CEPS WORKING DOCUMENT
Thinking ahead for Europe

Education Policy and Welfare Regimes in OECD Countries

Social stratification and equal opportunity in education

Miroslav Beblavý, Anna-Elisabeth Thum and Marcela Veselkova*

No. 357, December 2011

Abstract

In this Working Document we look at which OECD countries deliberately attempt to reproduce social stratification through educational policies, and which countries put greater emphasis on intervening in the stratification process. First, we examine the relationship between education and welfare policies as measures of intervention in this process: do countries intervene in both education and welfare – driven by a 'stratification culture'? Or is there a trade-off between intervention in education and welfare, with certain countries prioritising one over the other?

Our findings indicate that there are two pure types of clusters: i) a cluster in which: "the role of public policy is to promote equality" including countries that are egalitarian in the welfare and the education systems and ii) a cluster with stratification in both, a cluster in which – "there is a proper place for everyone in society" and several mixed clusters. Second, we consider whether it is the state on the one hand or the market or family on the other hand that provides education and welfare.

We found that countries can be grouped into more market-oriented and more 'etatist' clusters. Combining the analysis of stratification with the analysis of the market/state boundary, we observe a more complex clustering in groups of less egalitarian and market-oriented countries, less egalitarian market-oriented, egalitarian state-oriented, educational egalitarian state-oriented and educational egalitarian market-oriented countries.

We interpret our findings as challenging a one-policy-fits-all approach that advocates education policy reforms designed to increase equal opportunities in education. We argue that the context of each country needs to be considered before the implementation of such policies.

* Miroslav Beblavý, Comenius University, Bratislava, Slovakia and Centre of European Policy Studies (CEPS); Anna-Elisabeth Thum, CEPS; Marcela Veselkova, Slovak Governance Institute, Bratislava, Slovakia. This paper was prepared within the FP7 funded project NEUJOBS www.neujobs.eu. Funding by the European Commission is gratefully acknowledged.

CEPS Working Documents are intended to give an indication of work being conducted within CEPS' research programmes and to stimulate reactions from other experts in the field. The views expressed in this paper are those of the authors and do not necessarily represent any institution with which they are affiliated.

ISBN 978-94-6138-142-2
Available for free downloading from the CEPS website (http://www.ceps.eu)
© Centre for European Policy Studies, 2011

Contents

1. Introduction ... 1
2. Theoretical background ... 2
2.1 Welfare regimes as a source of stratification ... 2
2.2 Education as the process of stratification ... 5
2.3 Clusters of educational models and / or policies ... 6
2.3.1 Educational perspective ... 6
2.3.2 Labour market perspective ... 7
2.3.3 Approaches linking welfare and education ... 8
3. Data and methodology ... 10
4. Results ... 14
4.1 Descriptive statistics: the relationship with Esping-Andersen's typology ... 14
4.2 Model-based clustering ... 17
4.3 Agglomerative hierarchical clustering ... 22
5. Conclusion ... 26
5.1 Clustering in terms of explicit stratification in the public system ... 27
5.2 Clustering in terms of the extent of public vs. family / market involvement ... 27
5.3 Clustering in terms of combined dimensions ... 28
List of country abbreviations ... 30
References ... 31

List of Tables

Table 1. Indicator descriptions and sources ... 12
Table 2. Model-based clustering results ... 21
Table 3. Cluster means for each measure set ... 22
Table 4. Explicit stratification vs. equality in the public system ... 27
Table 5. Family / market vs. state provision in education and pension policy ... 28

List of Figures

Figure 1. Cross-country comparison of variance in reading performance within schools ... 15
Figure 2. Cross-country comparison of variance in reading performance between schools ... 16
Figure 3. Cross-country comparison of participation in institutional childcare, 2009 ... 16
Figure 4. Cross-country comparison of standardised measures of time spent in learning environments ... 17
Figure 5. Cross-country comparison in the average of replacement rate ratios between different earners, 2011 ... 17
Figure 6. Dendrogram with p-values for the measure set "Education" ... 24
Figure 7. Dendrogram with p-values for the measure set "Education and Pension" ... 25
Figure 8. Dendrogram with p-values for the measure set "Learning and Pension" ... 26

Education Policy and Welfare Regimes in OECD Countries

Social stratification and equal opportunity in education

CEPS Working Document No. 357/December 2011

Miroslav Beblavý, Anna-Elisabeth Thum and Marcela Veselkova

1. Introduction

Social stratification, defined as a "system with rather predictable rules behind the ranking of individuals and groups" (Kerbo, 2006, p. 1), is central to the organisation of every human society. The question of whether this stratification is natural and just has been debated for many centuries. In his classic treaty *Power and Privilege: A Theory of Social Stratification*, Lenski (1966) points out that the Greek philosophers provide us with the first glimpse of this dialectic in action. There are two competing arguments – one that attempts to preserve and replicate the existing social order (as represented by Aristotle) and the other that challenges and attempts to restructure it (represented by Phaleas). The reduction or elimination of inequality can be approached in two ways (see Roemer, 1998; 2008). Equality of outcome has traditionally been associated with the political left. It is concerned with the equalisation of income or wealth across individuals or households, usually through a redistribution of wealth from the richer to the poorer sectors of society. In contrast, equality of opportunity, 'levels the playing field' so that all have a chance to achieve the same outcomes. Whether or not they do so depends on their choices and actions. With regard to education, equality of opportunity means a mix of policies that will ensure that the educational performance of students does not reflect circumstances that are beyond the student's control, such as socio-economic status (Roemer, 1998).

The close alignment of these concepts with political ideologies implies that they are inherently related to belief systems. Without belief systems justifying the inequality or the need to restructure the existing social order, it is unlikely that a stratification system would remain stable over time (Kerbo, 2006, p. 1). However, the notion that moral ideas and values have a significant impact on the design of social policies has been debated (for a recent survey of literature, see van Oorschot, 2007). The debate revolves around the issue of the deservingness of needy people and suggests significant differences across countries. Whereas the 'social blame perspective' is still prevalent in Europe, the 'victim-blaming' view predominates in America (van Oorschot & Halman, 2000). However, even in Europe, the concept of deservingness is not universal across needy groups (van Oorschot, 2006): elderly people are seen as the most deserving, closely followed by sick and disabled people; unemployed people are seen as less deserving still and immigrants as the least deserving of all.

In this paper we explore which countries deliberately attempt to reproduce social stratification through social and educational policies, and which put greater emphasis on intervening in the stratification process. To this end, we use cluster analysis to identify sets of countries with similar educational policies and similar social policies. We restrict our sample

to those OECD countries for which all the indicators we use are available. Unfortunately, this procedure forces us to leave out France, the USA, Canada, New Zealand and Australia. In the next step, we compare these clusters with the traditional Esping-Andersen (1990) welfare regime typology to see whether there is a match between the educational model clusters and the welfare regime clusters. Esping-Andersen's typology is based on both stratification and decommodification. Our results show that countries do not always adopt the same approach in the education and social policy fields, but that careful disaggregation of differences allows for the identification of relatively robust clusters. The results of the research can serve as a basis for a more sophisticated analysis of interaction between welfare and education policies. It can also illuminate the limits of policy change, given the underlying patterns of welfare state and education policies in different countries. In other words, if there is such a thing as a stratification culture permeating many policy areas, proposed policy change in a single area might not be approved, implemented or indeed achieve the desired goals.

2. Theoretical background

2.1 Welfare regimes as a source of stratification

In his influential book *Three Worlds of Welfare Capitalism*, Esping-Andersen (1990) defines a welfare regime along two dimensions: i) the level of decommodification, i.e. the degree to which a person can maintain a livelihood without reliance on the market, and ii) stratification, i.e. the extent to which welfare systems differ in the structuring of social relations. Based on these criteria, he identifies three ideal welfare regimes – liberal, conservative and social-democratic. We will discuss these regimes from the perspective of stratification; the main subject of this section.

As Esping-Andersen (1990, p. 58) argues,

> "[w]elfare states may be equally large or comprehensive, but with entirely different effects on social structure. One may cultivate hierarchy and status, another dualisms, and a third universalism. Each case will produce its own unique fabric of social solidarity."

The corporatist welfare regime characteristic of Germany, Austria, France or Italy puts emphasis on the preservation of traditional status differentials in society. The benefits are therefore linked to the contributions paid by wage-earners to the national insurance schemes. Although these regimes have been historically associated with significant levels of social expenditure, the effects of redistribution are negligible. The liberal welfare states are built on the idea that a free market allows individuals to realise their potential, regardless of the pre-existing social hierarchies. The redistribution from rich to poor is therefore rather limited. Modest benefits cater mainly to a clientele of low-income, usually working class state-dependants. But whereas liberal regimes exhibit more inequality with respect to most indicators, such as income, Gini co-efficient or housing patterns, they are more socially inclusive than conservative regimes regarding educational participation and post-primary completion rates (Pechar & Andres, 2011). This reflects the dominance of the equality of opportunity in national discourse, where equal access to education is used to make citizens competitive in the labour market. Finally, the social-democratic regimes are based on the principles of universalism and decommodification of social rights. In contrast to the liberal regimes, which promote an equality of minimal needs, social democratic regimes promote an equality of the highest standards. The result is a peculiar combination of policies based on the principle of equality of outcome (such as high redistribution from the rich to the poor)

and policies based on the principle of equality of opportunity (such as equal access to education).[1]

Esping-Andersen's work triggered a vigorous academic debate (for a recent overview, see Bambra, 2007 or Arcanjo, 2006). In the process, various criticisms were raised regarding the classification of certain countries, the gender-blindness of the original Esping-Andersen typology or various methodological problems. The most intensely debated aspect was the range of countries: Esping-Andersen examined 18 OECD countries, but this sample choice was questioned. Particular attention was paid to the classification of Italy and Japan as conservative welfare regimes. With regard to Italy, some argue that when the Southern European countries are covered, a fourth 'Southern' or 'Mediterranean' cluster of welfare regimes emerges (see Bonoli, 1997; Ferrera, 1996; Ferreira & Figuardo, 2005). This Southern European welfare state is characterised by a high degree of fragmentation of social security and a high reliance on family (Ferrera, 1996).

On a similar note, it has been suggested that the Japanese welfare regime is more like that of South Korea, Taiwan, Hong Kong and Singapore than the conservative welfare regime of Germany, France or Austria (Aspalter, 2006; Croissant, 2004; Walker, 2005). This Confucian welfare regime is characterised by low levels of government intervention and investment in social welfare, underdeveloped public service provision and the importance of family and voluntary social nets (Bambra, 2007, p. 1100).

Finally, the enlargement of the European Union eastwards sparked a new interest in Central and Eastern European countries and their possible classification into existing welfare regime clusters (Ferreira & Figuardo, 2005; Fenger, 2007). This stream of welfare regime research suggests that there are significant differences between post-communist countries. Ferreira and Figuardo (2005) argue that some of the new countries cluster with the main group of old EU countries, whereas others form an entirely new cluster. Fenger (2007) analyses an exclusive sample of post-communist countries and suggests that welfare states in post-communist countries might be subdivided into three groups: i) a group of former-USSR countries, including Russia and Belarus; ii) a group of rather successful Central and Eastern European countries, including Poland and the Czech Republic, and iii) a group of developing welfare states, consisting of Romania, Moldova and Georgia. The welfare regime types thus seem to be sensitive to the sample size.

Attention has also been paid to Esping-Andersen's analytical focus on cash benefits: pensions, sickness benefits and unemployment benefits and ignorance to other domains of the welfare state, such as health care, education or social services (Bambra, 2005a; 2005b; 2007; Kautto, 2002). The failure to take into account care and provision services triggered a growing stream of literature that examines the welfare regimes though the gender lens (Lewis, 1992; Sainsbury, 1994; Bambra, 2006). The major criticism was related to the importance of gender as a form of social stratification and the importance of women and the family in the provision of welfare. Once childcare, care for elderly or parental benefits are taken into account, the countries do not cluster into distinct groups corresponding to welfare state regimes (see Sainsbury, 1999, Chapter 8). In the area of childcare, France, Denmark, Italy, Sweden, Belgium and Finland formed the cluster of countries with ambitious childcare provision and policies to support the employment of mothers. The liberal states clustered

[1] For an indication of Esping-Andersen's (1990) classification see column 1 in Table 2: Austria, Belgium, Germany, Japan, Luxemburg and the Netherlands belong to the conservative regime; Denmark, Finland, Iceland, Norway and Sweden belong to the social-democratic regime; Ireland and the United Kingdom can be classed under the liberal regime; the Czech Republic, Estonia, Hungary, Poland and Slovenia are classified as the CEE countries.

together because of low provision and few supportive policies but again, the liberal cluster was joined by the Netherlands, Germany and Norway.

