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***Using Fuzzy-set Theory to Assess
Conformity to Ideal Types***

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First published in Journal of European Social Policy 9(3)



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Reprint 2:2000

WELFARE REFORM IN THE NORDIC COUNTRIES IN THE 1990s: USING FUZZY-SET THEORY TO ASSESS CONFORMITY TO IDEAL TYPES

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Summary

This article uses a new method for policy analysis, fuzzy-set theory, which is a framework that allows for a precise operationalization of theoretical concepts. Fuzzy-set theory is used to assess the conformity of the Nordic countries to a pre-conceptualized ideal-typical Nordic welfare model. This permits us to assess recent welfare reform and judge whether changes are of a qualitative or quantitative nature, i.e. whether reform amounts to differences in kind or degree. Comparing the development of benefits in kind and cash within three welfare areas (families, the unemployed and the elderly) during the 1990s and across the Nordic countries gives us an opportunity to assess patterns of welfare reform. The patterns of welfare reform are complex, but fuzzy-set theory permits the study of diversity. Despite numerous changes, all the countries still belong to the Nordic welfare model, although to varying degrees. Generally, Finland and Sweden have implemented more cut-backs than Denmark and Norway, and all countries have both expanded and contracted welfare programmes. Resilience at the national level thus masks a differential development between welfare areas and within welfare programmes. Tentatively, it seems that welfare policies operate within upper and lower limits which in turn are likely to vary over long time periods and among different types of welfare states; the most generous programmes are liable to cut-backs and the least generous programmes to improvements.

Résumé

Cette article recourt à une nouvelle méthode

pour guider une analyse politique, la théorie des 'ensembles flous' (fuzzy-set). Cette dernière constitue une démarche particulièrement adaptée lorsque l'on souhaite rendre opérationnel des concepts théoriques. Cette théorie est utilisée ici pour évaluer la conformité des pays nordiques à l'idéal-type du modèle social Nordique. Cela nous permet d'apprécier les réformes sociales récentes et de juger si ces changements sont de nature qualitative ou quantitative, c'est-à-dire si ces réformes reflètent des différences en termes de types de modèle social ou en termes de niveaux de réalisation. La comparaison de l'augmentation des avantages en nature et en espèces pour trois catégories (les familles, les demandeurs d'emploi et les personnes âgées) au cours des années 1990 au sein des différents pays nordiques nous offre l'occasion d'évaluer la tendance des réformes sociales. Ces dernières sont complexes, mais la théorie des 'ensembles flous' permet d'étudier leur diversité. En dépit du nombre de changements, tous les pays participent encore du modèle social nordique bien que ce soit de manière plus ou moins franche. D'une façon générale, si la Finlande et la Suède ont opéré davantage de coupes que le Danemark et la Norvège, tous les pays ont engagé des programmes sociaux plus étendus qu'auparavant. Les différences au niveau national reflètent ainsi des évolutions différentes entre catégories et au sein des programmes sociaux. Ainsi, il apparaît que les politiques sociales opèrent dans certaines limites qui, elles-mêmes, varient au cours du temps et en fonction des situations caractérisant les différents pays: les programmes les plus généreux conduisent à des marches arrière et les programmes les moins généreux amènent à des améliorations.

Introduction

Historically, welfare reform has been characterized by expansion in coverage and generosity. The rich literature on welfare state development suggests that welfare reform is driven by economic development or politics and looks at how institutions, in particular state agencies, mediate economic and political pressures (see Ashford, 1986; Esping-Andersen, 1990; and Wilensky, 1975; or, for an overview, Huber et al., 1993). Accordingly, welfare reform is less expansionary, if not actually contracting, in countries with respectively poor economic performance, withering political mobilization of the Left and/or Catholic resources, and/or weak state capacities. Whether indeed economics, politics or institutions matter in the same way and to the same extent for *recent* welfare reform is another issue since both the goals and context of welfare reform have changed (see Pierson, 1996).