Second, there seems to be a trade-off between the provision of services for children and the elderly: the countries that lead in providing childcare are laggards in providing care for the elderly, and vice versa. Similarly, differences in the treatment of single mothers as earners, carers, or earner-carers cut across welfare regimes. The absence of generous social transfers creates incentives for mothers in the US, Germany, Italy, Denmark, Canada and Belgium to seek paid work. By contrast, social benefits were the key component of mothers' income in the Netherlands, the UK and Australia. In the third group of countries – Sweden, France and Finland, benefits and earnings were roughly equal. This earner-carer regime thus supported single parents as mothers and as workers. The tax relief to the family provider and the punitive effects of taxation on married women also suggests the existence of clusters that are different from those proposed by Esping-Andersen.

Based on these findings, Sainsbury (1999) describes the dynamics between the policy logics of gender regimes and welfare state regimes as follows. Conservative regimes attempt to replicate the existing social order by prescribing that benefits should correspond to contributions. In combination with the logic of the male breadwinner that upholds the traditional family, it leads to contradictory results for mothers and parents: women provide care for others but are less likely to be eligible for benefits to pay for their own care, or they are eligible only for means-tested benefits. The liberal regime rests on the principle of minimal state intervention in the economy and family life. Families and individuals are therefore expected to support and care for themselves. Cash benefits for families are therefore at low levels compared to the conservative and social-democratic regimes, and family services are targeted to the needy. Finally, the social-democratic regimes are built around the notion that state intervention can modify the effects of market forces and achieve greater social equality. The predominant regime is that of earner-carer, which envisions greater equality between women and men and the transformation of the traditional division of labour between the sexes. Social rights are therefore granted to the individual, independent of family relationships.

Esping-Andersen acknowledged this criticism and the importance of 'familialism' or 'de-familiarisation'. He identified two dimensions of familialism – the public policies aimed at families and the welfare burden assumed by them (Esping-Andersen, 1999). He declared 'family' to be one of the pillars of the welfare regime alongside the state and the market:

> Seen from the perspective of either the citizen or of society, our welfare comes inevitably from the combination of family, market and government inputs. Indeed, for most people throughout most of their lives, the all-dominant source of welfare is derived from the family and market. We receive most of our income from the market and typically most of our social support from family members. From a life cycle perspective, the welfare *state* only really gains prominence when we are very young or old. (Esping-Andersen, 2007, p. 3).

Finally, Esping-Andersen's typology was also questioned on methodological grounds (Bambra, 2006; Scruggs & Allan, 2006; 2008; Kangas, 1994, Ragin, 1994; Pitruzello, 1999). The recent studies replicating Esping-Andersen's call into question the historical and continued utility of the *Three Worlds* typology (for revision of welfare decommodification, see Scruggs & Allan, 2006 and Bambra, 2006; for revision of welfare stratification, see Scruggs & Allan, 2008). The accuracy of Esping-Andersen's typology was also challenged by more statistically robust methodologies, predominantly cluster analysis.

2.2 Education as the process of stratification

Education is a powerful predictor of future earnings. There are substantial earnings returns to quantitative measures of education, such as years of schooling (Card, 1999; Ashenfelter et al., 1999). The earnings returns to qualitative measures of education seem to be even higher and increasing with an individual's time on the labour market (Bishop, 1992; Riviera-Batiz, 1992; Altonji & Pierret, 2001). Equal access to education can be thus a powerful tool to replicate or restructure the existing social order.

We define educational stratification as educational inheritance and mobility between generations, i.e. the ways in which social and economic advantages and disadvantages are passed on from one generation to the next. As Menchik (1979) reminds us, for any degree of inequality we can have a relatively static society in which children always assume their parents' position, or a highly mobile society in which the position of the child is unrelated to that of his/her parents. Indeed, there are large differences in educational persistence between countries.

Using 50-year trends in the interregional persistence of educational attainment for a sample of 42 countries, Hertz et al. (2007) document that Latin America displays the highest intergenerational correlations (regional average 0.6) and the Nordic countries the lowest (regional average 0.34). The Western European correlations range from 0.30 in Denmark to 0.54 in Italy. The liberal economies score differently: the correlation in the US and Ireland is 0.46. In contrast, New Zealand and the UK score relatively low (0.33 and 0.31 respectively).[2] The effects of the communism are mixed. It would be reasonable to assume that the correlations would be low; however, they range from 0.2 in rural China and 0.28 in Kyrgyzstan to 0.41 as the average of the Eastern Bloc. Furthermore, despite these country differences, the global average correlation between a parent and child's schooling has held steady at about 0.4 for the past 50 years.

In addition to the transmission of educational attainment between generations, it is reasonable to also look at the link between student performance and family socio-economic status. The research suggests that family background has a strong effect on student performance (Willms & Somers, 2001; Woessmann, 2004; OECD, 2009). On average, young people from lower socio-economic backgrounds perform worse than those from more advantaged backgrounds. However, the strength of this relationship varies considerably among countries, suggesting that some governments are more successful than others in reducing disparities associated with socio-economic status (Willms, 2006, p. 8). One of the most comprehensive datasets comes from the OECD's PISA programme, which compares the mathematics, literacy and science performance of students aged 15. OECD (2009) concludes that parental education is the most important determinant of student performance. However, parental occupational status, household type, migrant status and language are important as well. The negative impact of having a father with low education is strongest in the Czech Republic, Slovakia, Hungary, Germany and Turkey; in contrast, the negative effect is smallest in Finland, Iceland, Italy, Norway, Portugal and Sweden. Woessmann (2004) reaches similar conclusions when looking at the effects of family-background characteristics on student performance in the US and 17 Western European school systems. He argues that family background has similar effects in both Europe and the United States. The most equitable performance for students from different family backgrounds is achieved in France and Flemish Belgium. In contrast, the UK and Germany have the lowest degree of equality of opportunity. Differences between 13 Latin American

[2] It should be noted that other studies suggest different levels of intergenerational mobility. Relying on longitudinal data for a cohort of individuals born in the UK in a week of March 1958, Dearden et al. (1997) suggest an intergenerational educational elasticity of 0.45.

countries were documented by Willms and Somers (2001). In their analysis they relied on UNESCO's PEIC data. Cuba was the most successful country in disentangling the link between family background and school performance.

These differences across countries are not entirely stable over time. In their seminar study, Shavit and Blossfeld (1993) report stability of socio-economic inequalities in educational attainment over much of the 20th century in all but two (Sweden and Netherlands) of 13 countries in their sample. However, recent studies challenge their conclusions and identify a widespread decline in educational inequality between students of different social origins. Breen et al. (2009) argue that this was most pronounced in Sweden, the Netherlands, the UK, Germany and France, and less so in Italy, Ireland and Poland. Hertz et al (2007) show that the standardised intergenerational schooling correlation increased over time in the US and the UK, whereas it decreased in the Netherlands and Finland. Esping-Andersen (2004) arrived at similar conclusions using IALS (International Adult Literacy Survey) data: the negative effect of fathers with a low level of education diminished sharply in Scandinavia, especially for the very youngest cohorts, born around 1970. In contrast, the effect persisted in Germany, the UK and the US.

What factors played a major role in the reduction of these inequalities? We are particularly interested in differences in the organisational features of the school system, through which equality of educational opportunity is achieved, as these can be influenced by governmental policy. Schutz et al. (2005) suggest that late tracking and a long pre-primary cycle are beneficial to equality of opportunity, while pre-school enrolment has a detrimental influence at low levels of enrolment and is beneficial at higher levels. Furthermore, they argue that equality is negatively related to private school financing but positively to private provision of education.[3] The positive impact of increasing the age of tracking in the case of Finland was also emphasised by Pekkarinen et al. (2006). Breen et al. (2009) also point to economic growth and welfare state expansion.

2.3 Clusters of educational models and/or policies

The clustering of educational models or more concrete educational policies can be approached from various perspectives – educational, industrial relations/labour market studies, economics or political science (for a recent survey, see Ashton et al., 2008). There are numerous clusters or typologies, which are based on different criteria. The narrow criteria usually focus on educational arrangements (educational perspective); the broader attempt to link skill formation to the labour market (industrial relations/labour market studies). Finally, there is a growing body of literature that explores educational models through the welfare lens of political economy. Although these clusters are the result of differing approaches, there is an intriguing match between clusters produced by various authors.

2.3.1 Educational perspective

The first set of clusters is based on the differences between education arrangements, such as universal vs. differentiated schools, integrated vs. separated sectors of schooling or years of schooling at various levels. These models attempt to isolate key characteristics of a particular system that distinguish it from other systems. The influential Furth (1985) typology is based on the post-compulsory vocational training arrangements. He suggests that there are three models of educational provision: the schooling model that integrated most forms of provision within the formal educational system (typical of the US, Canada and Japan), the dual model that was characterised by a strong and highly developed apprenticeship sector associated with West Germany, Switzerland and Austria, and the mixed model where

[3] Private schools may or may not be privately funded.

schools are complemented by a less formal sector of mainly work-based education, typical of the UK. This typology has been utilised by Green (1991) who suggests the existence of three models, the employer-led model that provides a work-based system of training (e.g. Germany), the education-led, college-based model, which provides both general and vocational training but in different institutions (France, Italy and Japan) and the education-led, college-based system that provides general and vocational training within the same institution (Sweden).

In contrast to Furth (1985) and Green (1991) who focus on post-compulsory education, Hoffmeyer-Zlotnik and Warner's (2007) typology is based on educational arrangements at all levels of education.

The first type, represented by Germany, rests on a short number of years of primary schooling and a differentiated lower and upper secondary sector. The tertiary sector consists of parallel schools, which provide further vocational education, applied universities and a greater number of academic high schools and universities. The lower secondary, the upper secondary and the tertiary sectors are clearly separated from each other.

The second type, represented by Luxembourg, rests on a greater number of years of primary schooling, a limited number of school types at lower secondary level and different types of general and vocational schools upper secondary level. The tertiary sector schooling consists of academic vocational education and universities, which are separated from lower and upper secondary schools.

The third type is represented by Denmark. Both primary and secondary schooling sectors are integrated. The primary school and the lower secondary school are combined in a comprehensive school. The upper secondary sector consists of many types of general schools and one type of vocational school. There is a small difference between vocational and university education at the tertiary level.

Finally, France is characterised by high rates of pre-primary enrolment. Primary schooling takes a greater number of years and there is no differentiation in the lower secondary sector. There is low vertical differentiation in the upper secondary sector. On the other hand, the tertiary sector is much more differentiated. This typology is in line with the typology of the Dutch Social and Cultural Planning Office (SCP, 2004), which proposes four clusters:

1) Germany, Belgium, Netherlands, Hungary and the Czech Republic,
2) Luxembourg, Austria and Slovakia,
3) Denmark, Finland, Sweden, Portugal, Estonia, Lithuania, Poland and Slovenia,
4) France, Greece, Ireland, Italy, Spain, the UK, Cyprus, Malta and Australia.

2.3.2 Labour market perspective

The major strength of the educational perspective lies in its ability to identify and abstract key features of the different educational systems. However, with the exception of historical studies (see, for example, Green, 1999), it fails to explain how these particular systems evolved. Labour market perspective overcomes this shortcoming, and provides explanations for different types of educational models, particularly in regard to the ways in which educational systems are formed by and respond to labour markets. The key to understanding the development and operation of educational systems is to understand the organisation of work within enterprises (Marsden, 1986; Maurice et al., 1986; Sorge & Warner, 1980).

Green (1991), although still writing from the educational perspective, effectively links educational systems to labour markets and industrial development. He offers the typology of

five primary models of education and training systems within Western Europe and East Asia, associated with Japan, Germany, France, Sweden and the UK. The state developmentalist model associated with Japan, South Korea, Taiwan and Singapore is highly centralised and puts strong emphasis on the development of group cohesion and personal skills, which are conducive to both the cohesive and orderly citizenship and disciplined and cooperative labour. To this end, general high schools predominate over vocational high schools and universities offer very broad programmes, even when they are specifically vocational. The German system, replicated in Austria, Switzerland and the Netherlands, is relatively decentralised. It is characterised by streaming at the secondary level, where academic ability is the main selection factor. The French model is characterised by strong central control, comprehensive systems of compulsory schooling and school-based systems of upper secondary education. National education is standardised. The Swedish model rests on unstreamed classes with automatic grade promotion. Comprehensive high school is the dominant institution. There is a strong emphasis on equality and social solidarity, which is ensured by strong central control. Finally, in England and Wales state control in education is limited and institutions are granted autonomy. Post-compulsory education consists of both school-based and work-based elements.

2.3.3 Approaches linking welfare and education

There is a growing body of literature that attempts to examine educational policies through a welfare lens. This is done either from the perspective of expenditure (Hega & Hokeinmeier, 2002; Ansell, 2008; Pechar & Andres, 2011) or from the perspective of equality (Allmendinger & Leibfried, 2003; Peter et al., 2010).

Although education is one of the components of the welfare state, along with health care, employment and social security, there is a group of scholars who suggest that there is trade-off between investment in education and investment in other welfare policies (Heidenheimer, 1981; Heclo, 1985; Castles, 1989). The trade-off thesis builds on the assumption that education and social security programmes are viewed as alternative strategies (Heidenheimer, 1981, p. 269). Countries thus invest either in educational opportunities or in social insurance programmes to ensure equality of conditions. Educational policies can thus be viewed as preventive and prospective, whereas other social policies are retrospective and compensatory (Allmendinger & Leibfried, 2003). This trade-off thesis thus helps to explain the paradox that although liberal regimes exhibit more inequality with respect to most indicators, such as income, Gini co-efficient or housing patterns, they are more socially inclusive than conservative regimes with regard to educational participation and post-primary completion rates (Pechar & Anndres, 2011).

Hega and Hokenmeier (2002) attempt to link the trade-off thesis to Esping-Andersens's (1990) theory of three types of welfare state (liberal, conservative and social-democratic). To this end, they examine the relationship between spending on education and social insurance programmes in 18 OECD countries in the period 1960-1990. They conclude that welfare states with similar social insurance policies will also cluster according to the similarity of their educational policies. Expenditure on social insurance exceeds expenditure on education in conservative states, relative to other welfare state types. Social democratic states lead the conservative and liberal states in both social insurance and educational commitments, measured in real dollars per capita. Finally, whereas the social insurance spending in liberal states is the smallest, spending on education is higher than in conservative states. Furthermore, the liberal states lead in general education participation at the secondary level, at a rate significantly higher than that of conservative and social democratic states. These findings support the trade-off thesis that liberal states support general education curricula at the post-primary level to provide the individual with the necessary human capital to succeed in the labour market, thereby minimising future expenditure on social programmes.

Two papers attempt to transcend such a binary trade-off. First, Ansell (2008) argues that higher education policy in the OECD countries is driven by partisan choices within a trilemma between the level of enrolment, the degree of subsidisation, and the overall public cost of higher education. He claims that governments can achieve at most two of three objectives of mass enrolment, full subsidisation, and relatively low total public cost. As a result, governments choose:

1) mass, partially private, inexpensive higher education system – the partially private model,
2) mass, fully public, expensive higher education system – the mass public model, or
3) an inexpensive, publicly funded, elite higher education system – the elite model.

Furthermore, Ansell argues that the dynamics within the trilemma are driven by the partisanship conditional on the structure of the existing higher education system. When existing enrolment is low, right-wing parties opt to increase spending on higher education and the expansion of enrolment. In contrast, left-wing parties opt to expand public funding only when enrolment has reached mass levels. At this point, right-wing parties seek to limit further expansion.

Pechar and Anders (2011) further expand the number of trade-offs faced when expanding the higher-education system. They argue that it is impossible to achieve all of the following goals at the same time: low taxation, low or no tuition fees, high non-repayable student aid, and a high participation rate in adequately funded higher-education institutions. Their findings suggest that the trade-off hypothesis is confirmed only for liberal and conservative regimes. However, social-democratic countries seem to avoid some of the trade-offs and are able to expand higher education without neglecting those who are unable or unwilling to make use of the educational opportunity. Nevertheless, they do it at the cost of interfering with the supply and demand of higher learning opportunities by, for example, limiting the seats for research universities.

Although the exploration of educational models in terms of social expenditure is necessary to understand the evolution of governmental support for various educational models, this focus underemphasises how educational policy structures social relations:

> (…) welfare states [and this holds also for educational models] may be equally large or comprehensive, but with entirely different effects on social structure. One may cultivate hierarchy and status, another dualism, and a third universalism. Each case will produce its own unique fabric of social solidarity (Esping-Andersen, 1990, p. 58).

As size is not a good predictor of the educational model's impact on social stratification, it is useful to explore the direct link to inequality.

Peter et al. (2010) study the fit of Esping-Andersen's (1990) welfare typology with regard to education policy. They use multilevel statistical techniques to cross-nationally compare the within- and between-school difference in socio-economic gradients in student achievement. The results show that conservative welfare states, as a group, have the highest between-school gradients for maths, reading and science; social-democratic countries have the lowest between-school gradients and liberal welfare states fall somewhere in between. In other words, variation in the socio-economic composition of a school has the greatest impact on student achievement in conservative and the least in social-democratic regimes.

Our contribution to this literature is twofold. First, we explore which countries deliberately use educational policy to replicate or reverse the existing social order and compare the identified sets of clusters with the original Esping-Andersen typology, as well as our own typology based on social stratification via a public pension system.

3. Data and methodology

As specified above, the main aim of this paper is to explore which countries deliberately attempt to reproduce social stratification through educational policies and which countries put greater emphasis on intervening in the stratification process. We consider educational policies as intervening in the stratification process when i) the state as opposed to the market provides learning frameworks that could counterbalance a non-learning friendly environment for the child at home and ii) when students are not streamed into ability groups. Conversely, education policies that maintain social stratification are those that a) leave it to the market to provide additional learning frameworks or opportunities or b) group students into ability group at an early stage.

We are also interested in the relation between education policies and welfare policies as measures of intervention in the stratification process: do countries intervene on both education and welfare – driven by a 'stratification culture'? Or is there a trade-off between education and welfare and countries intervene on either education or welfare? We consider welfare policies as intervening in the stratification process when state benefits do not reproduce the social stratification that has developed through income.

To answer these questions, we propose to use a set of indicators that measure stratifying factors in education and in welfare policies (see Table 1). In most cases we do not measure the formal policies themselves but rather their outcome. We measure the possible influence of education policies on social stratification by the explicit stratification within the state-organised system and by the provision of learning environments through the state on the one hand or through the market or the family on the other hand. The possible influence of welfare policies on stratification is measured by stratification present in the pension system and by the degree to which the state provides pension benefits as opposed to the market. The reasons for using pension data are i) that pensions are a major part of social expenditure and ii) because detailed data of replacement rates by income is available.

The choice of variables is based upon findings by the OECD literature on the PISA findings (for example, Causa & Chapuis, 2009; OECD, 2010). Causa and Chapuis (2009) show links between i) early differentiation (streaming or stratification) of students by ability and socio-economic inequality ii) early intervention and childcare policies and socio-economic inequality and iii) social benefits and socio-economic inequality. OECD (2010, p.78) stresses that school resources – such as learning time or extracurricular activities, are a key factor in determining the link between socio-economic background and educational performance.

We choose two variables to measure the explicit stratification within the state-organised system: variance between schools (level of effective streaming) and variance of outcomes within schools when measured by different reading ability groups at the age of 15. Within-school variance is measured as the part of the variance in reading performance explained by the within-school variation and accordingly – between-school streaming is measured by the part of the variance in reading performance explained by between-school variation. These variables indicate how far a country displays large differences in performance within and across schools. A high between-school variance in reading performance indicates that pupils of different reading capacity are to a large extent streamed into different schools. A high within-school variance in reading performance indicates that societal differences play out within schools and that schools have mixed pupils in terms of reading performance. A higher within-school variance could be believed to be more favourable for students of lower ability since they might be able to benefit from the peer group effects initiated by stronger pupils.

Another set of measures is selected to determine the degree to which either the state or the market or family provide learning environments. In particular we study participation in

institutional childcare, the average number of hours spent at school per year and the average number of weekly hours spent in lessons out of school. For the time spent in lessons outside school we use the average time as well as the variance in time spent in lessons outside school.

Three variables measure the extent to which pensions are stratified, i.e. earnings-related. The first indicator shows the ratio between the pensions of an individual who earned an income twice as high as the median earner and the pensions of a median earner. The second indicator shows the ratio between pensions of the median earner and the pensions of an individual who earned half the income of the median earner. The third indicator measures the pension replacement rate of the median earner. The first two indicators measure the explicit stratification present in the pension system whereas the third indicator measures to what extent the state provides pensions as opposed to the market or other private sources.

Pensions are chosen as being representative of social policy for two reasons. First, they represent a major item in social expenditure. Second, the detailed data that would enable us to calculate the deliberate government stratification via other social policies, such as family allowances or unemployment benefits, are not available.

As Table 1 shows, we select data from different sources – the PISA dataset, the OECD database, and Eurostat. We choose the most recent available years, which range from 2009-2011. Our sample consists of 22 countries (for summary statistics see Table A1): Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxemburg, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden and the United Kingdom. As mentioned above, the country selection is subject to data availability of all indicators. Due to data availability issues we needed to exclude France, the USA, Canada, New Zealand and Australia from our analysis.

Table 1. Indicator descriptions and sources

Indicator	Description	Source
Education Stratification		
Variance between schools (STR1)	Variance in student performance between schools (measured on the reading scale), expressed as a percentage of the average variance in student performance across OECD countries.	PISA (2009)
Variance within schools (STR2)	Variance in student performance within schools (measured on the reading scale), expressed as a percentage of the average variance in student performance across OECD countries.	PISA (2009)
Learning Environment Provision		
Early childhood education (LE1)	Participants in institutional childcare or ISCED 0-1 at ages 3-5; average of ranked values.	EUROSTAT (2008/2009)
Hours spent at school (LE2)	Weighted sum over hours per year of total compulsory and non-compulsory instruction time in the curriculum for 7-8, 9-11, 12-14 year-olds, "Education at a Glance".	OECD (2008)
Extracurricular activity - Mean (LE3)	Average of out of school time lessons (<2, 2-4, 4-6,>6h) in language, mathematics, science and other subjects for 7 to 15 year olds.	PISA (2009)
Extracurricular activity - Variance (LE4)	Variance of out of school time lessons (<2, 2-4, 4-6,>6h) in language, mathematics, science and other subjects for 7 to 15 year olds.	PISA (2009)
Welfare Stratification		
Pension stratification 1 (PEN1)	Ratio between replacement rate of the 2*median earner to the median earner, "Pensions at a Glance"	OECD (2011)
Pension stratification 2 (PEN2)	Ratio between replacement rate of the median earner to the 0.5*median earner,"Pensions at a Glance".	OECD (2011)
Welfare Provision		
Pension etatism (PEN3)	Replacement rate of the median earner, "Pensions at a Glance".	OECD (2011)

In order to divide countries into different policy regimes, one can either form groups of countries according to a set of indicators (cluster analysis) or imagine a set of political concepts underlying the political characteristics of a country and give each country a score on each of the concepts (factor or principal component analysis).[4] In this analysis we are more interested in providing a typology of countries rather than determining factors characterising a political regime. So we turn to cluster analysis for our study.

To detect clusters of countries in terms of stratifying policies we use two different clustering techniques:[5] agglomerative hierarchical clustering with p-values and model-based clustering with a model selection strategy.[6] The former allows the computing of more tentative clusters while the latter distinguishes more distinct clusters (Danforth, 2010, p. 10).Together the two methodologies give a picture of both reliable and tentative clusters. Clustering techniques allow forming groups of data points, which are ideally homogeneous within groups and heterogeneous across groups.

Agglomerative hierarchical clustering is based on distance measures between data points and is a widely used method to discern clusters without pre-determining the number of clusters beforehand. In agglomerative hierarchical clustering the data is first divided into singleton clusters which are then merged to larger clusters in subsequent steps. There are several criteria and several distance measures for deciding upon which data points to merge. We use Ward's method (based on the error sum of squares) and the Euclidean distance, which is the most commonly used method (Danforth, 2010, p. 12). Often there is no objective criterion for these methods to determine the optimal number of clusters (Edwards, 2003, p. 18; Danforth, 2010, p. 12). However, Suzuki and Shimodaira (2006) have developed a way to compute p-values using bootstrap resampling techniques. These p-values are computed for each cluster and indicate how much the data supports the cluster.[7] Results of hierarchical clustering are usually illustrated by so-called dendrograms – tree-like graphs in which branches indicate clusters and leaves are the objects to be clustered.

Model-based clustering is based on probability theory – and not on distance like hierarchical clustering techniques. The approach to address the clustering problem as a problem of estimating parameters of a mixture of probability distributions can be traced back to Wolfe (1970). Fraley and Raftery (1998) have developed a model-based clustering methodology in which each cluster is assumed to be a component of a normal mixture distribution.[8] Using a Bayesian Information Criterion, an optimal model for the normal mixture distribution is selected together with the optimal number of components or clusters and a set of parameters characterising the normal mixture distribution.