The Nordic countries provide fertile soil for examining this issue as they are relatively similar with regard to important institutional features such as comprehensive welfare states – illustrated by the term ‘Nordic welfare model’ – but different with regard to economic and political development in the 1990s. The Nordic model of welfare has long been regarded as among the most modern and mature expressions of the welfare state and therefore subject to interest beyond its geographical borders (Einhorn and Logue, 1989). Recent economic, political and social developments, however, have put a question mark over the sustainability and desirability of this model. Indeed some advocate the trimming, or even dismantling, of the Nordic model. Others are of the opinion that the political changes in the welfare state in the 1990s have already made the Nordic model history. This article is related to these debates and aims to shed some light on the actuality of change through an empirical investigation of welfare reform in the Nordic countries in the 1990s.

The Nordic model of welfare

Within academic research, no consensus has crystallized around what constitutes the Nordic model of welfare. Indeed, its theoretical conceptualization and empirical existence vary between areas such as health, voluntary work, and labour markets (see, respectively, Alban and Christensen, 1995; Klausen and Selle, 1995; Wadensjö et al., 1996). Most social policy researchers, however, agree that the Nordic model is characterized by common objectives of welfare policy such as the promotion of solidarity and equality (Esping-Andersen, 1990). In turn, these objectives are achieved through comprehensive and universal policies of a high quality (Esping-Andersen and Korpi, 1987). In this way both means and ends are used to describe the constitutive elements of the Nordic welfare model.

We will define some main features of the Nordic welfare model as:

- **Comprehensiveness:** the scope of public policy is broad; the state has a larger role vis-a-vis the market and civil society than is the case in other countries.
- **Full employment:** policies are committed to contributing to full (read: more) employment and/or preventing unemployment, particularly long-term unemployment.
- **Equality:** policies are committed to contributing to equality between groups based on gender, age, class, family situation, ethnicity, religion, region and so forth.
- **Universality:** right to basic social security benefits (in cash and kind) in a wide range of social contingencies and life situations.
- **High-quality benefits:** services are of a high quality, and provided by welfare professionals (see Kohlberg, 1991).
- **Generous benefits:** cash transfers are generous, in particular for low-income groups, to allow for a ‘normally’ accepted standard of living.

Needless to say, this definition is of the *ideal-typical* Nordic welfare model. What is more, these various aspects are thought to interact and reinforce each other: only together do they constitute the whole that we may describe as the Nordic welfare model (Esping-Andersen and Korpi, 1987). Accordingly, to shed light on the pattern of recent changes to the Nordic welfare states, one should adopt a *holistic view* and simultaneously examine the directions, scope and interconnections of all welfare-related change.

We have chosen three welfare policy areas which are essential for an understanding of the nature of the Nordic welfare model and the changes taking place, namely child and family support, unemployment measures and the welfare of the elderly (but see also Kautto et al., 1999). At the same time, these areas are of particular interest when looking at the pressures on the Nordic welfare states.

Child and family support is an area where social care services, rather than income transfers, can be said to be the 'key to the Nordic welfare model' (Sipilä, 1997). All western European welfare states have comprehensive cash benefits systems, although their coverage and income compensation differ considerably, but few have developed publicly supported social care services to the extent seen in the Nordic countries. In particular, their child and family support policies serve to promote employment and gender equality (but see Leira, 1992). At the moment, there is also intense discussion in all four countries as to the role of the family and other parts of civil society vis-a-vis the welfare state. Popular pressure is mounting for adult members of families to be able not only to opt for work, but also to care for their own offspring, and to find better ways of reconciling work and family life.

Unemployment measures constitute an area where cash benefits and services, in principle, work closely together to provide a safety net or income compensation, and help facilitate entry or re-entry into the labour market. In Scandinavia, due to an emphasis on labour

market insertion through publicly supported job and education programmes, the schemes have been said to differ from those in most other countries. The sustainability of the Nordic model is also dependent on low unemployment to increase revenue and reduce expenditures. In recent years, much talk has been about how to remove work disincentives, reduce structural unemployment and prevent long-term unemployment, in particular among young people.

Welfare for elderly people is the last and in money terms most expensive area. As in other industrialized countries, the Nordic countries' populations are ageing. Increasing costs for old-age pensions combined with more elderly people getting older and technological advances in health and social care mean that there is much pressure for their share of social expenditure to grow further. Perhaps due to risk-averse policymakers, this issue has not been as vigorously discussed as the other two welfare areas. Nevertheless, together with unemployment measures, welfare for the elderly makes up more than half of public social budgets, making them natural if not unavoidable targets for budget cuts.