The advantage of model-based clustering as opposed to hierarchical clustering is that the former is not sensitive to the choice of a distance measure and a similarity criterion,[9] which can be a problem of hierarchical clustering. In model-based clustering a maximum likelihood criterion is used. A good performance of model-based clustering as opposed to existing methods has been documented in Fraley and Raftery (1998, p. 1). In addition, Fraley and Raftery (1998, p. 3) report that hierarchical clustering methods are either computing time- or

[4] See, for example, Arts and Gelisssen (2002, p. 152)

[5] For the programming of these techniques we use the packages 'mclust' and 'pvclust' implemented in R version 2.12.2.

[6] In the choice of these two methods we follow Danforth (2010).

[7] The Null hypothesis that the cluster does not exist is tested. Rejecting the Null hypothesis with significance 0.1 indicates a strong support of the data for the cluster.

[8] A normal mixture distribution is a convex combination of a set of normal distributions.

[9] Fraley and Raftery (1998:2) call these criteria "heuristic".

space-consuming. On the other hand, model-based clustering is based on parametric assumptions on the mixture models, which can be too restrictive in some cases.

In order to perform both hierarchical clustering and model-based clustering techniques, we standardise the data. Non-standardised data can be problematic for hierarchical clustering since differences in scaling can put different weight on the variables during the clustering procedure. Standardised data also eases the convergence of the algorithm used in model-based clustering. For model-based clustering we set a conjugate prior on the means and variances. Setting a prior eases the convergence of the algorithm. We used the default of nine maximum possible clusters. For the hierarchical clustering with p-values, we set 1000 bootstrap replications.

4. Results[10]

The results are presented in two steps: first we compare our indicators of stratification present in the education and the pension system to Esping-Andersen's (1990) typology in order to detect possible similarities. In a second step we take the analysis further and use two types of cluster analyses to determine new clusters of countries present in the data.

4.1 Descriptive statistics: the relationship with Esping-Andersen's typology

A first purely visual inspection of the data (see Figures 1 to 5 and Table 3 below) indicates that educational stratification seems to be more common in conservative countries than in social-democratic ones. The social-democratic (or Nordic) model is characterised by a small degree of educational streaming between schools, high participation in institutional childcare (with the exception of Finland), a small amount of time spent at school or in market-provided learning and a not very egalitarian pension system of differing size. The conservative model can be described by a comparatively high degree of educational streaming, a relatively high participation in institutional childcare, a comparatively high number of hours spent in school or market-provided learning environments and a rather non-egalitarian pension system. Liberal countries are the most egalitarian in terms of the pension system, a relatively low degree of educational streaming, low participation in institutional childcare or extracurricular activity but a high number of hours spent at school. The literature building upon Esping-Andersen (1990) has detected two additional clusters for Mediterranean and Central-European economies (CEE). Our data supports treating them separately from the original set of clusters detected by Esping-Andersen (1990). CEE countries are similar to conservative countries in terms of educational streaming, but less time is spent at school or in institutional childcare and the pension system is rather non-egalitarian. Mediterranean countries are similar to conservative countries in terms of educational streaming, participation in institutional childcare, time spent at school. They have the least egalitarian pension system in the sample.

In terms of streaming policies, we can see in Figures 1 and 2 that – with the exception of Luxemburg – countries classified by Esping-Andersen (1990) as conservative are situated in the bottom half of the distribution of the variance in reading performance within schools and in the top half of variance in reading performance between schools – indicating that compared to the other countries in the sample, conservative countries seem to stratify students to a larger extent in different schools. Esping-Andersen's social-democratic countries, on the other hand, are situated in the top half of the distribution of variance

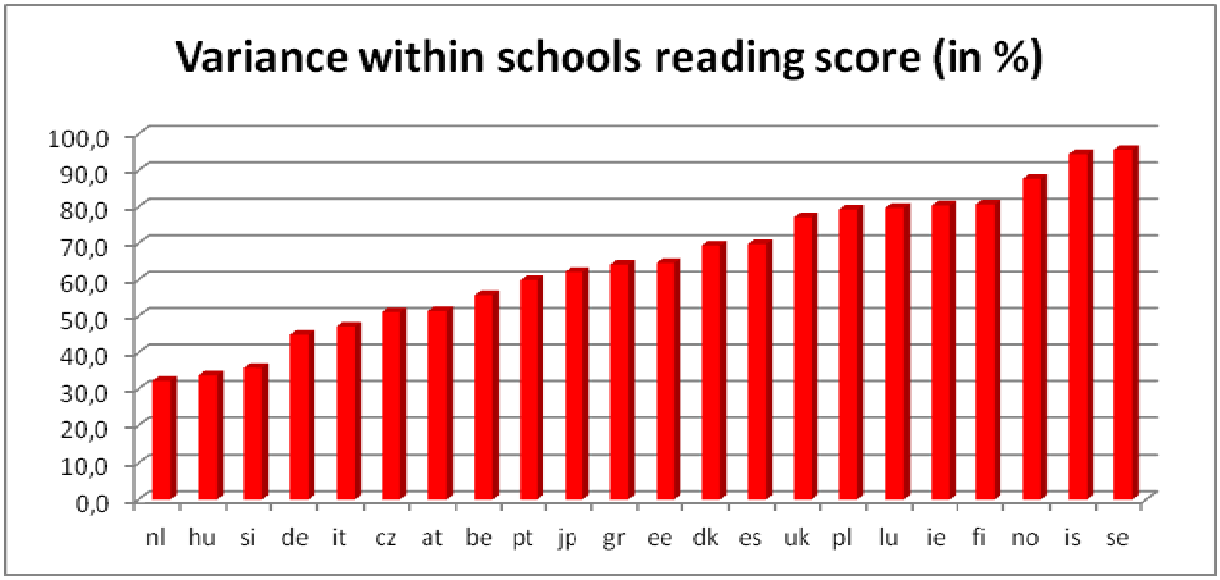
[10] See the list of country abbreviations at the end of the paper for an explanation of the abbreviations used throughout this document.

within-schools and in the bottom half of the distribution of the variance between-schools – indicating that social-democratic countries seem to stream less between-schools but rather within-schools. Liberal countries are in the middle of the distribution concerning between-school variance and more towards the top half of the distribution of within-school variance. Mediterranean countries are situated more towards the bottom half of within-school variation and more towards the top-half of between-school variation. The CEE countries seem to be split into countries with less educational streaming (Poland and Estonia) and countries displaying more educational streaming (Czech Republic, Slovenia and Hungary).

In terms of exposure to learning environments provided either by the state or by the market, as can be inferred from Figures 3 and 4,[11] social-democratic countries score higher on participation in institutional childcare and lower on an average of hours spent in school or in extracurricular learning. Conservative and liberal countries are evenly spread across both the distribution of participation in early childhood education and extracurricular activity. Mediterranean countries score high on the extracurricular activity index but in a divided fashion on the participation in institutional childcare index (Greece and Portugal score lower whereas Italy and Spain score highly).

The degree of stratification in pension data compared across countries is depicted in Figure 5. The indicator shown is an average between the ratios of the replacement rate of double-the-median earner to the median earner and the half-the-median earner to the median earner. A value of 100 indicates a completely egalitarian pension system. Figure 5 shows that the liberal countries Ireland and the UK are the most egalitarian countries in terms of pensions in our sample. Conservative, social-democratic, CEE and Mediterranean countries can be found all along the distribution. We conclude that Esping-Andersen's typology cannot be detected in the pension stratification data – with the exception of the liberal countries.

Figure 1. Cross-country comparison of variance in reading performance within schools



[11] Figure 4 shows an average of the standardised average hours spent at school or in extracurricular activity. This indicator does not take into consideration the reason why a child takes extracurricular lessons. It is a crude indicator of how much time a child spends learning.

Figure 2. Cross-country comparison of variance in reading performance between schools

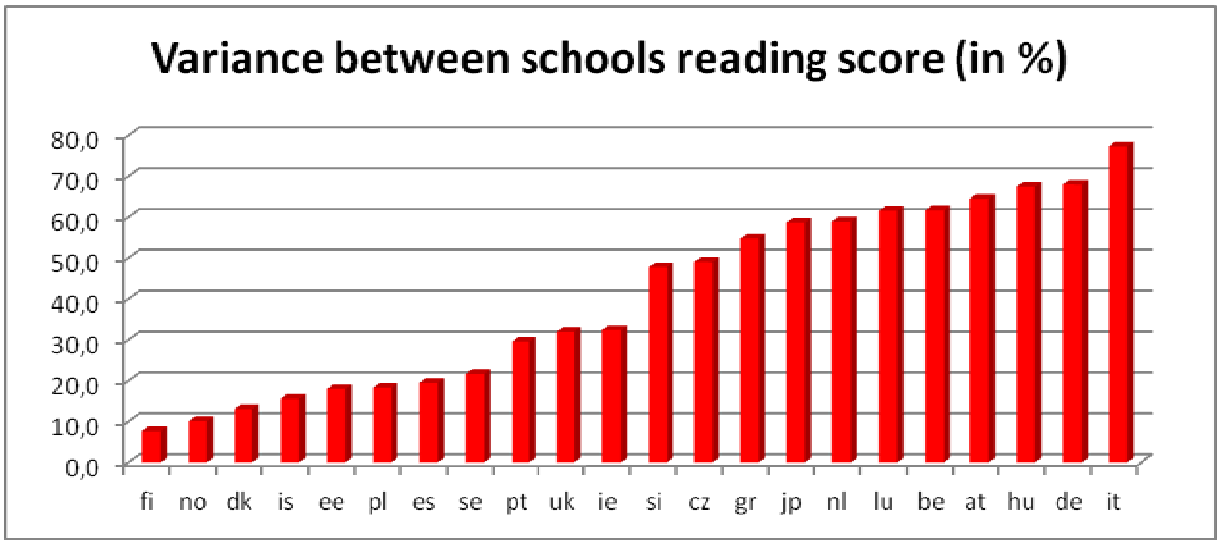


Figure 3. Cross-country comparison of participation in institutional childcare, 2009

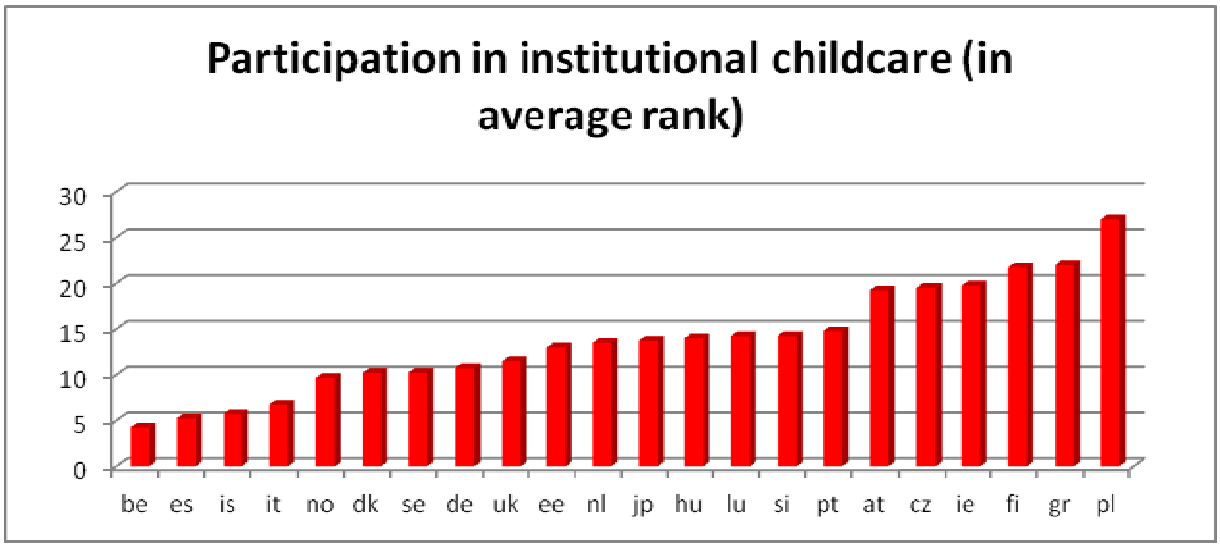


Figure 4. Cross-country comparison of standardised measures of time spent in learning environments