The following section sets out the method and material used. The next three sections conceptualize the Nordic model within a welfare area and analyse the Nordic countries' conformity in the 1990s. We discuss the overall development, and conclude, more generally, by discussing the potential for using fuzzy-set theory in policy analysis, and in comparative studies in particular.

Method and material

The distinction between qualitative and quantitative methods is conventional within social science and also in comparative welfare state research. The strength of qualitative methods is their in-depth understanding of

cases whereas their Achilles' heel is the limited representativeness and thus unsuitability for drawing generalizations from one case to another. In contrast, quantitative methods are good for making generalizations, but do not tend to provide informed understanding of the cases in hand (Ragin, 1994). Perhaps because of these inherent features, neither method has been successful in assessing the recent change of welfare states.

Here we propose a method that allows us to examine qualitative and quantitative aspects simultaneously. The method has been developed by Charles Ragin to study social diversity in comparative studies (Ragin, forthcoming). Ragin advocates using fuzzy-set theory in the social sciences as it has a number of advantages over conventional quantitative variable-oriented and qualitative case-oriented research. At the core of fuzzy-set social science is a perception of cases as configurations of aspects so that a difference in one aspect may constitute a difference in kind and not just in degree. At the same time, the fuzzy-set approach allows partial membership of a case in a given configuration. Consequently, using the fuzzy-set approach allows us to study differences in both kind and degree at the same time – what is known as 'diversity'. Among other things, this makes it possible to evaluate cases relative to their membership of specified ideal types. The ideal type is – in a Weberian sense – an analytical construct that serves as a yardstick for social researchers to determine the extent to which real empirical phenomena are similar and how they differ from some pre-defined measure (Weber, 1949). For our purposes, it means we can measure the conformity of countries to the Nordic welfare model and changes therein.

Using fuzzy-set social science to study the conformity of specific national systems to ideal types is quite straightforward. It entails four basic steps:

1. Informed by theoretical and substantive knowledge, identify aspects (equal to sets) of the ideal type leading to the construction of a

useful property space. This step is prior to using fuzzy-set social science.

2. Specify the cases' membership scores in the sets comprising this property space, i.e. scores reflecting the degrees to which cases are in or out of sets where 0 is fully out, 1 is fully in, and 0.5 is the cross-over point, being neither more in nor more out.

3. Compute the membership of each case in the ideal-typical model, i.e. the given crisp location in the property space, using the principles of fuzzy-set theory.

4. Evaluate the homogeneity of cases by using the information from the previous step to measure the conformity of each case to the ideal-typical instance.

From theories we may be able to select the attributes, conditions or aspects that constitutes the ideal type, here the Nordic welfare model. These aspects are in turn transformed into sets. For example, previous research has identified 'universality' and 'generosity' as constitutive aspects of the Nordic welfare model so we make two sets, one on 'universality' and one on 'generosity'. Moreover, the possible combinations of sets form the so-called 'multi-dimensional property space'. In our example, we have a two-dimensional property space where $*$ = and (also known as 'set intersection') and \sim = not: universal*generous; universal*~generous; ~universal*generous; ~universal*~generous, e.g. '~universal*generous' reads '*not* universal *and* generous'. These combinations of sets are corners in the property space, and we will refer to them as 'ideal-typical locations', as they can be understood as expressing *ideal types* since countries will rarely have full membership scores in two or more aspects. The number of ideal-typical locations is given by 2^k , where k is the number of sets (Ragin, forthcoming).

The membership of a case – here a country – can vary from being fully in to fully out of the sets. By allowing for *partial membership*, sets become 'fuzzy' in contrast to 'crisp'. In crisp sets cases are either in to a value of 1 (or yes) or out to a value of 0 (or no). Like crisp

sets, fuzzy sets operate with 0 and 1 as qualitative assignments. In fuzzy sets 0 indicates fully out and 1 equals fully in. The reality for many cases, however, is somewhere in between. The majority of European countries, for example, may neither qualify to be fully out of generosity nor fully in. In fuzzy-set social science, such cases are partial in a set and are given values between 0 and 1 to indicate their degree of membership. In this way the use of fuzzy sets permits us to study both qualitative and quantitative variations simultaneously. In our example, fairly generous benefits in a country may qualify it to be in the set of generous countries, but less so than countries with more generous benefits. Through the combination of qualitative and quantitative assessment fuzzy sets allow us to study complex diversity.