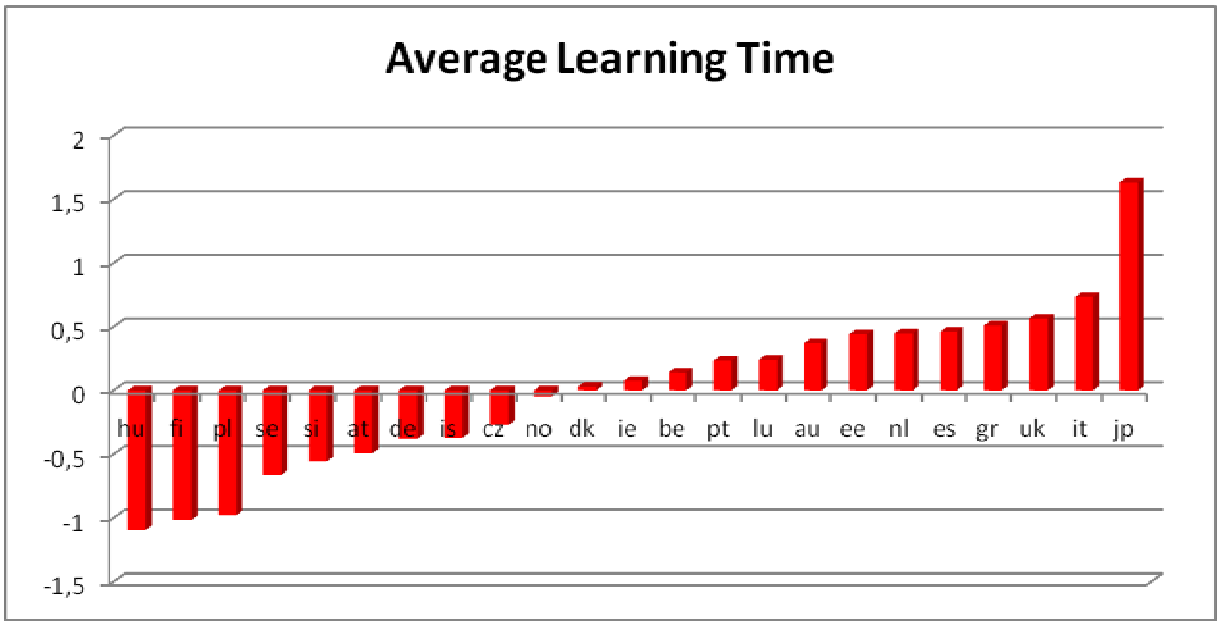
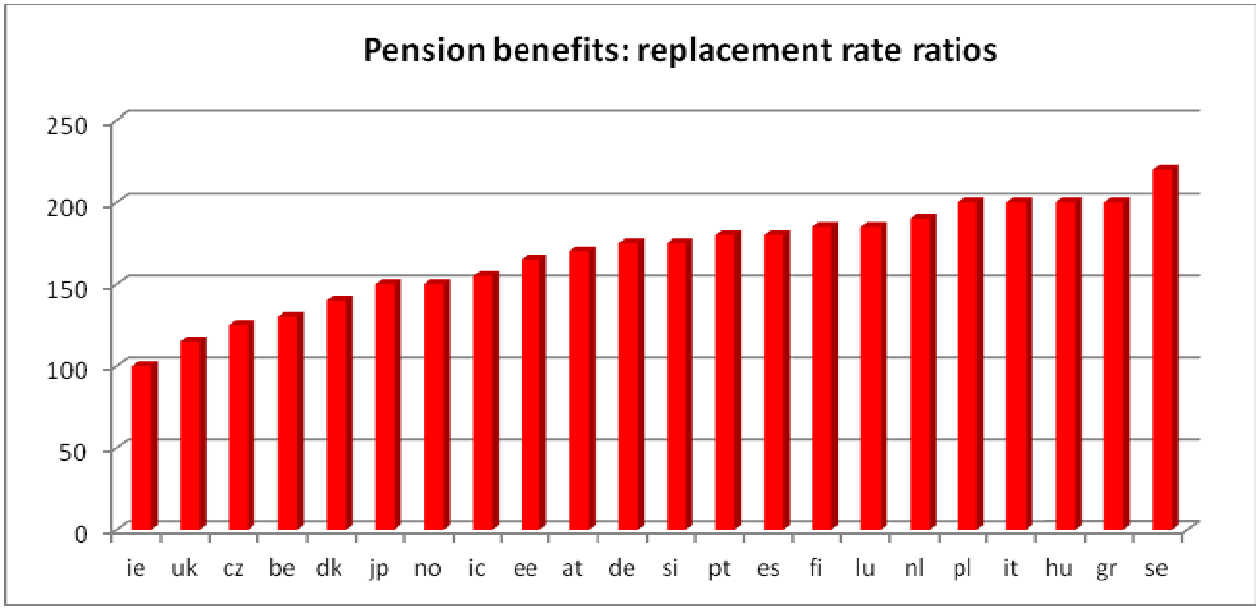


Figure 5. Cross-country comparison in the average of replacement rate ratios between different earners, 2011



4.2 Model-based clustering

The results of model-based cluster analysis are shown in Table 2. The first column shows the clustering found by Esping-Andersen (1990) with the addition of a Mediterranean cluster and a CEE country cluster. The second and third columns show results of the clustering using pension and education indicators independently. The fourth column depicts the clustering obtained when taking the pension and the education measure set together. The fifth column illustrates the clustering results when looking at measures of explicit state intervention (streaming and pension replacement rate ratios). Finally, the sixth column shows clustering results when examining the extent to which the state system intervenes as

opposed to the market or the family (participation in early childhood education, hours spent at school and hours spent in extracurricular activity). We understand this measure set as indicating the market-state boundary. Table 3 shows the associated means of the resulting clusters for all measure sets.

The clustering of the pension stratification data (column 2 in Table 2) shows that there are two main groups of countries: a large group of countries with a relatively high mean ratio between the replacement rates of low and high earners and a relatively high replacement rate for the mean earner (see Table 3) and a small group of egalitarian countries, namely the liberal countries Ireland and the UK, Belgium and the Czech Republic.[12] Liberal countries have been characterised by Esping-Andersen (1990) as empowering the free market; there is some theoretical foundation to the fact that they would display an egalitarian state-provided pension system with low replacement rates in general. The Czech Republic is the only CEE country that has not yet undergone a state reform of the pension system.

The education clustering (column 3 in Table 2) shows a similar picture as the descriptive results shown in section 5.1: the first cluster shows a group of countries containing four of Esping-Andersen's conservative countries (Germany, Austria, Belgium and the Netherlands), Italy and three CEE countries (the Czech Republic, Hungary and Slovenia). These countries can be classified as following the Germanic education model. As Table 3 shows, these countries can be described as having quite a strong culture of streaming children into different schools and by a high exposure to state-provided education.

The second cluster in the education clustering is a mixture of Scandinavian, Mediterranean and liberal countries, which display a relatively high degree of within-school variance in educational performance and a low degree of between-school variance. They can be classified as following models similar to the Anglo-Saxon, French or Scandinavian systems. The countries in this group are characterised by a weak culture of streaming and a high exposure to state-provided education.

The third cluster consists of three countries (Estonia, Greece and Poland) that are characterised by a quite low rank in participation rates in institutional childcare, a low degree of streaming into different schools and low numbers of hours spent at school, but a relatively high exposure to market-provided learning.

Japan constitutes the fourth cluster in the education clustering and is characterised by a high variance in reading performance both within and between schools, medium participation in early childhood education, a relatively high number of hours spent at school and a particularly high mean and variance in extracurricular activity. Japanese children are highly exposed to educational environments and variance in performance is high. The independence of Japan from other clusters seems mainly to be driven by high extracurricular activities.

By combining the education and pension measure sets (column 4 in Table 2), we aim to find out whether countries that intervene to a large extent in the stratification process in education also intervene strongly in the stratification process in pensions. In other words, we are interested in whether countries can be grouped into those with a 'culture of intervening in the stratification process' and those not intervening in the stratification process – in terms of the education and the pension system. Countries can be clustered into three groups:

1) countries in which the state plays an important role and stratification is reproduced both in education and in pensions (mainly conservative countries, some CEE countries and Italy)

[12] Descriptive data shown in Figure 5 also illustrate that these four countries are the most egalitarian in terms of the pension system.

2) countries in which both the pension and the education system tend to be more egalitarian and the market plays a more important role (social-democratic, liberal, Mediterranean and some CEE countries)

3) Japan, which is characterised by a relatively egalitarian system in terms of pension stratification combined with a low replacement rate for the median earner, strong between- and within-school variance and a particularly high amount of time spent in extracurricular activities.

Results from the education and the pension measure sets separately or jointly (the measure sets "Education", "Pension" and "Education and Pension" in Table 2) all indicate that there is a cluster containing the more non-egalitarian countries and one displaying the more egalitarian countries.

In a next step (column 5 and 6 in Table 2) we split the measure sets into a set of variables measuring the explicit intervention of the state in the stratification process (pension stratification and school streaming policies) and a set of variables measuring the extent to which the state as opposed to the market provides learning environments (participation in institutional childcare, hours spent at school and hours spent in extracurricular activities).

Studying the measures of explicit state intervention (measure set "Streaming and Pension", column 5 in table 2) we can see that countries can be roughly clustered into groups of either high or low equality in the pensions system combined with either high or low educational equality. The first group consists mainly of conservative countries, some CEE countries and Italy. It is characterised by non-egalitarian pensions and high educational inequality (a high degree of between-school streaming). The liberal countries form a separate group, characterised by low between-school streaming and a small difference in replacement rates of pensions for different earners. The Nordic and Mediterranean countries form another group, characterised by low levels of between-school streaming but high levels of stratification in the pensions. A fourth group consists of Belgium, the Czech Republic and Japan, characterised by both high within- and between-school streaming and an average level of stratification in the pension system.

The measure set indicating the extent to which the state intervenes as opposed to the market results in a clustering of two main groups and Japan (measure set "Learning and Pension", column 6 in Table 2). The first group of countries seems to intervene less in the provision of pensions and education: provisions of pensions are lower, participation in institutional childcare and time spent at school are lower but non-state provided extracurricular activity is also low compared to the second group of countries. The second group of countries can be described as having a higher pension replacement rate, higher participation in institutional childcare, more hours spent in school and a somewhat higher degree of extracurricular activity. Japan is characterised by a small pension system (a low replacement rate to the median earner), medium participation in institutional childcare, relatively high number of hours spent at school and a high degree of extracurricular activity, indicating a more market-influenced system.

We can combine the findings of the fifth and the sixth column (column 5 and 6 in Table 2 taken together) and group countries into those that are

- less egalitarian in the stratification process and provide learning environments to a larger extent by the market – such as Austria, Germany, Hungary and Slovenia.
- less egalitarian in the stratification process and guarantee the provision of learning environments to a larger extent by the state – such as Italy and the Netherlands.
- more egalitarian in the stratification process and in which the state provides learning environments to a larger extent than the market – such as Ireland and the UK.

- more egalitarian in the stratification process of education (but not of pensions) and leave the provision of learning environments to a larger extent to the state – such as Denmark, Greece, Iceland, Luxemburg and Spain.
- more egalitarian in the stratification process of education (but not of pensions) and leave the provision of learning environments to a larger extent to the market – such as Estonia, Finland, Norway, Poland, Portugal and Sweden.

The results from model-based clustering show that countries can to some extent be grouped into those that are egalitarian (these countries tend to be the social-democratic, liberal and Mediterranean countries) or non-egalitarian (these countries tend to be rather the conservative ones), in terms of stratification of both the pension system and the education system but some countries can also be egalitarian in one but not in the other dimension. In terms of education systems, the results show that countries fall into groups of more and less egalitarian education systems. The extent of state intervention in education can be high or low for egalitarian countries but only high for non-egalitarian countries.