The *principle of negation* is a useful principle in fuzzy-set theory. If, for example, a country scores 0.6 in the generosity set its corresponding score in the non-generosity set is 0.4, which is found by subtracting the generosity score from 1. This follows the logic of partial membership, i.e. that cases can be partly in and partly out of a given aspect at the same time. To the extent that a country is not fully generous it is somewhat non-generous.

Countries' membership scores, so-called 'crisp locations' in the property space, reflect their membership of ideal types. These membership scores are computed according to the principles of fuzzy-set theory (see Ragin, forthcoming). According to the *minimum principle* in fuzzy-set theory, the conformity of a case to an ideal-typical location in a property space is given by the minimum value of scores in the sets involved. This goes against the frequent use made of averages, medians and similar principles in social science. But in fuzzy-set logic a high degree of, for example, universality does not lead to higher degrees of generosity; the lowest score dictates the membership in the set of universal and generous countries. The chain is no stronger than its weakest link.

The fuzzy-set approach provides us with

some advantages in relation to traditional case-oriented methods and the variable-oriented methods (Ragin, 1994). Imagine having two generous welfare states, where one is universal and the other not. According to most variable-oriented research this may be seen as two examples of the same case, generous welfare states with varying degree of universality. For case-oriented research two such cases will often be seen as distinctly different, but their similarities and differences would be unquantifiable. Like the case-oriented research, the fuzzy-set approach sees these two welfare states as different in kind, but it can formalize statements about their similarities and differences. This is done by examining their crisp locations, one case being equal to the Nordic welfare model (the ideal-typical location universal*generous) and the other resembling another model (~universal*generous) which perhaps, in turn, could be said to be an expression for the Bismarckian welfare model.

Since the fuzzy-set approach allows us to assess degrees of membership in sets, researchers can use this information to evaluate the way cases are located in relation to the ideal-typical locations and in relation to each other (Ragin, forthcoming). Thereby, we can evaluate whether, for example, the Nordic countries are comparable as instances of the Nordic welfare model in an ideal-typical sense. Due to the different degrees by which they adhere to the Nordic model of welfare, we can see if this ranking makes sense. By making assessments for different points in time, we may investigate the patterns of welfare reform and their impact on the extent to which countries belong to the Nordic model.

Fuzzy-set theory offers us a tool to determine whether changes are marginal in nature by amounting to a *difference in degree*, or fundamental by amounting to a *difference in kind*. Thus, if a country's new crisp location remains closest to the same ideal-typical location as before, it constitutes a difference in degree. In contrast, when it gets closer to another ideal-typical location than before, it

amounts to a difference in kind. In our case, the question concerns the position and change of position of the Nordic countries in relation to the ideal-typical location expressed in the Nordic welfare model and in relation to the position of each other.

Let us illustrate the basics necessary for our purpose by using the example above of the Nordic model of welfare which had been identified in the literature as being constituted by universality and generosity. For the sake of simplicity, Table 1 gives the fuzzy membership scores in the set of countries with respectively universality and generosity for four hypothetical countries; Equallygal, Transitionstan, Meritius, and Dollarland. These scores vary between 0 (fully out) to 1 (fully in). Scores in between 0 and 1 indicate partial membership in the following way: scores between 0.83 and 0.99 indicate that the case is *almost fully in* the set of countries with universality/generosity; 0.67 to 0.82 indicate *fairly in*; 0.51 to 0.66 are *more or less in*; 0.5 is the cross-over point where the case is *neither more in nor more out*; 0.33 to 0.49 are *more or less out*; 0.17 to 0.32 are *fairly out*; and 0.01 to 0.16 are *almost fully out*. This nine-category fuzzy membership score will be used throughout the article to help us translate interval fuzzy membership scores into verbal concepts.

In Table 1, Equallygal is fully in the set of countries with universality, and fairly in the set of countries with generosity. Transitionstan is almost fully universal, but it is fairly out of generosity. The case of Meritius is nearly the opposite, i.e. more or less out of universality, but almost fully generous. Dollarland is both the least universal and least generous of the four countries; it is fully out of generosity and almost fully out of universality.