Table 2. Model-based clustering results

Measure set	**Esping-Andersen clustering**	**"Pension"**	**"Education"**	**"Education and Pension"**	**"Streaming and Pension"**	**"Learning and Pension"**
Variables in the set	**-**	**PEN1,PEN2,PEN3**	**STR1,STR2,LE1, LE2, LE3, LE4**	**STR1,STR2,LE1, LE2, LE3, LE4,**	**STR1,STR2,PEN1, PEN2**	**LE1, LE2, LE3,LE4, PEN3**
Nr of clusters	5	2	4	3	4	3
Nr of observations	22	22	22	22	22	22
Country Classifications	at	at	at	at	at	at
	be	de	be	de	de	be
	de	jp	cz	gr	hu	cz
	jp	lu	de	hu	it	ee
	lu	nl	hu	it	nl	fi
	nl	ee	it	lu	si	de
		hu	nl	nl		hu
	cz	pl	si	si	be	se
	ee	si			cz	no
	hu	dk	dk	be	jp	pl
	pl	fi	fi	cz		pt
	si	is	is	dk	ie	si
		no	lu	ee	uk	ie
	dk	se	no	fi		uk
	fi	gr	pt	is	dk	
	is	it	es	no	ee	dk
	no	pt	se	pl	fi	gr
	se	es	ie	pt	gr	is
			uk	es	is	it
	es	be		se	lu	lu
	gr	cz		ie	no	nl
	it	ie	ee	uk	pl	es
	pt	uk	gr		pt	
			pl	jp	es	jp
	ie				se	
	uk		jp			

Note: As noted in Table 1 PEN1, PEN2 and PEN3 indicate different rates of replacement ratios across earning groups (between the 2* median earner and the median earner (PEN1), the median earner and the 0.5* median earner (PEN2) and the replacement rate of the median earner (PEN3)), STR1 indicates between school variance, STR2 within school variance (both STR1 and STR2 are measured in % of the average variance in student performance across OECD countries), LE1 indicates participation in early childhood edcuation (average of ranked values across age groups), LE2 hours spent at school (weighted sum over hours spent in schooling by different age groups), LE3 mean extracurricular activity and LE4 variance extracurricular activity (LE3 and LE4 are the mean and variance of the % of respondents).

Table 3. Cluster means for each measure set

Measure Set \ Variables	PEN1	PEN2	PEN3	STR1	STR2	LE1	LE2	LE3	LE4
Esping-Andersen									
Conservative	158.3	175.0	0.6	62.2	54.4	12.6	861.8	5.3	46.4
Socio-democratic	188.0	152.0	0.7	13.6	85.6	11.5	757.0	3.9	12.8
Liberal	105.0	110.0	0.3	32.2	78.8	15.6	906.5	4.3	21.8
CEE	170.0	176.0	0.6	40.1	52.9	17.6	669.2	6.1	32.9
Mediterranean	187.5	192.5	0.7	45.3	60.3	12.2	870.5	6.6	29.6
Pension									
Cluster1	180.56	177.22	0.67						
Cluster2	112.50	122.50	0.38						
Education									
Cluster1				61.84	44.02	12.78	811.50	3.75	11.98
Cluster2				24.32	79.50	12.32	826.51	4.23	16.59
Cluster3				30.35	69.34	20.67	682.27	9.17	55.31
Cluster4				58.72	62.18	13.75	792.99	17.30	240.99
Education & Pension									
Cluster1	178.75	195.00	0.74	62.55	48.64	14.34	820.50	4.25	16.31
Cluster2	162.31	152.31	0.57	25.28	74.31	13.28	787.69	5.07	22.86
Cluster3	160.00	140.00	0.34	58.72	62.18	13.75	792.99	17.30	240.99
Streaming&Pension									
Cluster1	173.33	196.67		64.00	40.88				
Cluster2	133.33	136.67		56.48	56.36				
Cluster3	105.00	110.00		32.20	78.78				
Cluster4	186.36	170.00		24.53	76.86				
Learning & Pension									
Cluster1			0.53			14.98	762.00	4.60	21.66
Cluster2			0.85			11.11	876.57	5.06	17.77
Cluster3			0.34			13.75	792.99	17.30	240.99

Note: As noted in Table 1 PEN1, PEN2 and PEN3 indicate different rates of replacement ratios across earning groups (between the 2* median earner and the median earner (PEN1), the median earner and the 0.5* median earner (PEN2) and the replacement rate of the median earner (PEN3)), STR1 indicates between school variance, STR2 within school variance (both STR1 and STR2 are measured in % of the average variance in student performance across OECD countries), LE1 indicates participation in early childhood edcuation (average of ranked values across age groups), LE2 hours spent at school (weighted sum over hours spent in schooling by different age groups), LE3 mean extracurricular activity and LE4 variance extracurricular activity (LE3 and LE4 are the mean and variance of the % of respondents).

4.3 Agglomerative hierarchical clustering

In this section we analyse the results of the hierarchical clustering, which are from a methodological point of view more tentative. Results are generally similar to the results obtained from model-based clustering. They are presented in the form of dendrograms – as described in section 4. In this section we show some exemplary dendrograms.

We use a methodology that provides two types of special p-values indicating the statistical validity of a cluster. The green p-values (they are found on the right side at each branch intersection and are called BP - "bootstrap probability") are computed using a conventional bootstrap approach and indicate how often a certain cluster appears in each bootstrap run. The red p-values (they are found on the left side at each branch intersection and are called AU – "approximately unbiased") are computed using a multi-scale bootstrap resampling technique and can be shown to be a more accurate approximation for unbiased p-values (see Suzuki & Shimodaira, 2006).

Figure 6 shows the clustering that results when using the "Education" measure set (including the streaming variables and the state- and market-provided learning environments). These results correspond to those of the model-based clustering (Table 2 column 3) – with the exception of Finland. The larger first cluster found using model-based clustering is further split when using hierarchical clustering: the Netherlands, Italy and Belgium are split into a separate cluster. As calculations of the group-specific means show (Table 3), the difference in participation in institutional childcare (which is higher in Belgium, the Netherlands and Italy) drives this further split of the first cluster when using hierarchical clustering.

Figure 7 depicts the results of hierarchical clustering for the "Education and Pension" measure set (including the education indicators and the indicators for stratification and size of the pension system). Results are again similar to the model-based clustering results in (Table 2 column 4) and again when using hierarchical clustering the data are divided into more groups than in the model-based clustering. The clusters on the left hand side of the dendrogram can be denominated as the less egalitarian countries with a large pension system and with the state providing to learning environments to a slightly higher extent than the market.

The large cluster of less egalitarian countries (both in the education and in the pension system) is now split into three different groups with Italy and the Netherlands being split off and Greece and Luxemburg being grouped with Portugal and Spain. Italy and the Netherlands have a relatively high non-egalitarian pension system compared to the other countries in the first cluster in the model-based clustering (see column 4, Table 2).

The second – more egalitarian – group of countries in column 4 in Table 2 is also split into smaller groups in the hierarchical clustering results. Ireland, the UK, Belgium and the Czech Republic form their own cluster, probably due to their comparatively egalitarian pension system. Estonia and Norway form another separate group possibly because they are characterised by similarly low between-school streaming, high within-school streaming and high participation in institutional childcare – in which they are similar to Denmark, Iceland, Sweden and Finland (a Nordic model). But they are also characterised by a relatively high mean and variance in extracurricular activity – in which they are not similar to Denmark, Iceland, Sweden and Finland. Poland – the remaining country in the clusters on the right hand side of the dendrogram – is characterised similarly to the Nordic countries.

Figure 8 shows the hierarchical clustering results for the indicators measuring the extent to which the state as opposed to the market provides learning environments: "Learning and Pension". Apart from Greece and Belgium, which have switched positions, the clustering is similar to the results in the model-based clustering. Again, the clusters are split further than when using the model-based approach. The three clusters on the left-hand side of the dendrogram contain countries that are characterised by a more state-based provision of learning environments – in particular, a higher number of hours spent at school and a higher replacement rate of pensions for the median earner. Conversely, the clusters on the right-hand side contain countries characterised by a more market-based provision of learning environments (in particular, lower numbers of hours spent at school) and a more market-based provision of pensions (a lower replacement rate for the median earner).

The results obtained from hierarchical clustering largely confirm those obtained by model-based clustering but offer a more nuanced picture by providing a set of further differentiated sub-clusters, which can be interpreted as being more tentative.

Figure 6. Dendrogram with p-values for the measure set "Education"

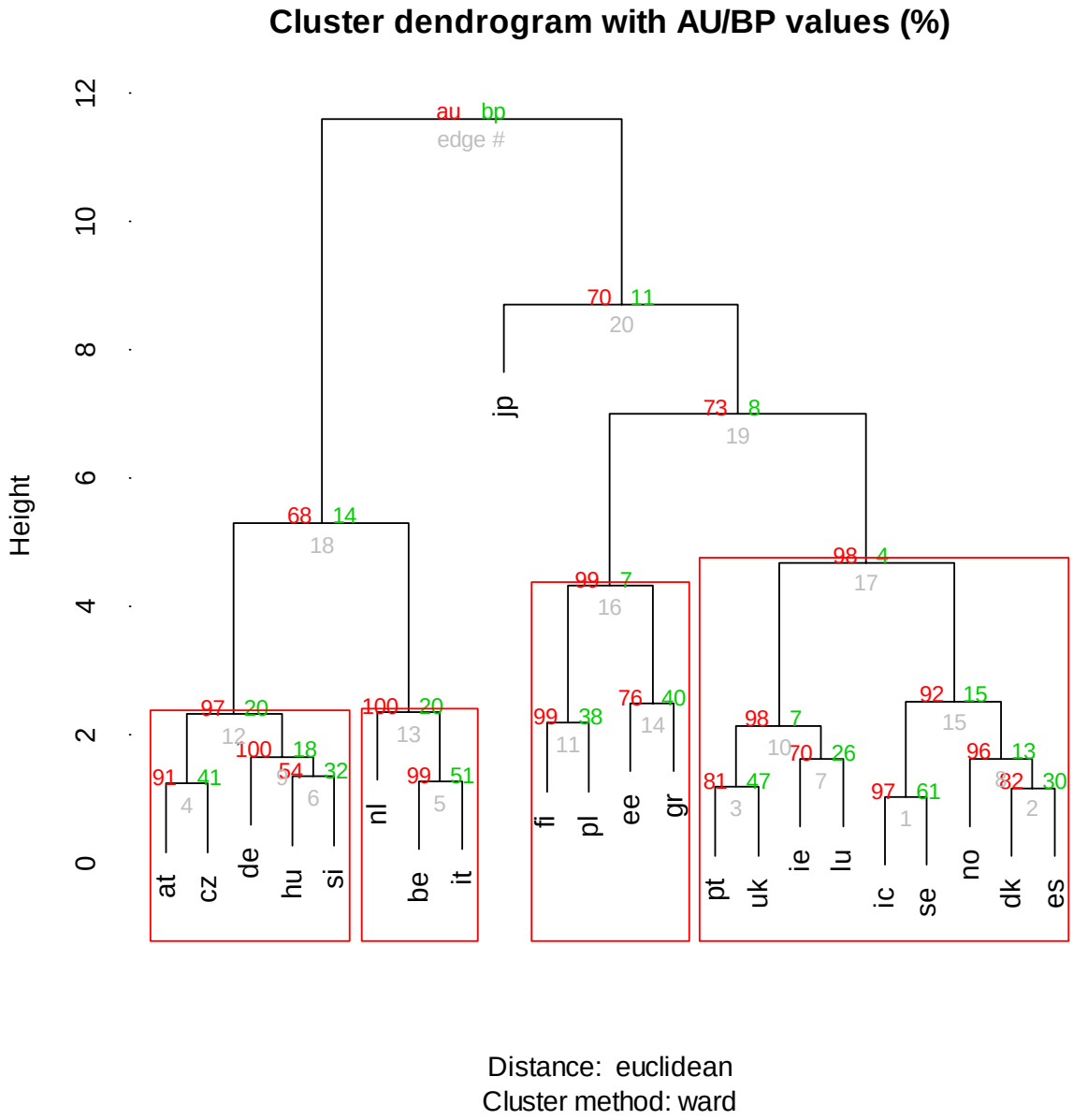


Figure 7. Dendrogram with p-values for the measure set "Education and Pension"

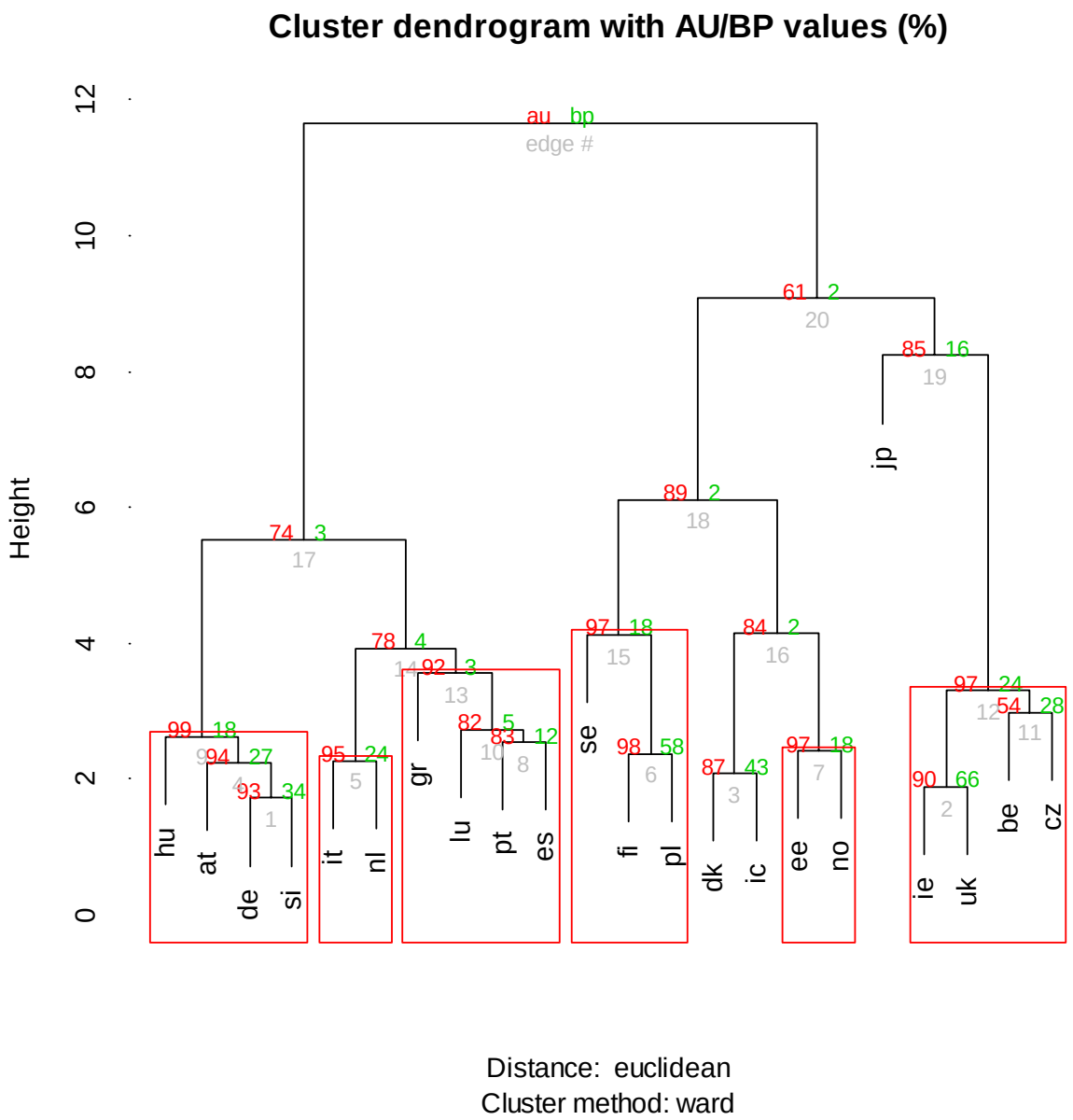
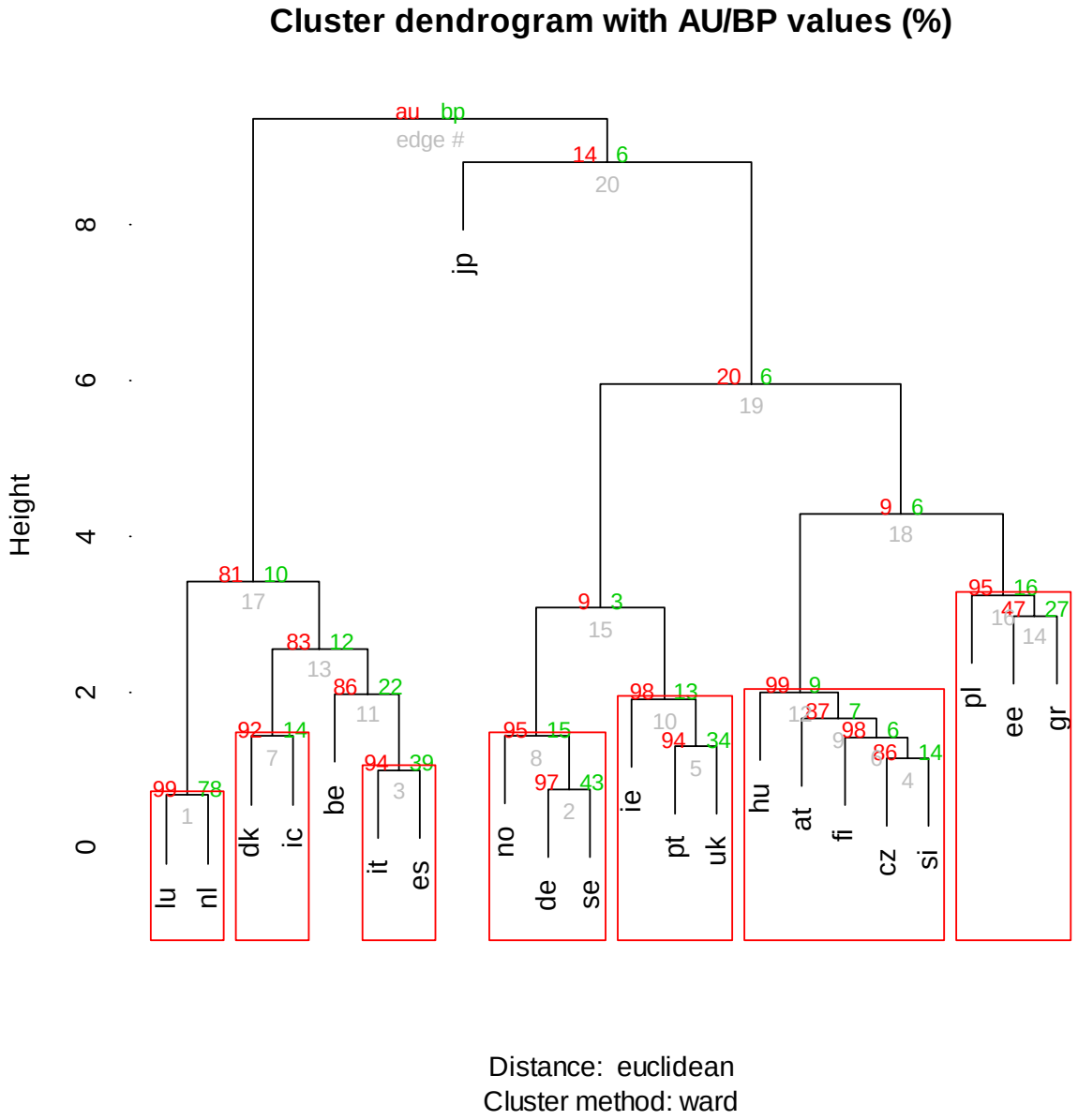


Figure 8. Dendrogram with p-values for the measure set "Learning and Pension"



5. Conclusion

The paper explored the question of which countries deliberately attempt to reproduce social stratification through educational policies and which countries put greater emphasis on intervening in the stratification process. We were also interested in the relation between education policies and welfare policies as measures of intervention in the stratification process: do countries intervene in both education and welfare – driven by a 'stratification culture'? Or is there a trade-off between education and welfare in which countries intervene in either education or welfare?

Our conceptualisation of how policies influence stratification in education and welfare was based on looking at:

- the explicit stratification in the public system and
- the boundary between family / market and the state provision disaggregation. We find that with regard to stratification in the public systems, we find not only pure

combinations reflecting equal thinking about the proper role of public policy (stratification 'culture'), but also combinations.

- Clustering in terms of both above-mentioned dimensions combined.

5.1 Clustering in terms of explicit stratification in the public system

We find three different options of clusters. There are two pure types:

- with emphasis on equalisation in both areas, present in the two Anglo-Saxon countries studied
- with stratification in both, a cluster in which – "there is a proper place for everyone in society" and present in Germany and countries generally neighbouring Germany and historically influenced by its welfare and education policies, including several post-communist ones.

However, as already noted, there are also mixed clusters. Particularly interesting is a large mixed cluster where equality in education policy is combined with stratification in pensions, something we could call "equality of opportunity, not of outcomes". This cluster combined Nordic and Southern countries.

The fourth option – equal pensions with a stratified education system seems to be rare and of a more random nature. Information on the four clusters is shown in Table 4.

Table 4. Explicit stratification vs. equality in the public system

		Education	
		Stratification	**Equalisation**
Pension	**Stratification**	AT, DE, HU, IT, NL, SI	DK, EE, FI, GR, IC, LU, NO, PL, PT, ES, SE
	Equalisation	BE, CZ, JP	IE, UK

Source: Authors' compilation.

5.2 Clustering in terms of the extent of public vs. family/market involvement

On the other hand, there is consistency between education and pension policies in terms of the extent of public vs. family / market involvement. With the exception of Japan, there are just two clusters.

The first cluster, which is more etatist on both fronts (more school instruction time, more early childhood education, less variance on extracurricular lessons, higher pension replacement rates). It contains a mixture of Nordic and Southern countries, but it should be noted that only a minority of the Nordic countries is involved.

The second cluster, which is more family / market-dependent both in terms of pension and education, contains a combination of Germanic, Anglo-Saxon and Central Eastern European countries, but also several Nordic countries.

In this case, rather than the particular division of countries into clusters, we find the congruence between education and pension policies to be an intriguing one.

Table 5. Family/market vs. state provision in education and pension policy

Type	Countries
More etatist in both	DK, GR, IC, IT, LU, NL, ES
More family / market-oriented in both	AT, BE, CZ, DE, EE, FI, HU, SE, NO, PL, PT, SI, IE, UK
Special case	JP

Source: Authors' compilation.

5.3 Clustering in terms of combined dimensions

We also explored clustering for the combined questions, where countries can be clustered into three groups:

- countries characterised by a non-egalitarian system in pension replacement rates but providing the median earner with a relatively high replacement rate and in terms of educational indicators, by high between-school streaming, low within-school streaming, the state as opposed to the market or the family providing to a large extent for learning environments. The state plays an important role and stratification is reproduced both in education and in pensions.
- countries displaying on average a more egalitarian system in terms of pension stratification, a lower replacement rate for median earners and – in terms of education – low between-school variance, high within-school variance in reading performance and the market providing for learning environments to a slightly larger extent than the market. Both the pension and the education system tend to be more egalitarian and the market plays a more important role.
- Japan, which is characterised by a relatively egalitarian system in terms of pension stratification combined with a low replacement rate for the median earner, strong between- and within-school variance in terms of educational performance and a particularly high amount of time spent in extracurricular activities.

Looking at the relationship of the findings with traditional typologies, especially the welfare regime typology of Esping-Andersen, we find that when one looks specifically at stratification mechanisms (E-A's research question was wider) and takes into account both education and pensions, the following emerges:

- the difference between 'traditional' conservative countries and Southern Europe is much more marked than in Esping-Andersen's analysis,
- post-communist countries do not make up one type, but adhere to either Germanic or Nordic country models, largely in alignment with their history and / or geography (the Czech Republic, Hungary and Slovenia being closer to Germany, Poland and Estonia closer to the Nordic countries, but not invariably so),
- the Nordic countries' difference vis-à-vis the conservative Continental states can easily be overstated, since these groups tend to share significant stratification in pensions and also are not, in several cases, as state-dependent as is usually thought. This requires more analysis and exploration. The key dividing line between Germany and Scandinavia seems to go through streaming, where they adopt completely different approaches,
- the absence of relevant data for France prevents us from integrating this very important country into the analysis.

This paper aims to challenge the one-policy-fits-all approach of advocating education policy reforms that are designed to reduce the effect of socio-economic status: namely early childhood education and late streaming (which are advocated by the OECD based on PISA surveys, for example). International or national policy-makers should take into account three facts / conditions found in this paper when implementing such policy reforms. The acceptability, implementation and results of such reforms are likely to differ significantly depending on the underlying conditions. The following three facts – implied by our findings – show in what way the introduction of policy reforms designed to promote equal opportunity in education could be unsuccessful in some countries:

1. First of all, the research shows that a culture of egalitarianism / stratification is rooted in very long-term factors, not just path-dependency, which can be seen *inter alia* from the fact that post-communist countries divided themselves into two groups, depending on their historical cultural ties. These longstanding factors are not necessarily easily overcome by a reform concentrating only on the education system.
2. We also showed that the interplay between a culture of stratification in welfare and education systems differs between countries: in some countries, there seems to be a trade-off where initial emphasis on equality of opportunity is coupled with acceptance of stratification in pensions, whereas in others there is a stratification culture (either egalitarian or pro-stratification) that becomes apparent both in the education and pension systems. This means that in countries with a trade-off implementing non-stratifying education policies, there might be more stratification in the welfare system as a result.
3. Thirdly, the presence of a stratification culture in countries does not neatly overlap with the state vs. family / market boundary, but cuts across it. This is important because it challenges frequent though lazy assumptions that acceptance of more inequality / stratification is associated with less state intervention. Therefore, our research shows that the extent of state intervention and the direction of the state intervention (pro-egalitarian or not) are two separate dimensions, which together produce differentiated results. This fact should be taken into account when implementing a policy reform to increase educational equality in a specific country.