Moreover, Table 1 indicates how closely these hypothetical countries approximate to the pre-conceptualized Nordic welfare model (universal*generous) by using the minimum principle in fuzzy-set theory. Using the minimum principle, Equallygal has a score of 0.71 in the Nordic model, as its lowest membership in the two sets is 0.71, thus being fairly close

Table 1 Using fuzzy-set theory to assess proximity of four hypothetical countries to the ideal-typical Nordic welfare model

	Universality (U)	Generosity (G)	Nordic welfare model (U*G)
Equallygal	1.00	0.71	0.71
Transitionstan	0.84	0.28	0.28
Meritius	0.36	0.88	0.36
Dollarland	0.14	0.00	0.00

to the Nordic model. In contrast, Dollarland is fully out of the Nordic model, as its scores 0. Meritius and Transitionstan are, respectively, more or less out and fairly out of the Nordic model.

Of course, the conformity of cases to other ideal types can be assessed using the principle of negation and the minimum principle. For example, Meritius has a score of 0.64 in the Bismarckian model (\sim universal*generous), Transitionstan a score of 0.72 in what may be described as an expression of the Beveridge model (universal* \sim generous), and Dollarland a score of 0.86 in the residual model (\sim universal* \sim generous).

Scores are sensitive to the context and ranges chosen for the fuzzy scores in the sets. Thus, in the remainder of this article we will not witness the same variation in proximity to the Nordic model as in the hypothetical countries. The Nordic countries can be expected to be more in than out in most aspects of the Nordic model. Of course, however, the aim of this article is precisely to shed more light on whether this is indeed the case, and whether we may identify patterns of welfare reform over time and between countries, areas, and programmes.

The weakness of the fuzzy-set approach may be that it demands a very high degree of correspondence between the ideal types and the fuzzy membership scores. This, in turn, necessitates close attention to the analytical construction of the ideal type, the empirical indicators of its constitutive elements, the

empirical evidence used to indicate membership, and the criteria used to establish qualitative breakpoints as well as the translation of data to fuzzy interval scores and verbal qualifiers (see, also, Ragin, forthcoming). Doing this, the researcher cannot rely on averages or other relative benchmarks common in conventional social science, but must be informed by theory and substantive knowledge. Averages are sample specific: ideal types are not. The direct and active involvement of the researcher leaves him/her open to criticism for choosing the wrong aspects, empirical indicators, empirical evidence and qualitative breakpoints, and of not properly translating data into verbal qualifiers. To enrich scientific dialogue it is salient that the researcher is as open as possible about the choices made in the course of investigation as these impact on the results – just like explicit and implicit choices made in any other type of research. This is accentuated by the fact that social research is not characterized by the same rich and abundant evidence as the natural sciences. In cross-national analysis, scarcity of relevant comparable data sometimes make second-best data the only option. This should be made explicit by the researcher.

An example can illustrate some of these practices and issues. From theoretical and substantive knowledge we have identified aspects of the Nordic model within each of three welfare areas (see below and the following section). For the first area, child and family support, three constitutive aspects are identified, i.e. generous cash benefits, universality of child care and high-quality child care. This has led to the identification of empirical indicators, criteria for qualitative breakpoints and for pegging data to fuzzy interval scores, all informed by theory and substantive knowledge along the following lines:

- *Generosity* is measured by the impact of Family allowances on family income after tax. Based on three stylized family types (with differing number and age of children) the average increase per child in net dispos-

able income due to family allowances was found. If family allowances in a country increase this income by 6 percent or more we judge this country to be fully in the set of countries with generous benefits whereas we judge increases of 1.4 percent or less as trivial in relation to the cost of raising children and thus fully out.