Therefore – and this is the main policy implication of our paper – the implementation of education reforms designed to increase equal opportunities in education should be approached with caution, in the sense that the whole system of the particular country (the country context) should be taken into account to ensure successful policy reform.

List of country abbreviations

at – Austria

be – Belgium

cz – Czech Republic

de – Germany

dk - Denmark

ee – Estonia

es – Spain

fi – Finland

gr - Greece

hu – Hungary

ie – Ireland

is - Iceland

it – Italy

jp – Japan

lu – Luxemburg

nl – Netherlands

no – Norway

pl - Poland

pt – Portugal

se – Sweden

si - Slovenia

uk – United Kingdom

References

Allmendinger, Juttaa and Stephan Leibfried (2003) "Education and the welfare state: the four worlds of competence production," *Journal of European Social Policy* 13 (1): 63-81.

Altonji, J.G. and C. R. Pierret (2001) "Employer Learning and Statistical Discrimination", *Quarterly Journal of Economics* 116 (1): 313-350.

Ansell, Ben (2008) "University Challenges Explaining Institutional Change in Higher Education," *World Politics* 60 (2): 189-230.

Arcanjo, Manuela (2006) "Ideal (and Real) Types of Welfare State." Available from http://pascal.iseg.utl.pt/~depeco/wp/wp062006.pdf (Accessed 29 November 2011).

Arts & Gelissen (2002) "Three worlds of welfare capitalism or more? A state-of-the-art report", *Journal of European Social Policy*.

Ashenfelter, O., C. Harmon, and H. Oosterbeek (1999) "A Review of Estimates of the Schooling/Earnings Relationship, with Tests for Publication Bias", *Labour Economics*, Vol. 6(4), pp. 453-470.

Ashton, David, Johnny Sung and Jill Turbin (2008) "Towards a framework for the comparative analysis of national systems of skill formation," *International Journal of Training and Development* 4 (1): 8-25.

Aspalter C. (2006) "The East Asian welfare model," *Int J Soc Welfare* 15: 290–301.

Bambra, Clare (2005a) "Worlds of welfare and the health care discrepancy," *Soc Policy Society* 4:31–41.

Bambra Clare (2005b) "Cash versus services: 'worlds of welfare' and the decommodification of cash benefits and health care services," *J Soc Policy* 34:195–213.

Bambra, Clare (2006) "Decommodification and the Worlds of Welfare Revisited," *Journal of European Social Policy* 16 (1): 73-80.

Bishop, J.H. (1992) "The Impact of Academic Competencies on Wages, Unemployment, and JobPerformance", *Carnegie-Rochester Conference Series on Public Policy* , Vol. 37, pp. 127-194.

Bonoli, Giuliano (1997) "Classifying Welfare States: a Two-dimension Approach", *Journal of Social Policy* 26 (3): 351-372.

Breen, Richard, Ruud Luijkx, Walter Muller and Robert Pollak. 2009. "Nonpersistent Inequality in Educational Attainment: Evidence from Eight European Countries." *American Sociological Review* 114 (5); 1475-1521.

Card, D. (1999) "The Causal Effect of Education on Earnings", In: Orley Ashenfelter, David Card (eds.), *Handbook of Labor Economic*s, Vol. 3A: 1801–1863. Amsterdam: Elsevier.

Castles, Francis G. (1989) "Explaining public education expenditure in OECD nations," *European Journal of Political Research* 17: 431–48

Causa, O. & Chapuis, C. (2009) Equality in student achievement across OECD countries: an investigation of the role of policies, OECD Working paper (2009)49.

Clark, Burton (1983) *The Higher Education System*. Berkeley: University of California Press.

Croissant A. (2004) "Changing welfare regimes in east and southeast Asia: crisis, change and challenge," *Soc Policy Adm* 38: 504–524.

Danforth (2010): The Emergence of Three Worlds of Welfare, PhD paper.

Dearden, Lorraine, Stephen Machin, and Howard Reed (1997) "Intergenerational Mobility in Britain." *Economic Journal* 107: 47-66.

Edwards, E. (2003): Revisiting Esping-Andersen's "Three Worlds" using Cluster Analysis, Presented at the Annual Meeting of the American Political Science Association, Philadelphia.

Esping-Andersen, Gøsta (1990) *The Three Worlds of Welfare Capitalism*. Princeton, NJ: Princeton University Press.

Esping-Andersen, Gosta (2007) "Families and the Revolution in Women's Roles. 3 Lectures."

Esping-Andersen, Gosta (1999) *Social Foundations of Postindustrial Economies*, Oxford: Oxford University Press.

Esping-Andersen, Gosta (2004) "Unequal opportunities and the mechanisms of social inheritance." in Miles Corak, ed. *Generational Income Mobility in North America and Europe*. Cambridge: Cambridge University Press.

Fenger, H. J. M. (2007) "Welfare Regimes in Central and Eastern Europe: Incorporating Post-Communist Countries in a Welfare Regime Typology." *Contemporary Issues and Ideas in Social Sciences* 3 (2): 1-30.

Ferreira, Leonor Vasconcelos and Adelaide Figueiredo (2005) "Welfare Regimes in the EU 15 and in the Enlarged Europe: An exploratory analysis." FEW Working Paper no. 176. Faculdade de Economia, Universidade do Porto.

Ferrera, Maurizio (1996) "The ´Southern` Model of Welfare State in Social Europe", *Journal of European Social Policy* 6 (1): 17-37.

Fraley, C. and Raftery, A. (1998): How many clusters? Which Clustering Method? Answers via Model-based Cluster Analysis. The Computer Journal 48(8): 578-588

Furth, D. (1985) *Education and Training after Basic Schooling*, Paris: OECD.

Green, A. (1991) "The Reform of post-16 education and training and the lessons from Europe," *Journal of Education Policy* 6 (3): 327-39.

Heclo, Hugh (1985) *The welfare state in hard times*. Washington, DC: APSA.

Heidenheimer, Arnold J. (1981) "Education and social security entitlements in Europe and America." In *The development of welfare states in Europe and America*, ed. P. Flora and A.J. Heidenheimer, 269–306. London: Transaction.

Hega, G.M. and Hokenmaier, K.G. (2002) "The welfare state and education: A comparison of social and educational policy in advanced industrial countries," *German Policy Studies* 2(1):1–28.

Hertz, Thomas, Tamara Jayasundera, Patrizio Piraino, Sibel Selcuk, Nicole Smith and Alina Verashchagina (2007) "The Inheritance of Educational Inequality: International Comparisons and Fifty-Year Trends." *The B.E. Journal of Economic Analysis & Policy*, 7 (2).

Hoffmeyer-Zlotnik, Jürgen H.P. and Uwe Warner (2007) "How to Survey Education for Cross-National Comparisons: The Hoffmeyer-Zlotnik / Warner-Matrix of Education," Metodološki zvezki 4 (2): 117-148.

Kangas Olli (1994) "The politics of social security: on regressions, qualitative comparisons and cluster analysis." In: Janoski T, Hicks A, eds. *The comparative political economy of the welfare state*. Cambridge: Cambridge University Press: 46-65.

Kerbo, Harold R. (2006) "Social stratification," Available from http://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1064&context=ssci_fac&sei-redir=1#search=%22social+stratification+kerbo%22 (Accessed 19 May 2011)

Kautto Mikko (2002) "Investing in services in West European welfare states," J Eur Soc Policy 12:53–65.

Lenski, Gerhard E. (1966) *Power and Privilege: A Theory of Social Stratification*. New York: McGraw-Hill.

Lewis, Jane (1992) "Gender and the development of welfare regimes," *J Eur Soc Policy* 2:195–211.

Marsden, D. W. (1986) *The End of Economic Man? Custom and Competition in Labour Markets*. Brighton: Wheatsheaf.

Maurice, M., F. Sellier and J.J. Silvestre (1986) *The Social Foundations of Industrial Power - A Comparison of France and Germany*. Cambridge, Mass: The MIT Press.

Menchik, Paul L. (1979) "Inter-generational Transmission of Inequality: An Empirical Study of Wealth Mobility," Economica, New Series 46 (184) Special Issue on the Economics of Inheritance: 349-362.

Mulligan, Casey (1999) "Galton versus the human capital approach to inheritance." *Journal of Political Economy* 107: S184-S224.

OECD (2009) PISA 2009 Results: Executive Summary. Paris: OECD.

OECD (2009) *Growing Unequal:* Paris: OECD.

OECD (2010): PISA 2009 Results: What makes a School Successful? – Volume IV. Paris: OECD.

Pechar, Hans and Lesley Andres (2011) "Higher-Education Policies and Welfare Regimes: International Comparative Perspectives," *Higher Education Policy* 24: 25-52.

Pekkarinen, Tuomas, Roope Uusitalo and Sari Pekkala (2006) "Education Policy and Intergenerational Income Mobility: Evidence from the Finnish Comprehensive School Reform." *IZA DP No. 2204*. Bonn: Institute for the Study of Labor.

Peter, Tracey, Jason D. Edgerton and Lance W. Roberts (2010) "Welfare regimes and educational inequality: a cross-national exploration," *International Studies in Sociology of Education* 20 (3): 241-264.

Ragin Charles C. (1994) "A qualitative comparative analysis of pension systems." In: Janoski T, Hicks A, eds. *The comparative political economy of the welfare state*. Cambridge: Cambridge University Press:320–45.

Pitruzello S. (1999) "Decommodification and the Worlds of Welfare Capitalism: a cluster analysis." Florence: European University Institute, 1999.

Rivera-Batiz, F. L. (1992), "Quantitative Literacy and the Likelihood of Employment Among Young Adults in the United States", *Journal of Human Resources*. 27 (2): 313-328.

Roemer, J.E. (1998): Equality of Opportunity, Cambridge, MA: Harvard University Press.

Roemer, J.E. (2008): "Equality of opportunity." The New Palgrave Dictionary of Economics Online. Palgrave Macmillan. Available from http://www.dictionaryofeconomics.com/article?id=pde2008_E000214 (Accessed 29 November 2011)

Sainsbury, Diane (1994) *Gendering welfare states*. London: Sage Publications.

Schütz, Gabriela, Heinrich Ursprung and Ludiger Woessmann (2005) "Education Policy and Equality of Opportunity", IZA Discussion Paper, n. 1906, Bonn: Institute for the Study of Labor.

SCP Bureau du Plan Social et Culturel (2004) Performances du secteur public. Comparaison internationale de l'éducation, de la santé, de la police/justice et de l'administration publique. La Haye : publication SCP 2004/14.

Scruggs, Lyle and James P. Allan (2006) "Welfare State Decommodification in Eighteen OECD Countries: A Replication and Revision," *Journal of European Social Policy* 16 (1): 55-72.

Scruggs, Lyle A. and James P. Allan (2008) "Social Stratification and Welfare Regimes for the Twenty-first Century Revisiting The Three Worlds of Welfare Capitalism," *World Politics* 60 (4): 642-664.

Suzuki,R. and Shimodaira, H. (2006): Pvclust: An R Package for Assessing the Uncertainty in Hierarchical Clustering, *Bioinformatics* 22 (12): 1540-1542.

van Oorschot W, Halman L (2000). Blame or fate, individual or social? An international comparison of popular explanations of poverty. *European Societies* 2(1): 1–28.

van Oorschot, Wim (2006) "Making the difference in social Europe: deservingness perceptions among citizens of European welfare states," Journal of European Social Policy 16 (1): 23-42.

van Oorschot, Wim (2007) "Culture and social policy: a developing field of study," Int J Soc Welfare 16: 129-139.

Walker A, Wong C. (2005) *East Asian welfare regimes in transition: from Confucianism to globalisation*. Bristol: Policy Press.

Warner, G. (1992) "Internationalization Models and the Role of the University," International Education Magazine.

Willms, J. Douglas (2006) "Learning Divides: Ten Policy Questions about the Performance and Equity of Schools and Schooling Systems," UIS Working Paper No. 5, UNSECO

Willms, J.Douglas and Marie-Andre Somers (2001) "Family, Classrooms, and School Effects on Children's Educational Outcomes in Latin America." *School Effectiveness and School Improvement*, 12(4): 409-445.

Woessmann, Ludger (2004) "How Equal Are Educational Opportunities? Family Background and Student Achievement in Europe and the United States," Discussion Paper No. 1284, IZA.

Wolfe, J. (1970) Pattern Clustering by Multivariate Mixture Analysis, *Multivariate Behavioral Research, 5: 329-350.*