- *Universality* is measured by the proportion of children in child day care and family day care whether public or private. The sometimes widespread use of child care in the informal sector is not covered by the measure, but this is also not directly relevant for the conceptualized ideal type. However, there are still many other schemes for children which may potentially obstruct any measure of child-care coverage. In particular, for children below 3 years of age, the existence of maternity and paternity allowances, parental leave and related schemes undermines any coverage measure. Children above the age of 6 are often attending school or pre-school schemes. Therefore, to arrive at the least biased measure of child-care coverage, we focus on children aged 3–6. The universality aspect is also not as straightforward as it may initially appear. The goal is not – and has never been – to place all children in child care. Instead of taking an interval scale from 0 to 100 percent coverage, we have therefore set a qualitative breakpoint at 80 percent for being fully in and 20 percent for being fully out. The relatively high cut-off point of 80 percent aims to take into account the comparatively high labour market participation rates of Nordic mothers and grandmothers, who were traditionally full-time carers of children.
- *Quality* of child care can be measured in various ways. American studies have identified the number of children per staff member as one of the crucial parameters which can be said to impact on children's well-being and later performance (Howes, 1997; Peisner-Feinberg and Burchinal, 1997). Other quality measures, such as staff

Table 2 Specification of empirical indicators and the translation of data to fuzzy score ranges and verbal qualifiers

Area	Empirical indicator	Fully in the set	Almost fully in the set	Fairly in the set	More or less in the set	Neither more in nor out of the set	More or less out of the set	Fairly out of the set	Mostly out of the set	Fully out of the set
Families		1.00	.83-.99	.67-.82	.51-.66	.50	.33-.49	.17-.32	.01-.16	0.00
	Generosity measured by average increase in net disposable income caused by family allowances (%)	≥6.00	5.20-5.99	4.40-5.19	3.60-4.39	3.50-3.59	2.80-3.49	2.10-2.79	1.40-2.09	<1.40
	Universality measured by share of children aged 3-6 in child day care or family day care (%)	>80	71-80	61-70	51-60	50	40-49	30-39	20-29	<20
	Quality measured by child-staff ratio in child day care	<3.00	3.00-3.99	4.00-4.99	5.00-5.99	6.00	6.01-7.00	7.01-8.00	8.01-8.99	≥9.00
Unemployed	Index of accessibility to unemployment insurance benefit ^a (0-100)	>86	75-86	68-74	51-62	50	40-49	30-39	20-29	<20
	Generosity measured by average net replacement rate of unemployment insurance benefit (%)	>85.0	75.0-85.0	63.0-74.9	51.0-62.9	50.0-50.9	40.0-49.9	30.0-39.9	20.0-29.9	<20.0
	Index on the quality of employment policies ^b	<12.0	12.1-18.0	18.1-26.0	26.1-36.0	36.1-37.0	37.1-49.0	49.1-61.0	61.1-73.0	>73.0
Old	Universality of old-age pensions ^c	Universal -	-	-	-	Selective	-	-	-	Residual
	Generosity measured by average net replacement rate of national old-age pensions (%)	≥65.00	60.00-64.99	54.00-59.99	46.00-53.99	45.00-45.99	37.00-44.99	28.00-36.99	18.00-27.99	<18.00
	Index on extensiveness of social care for elderly ^d	≥45.0	40.0-44.9	34.0-39.9	27.0-33.9	26.0-26.9	19.0-25.9	13.0-18.9	8.0-12.9	<8.0

Notes

^a Composite index based on the coverage and allocation criteria as well as re-entitlement requirements for unemployment insurance.

^b Composite index based on the relative and absolute unemployment rates of young people.

^c Universality assessed according to the coverage and allocation criteria for national basic and national supplementary old-age pensions, resulting in a trichotomy (universal, selective and residual).

^d Composite index based on the share of elderly receiving home help services or living in institutions for the elderly and service-flats.

Table 3 Using fuzzy-set theory to assess the conformity of Nordic countries to the Nordic model of child and family support, 1990–7

<i>Country</i>	<i>Year</i>	<i>Generosity of cash benefits (G)</i>	<i>Universality of child care (U)</i>	<i>Quality of child care (Q)</i>	<i>Nordic model of child and family support (G*U*Q)</i>
Denmark	1990/91	.56	.94	.53	.53
	1993/94	.64	.94	.70	.64
	1996/97	.65	1.00	.70	.65
Finland	1990/91	–	.63	.66	.63
	1993/94	1.00	.51	.62	.51
	1996/97	.82	.70	.62	.62
Norway	1990/91	–	.61	.74	.61
	1993/94	–	.67	.74	.67
	1996/97	–	.67	.74	.67
Sweden	1990/91	.88	.72	.70	.70
	1993/94	.79	.70	.62	.62
	1996/97	.50	1.00	.62	.50

Notes: Unfortunately, no data are available on generosity for Norway, generosity in Finland 1990/91 and the quality of child care for 1996/97. Nevertheless, it is most likely that the absence of data on generosity in Norway has no impact on the proximity to the Nordic model of child family support as the minimum is probably given by the scores in universality of child care. The 1996/97 data on the quality of child care has been assumed to be at the same level as in 1993/94. This is a heroic assumption given the massive increase in child-care places which is likely to have involved some trade-off with quality as measured here by child–staff ratios.

education, were not available to the researcher for all the countries in the whole period in question. The specific child–staff ratio for good and bad-quality child care depends on the age and other characteristics of the children. On average for children aged 3–6, however, less than 3 children per staff member is definitely a sign of high-quality child care and more than 9 children distinctly low-quality (Brazelton, 1992). Less than 6 children per staff member is a sign of good quality.

Table 2 sets out these empirical indicators and their pegging to the fuzzy interval scores for child family support as well as for the two other areas of unemployment measures and welfare for the elderly (for documentation, see Kvist, 1999).

Most of the material stems from two major ongoing cross-national studies of social protection, ‘Social Security in the Nordic

Countries’ (NOSOSCO/NOSOSKO 1992; 1995; 1996; 1997; 1998), and ‘Elements of Social Security’ (Hansen, 1997; 1998).

Family support

Universal family allowances are not unique to the Nordic countries, so we will not take universality of cash benefits as a defining feature of the Nordic model, but only their generosity. The most distinct feature of the Nordic model of child and family support, however, is to be found on the service side of social protection for families – the way child care is provided or, rather, is ideal-typically described. The ideal of child care in the Nordic countries could be described as one of public support for – or perhaps even a guarantee of – universal child care of a high quality based on solidarity. The ideal

of universality in services encompasses the ideal that every citizen, irrespective of need or merit, is able to access child care. Solidarity, in this case, comes to mean arrangements making it feasible for low-income groups to access the services. And by high quality is meant that, for example, child-care institutions are not just car parks for children during parents' work hours, but also have strong elements of socialization.

Expressed in fuzzy-set terms the Nordic model of family support is the ideal-typical location: generosity*universality*quality. Table 2 above shows the empirical indicators and their pegging to fuzzy membership scores. Table 3 above reports the Nordic countries' membership in the various aspects – or sets – of the Nordic model of family support and in the model as such. For the sake of simplicity we have chosen three points in time; 1990/91, 1993/94 and 1996/97.

Generosity of cash benefits

In 1990, Denmark was the least generous of the Nordic countries. In 1991, family allowances were increased and infant benefits extended from 0–3 years old to 0–6 years old. Other improvements were made during the 1990s, and as a result Denmark was close to fairly generous by 1997, and she surpassed Sweden in 1996. This, however, had more to do with cuts in Swedish benefits than improvements in Danish ones.

In 1994 Finland was fully generous and by far the most generous of the Nordic countries for families. Family allowances were not affected by the general cuts in social protection of the early 1990s. In 1994 benefits were actually increased quite substantially by some 40 percent as the cash support for families changed from a tax allowance to a direct allowance with an extra supplement for single parents. The family allowance remained nominally unchanged from 1994 to 1995 leading

to a slight decrease in generosity. In 1996 benefits were reduced significantly and not indexed the following year. Although falling from fully generous to fairly generous, Finland remained the most generous Nordic country for families.

Sweden was almost fully generous to families in the early 1990s. Although the main elements of the so-called 'crisis packages' were budget cuts in social programmes, family allowances were actually increased twice as part of the tax/benefit reform of 1991. Until 1995, however, the basic allowance for children remained nominally the same at SEK9000 annually per child. Supplements for multiple children were reduced in 1994, severely cut in 1995 and closed for new recipients in 1996. In 1997, as a result of these cut-backs, Sweden was neither more in nor more out of the set of generous countries for families.

Universality of child care

In 1990, care of children aged 3–6 in Denmark was almost fully universal; and in 1996 it had become fully universal. However, waiting lists have persisted through the 1990s, especially for infants and toddlers, despite top-level political priority and rhetoric. This is partly due to the fact that child care in Denmark, as in the other Nordic countries, is the province of local government, the municipalities. Due to central governmental threats and promises of extra subsidies, and, perhaps more importantly, to attract potential tax-paying families or avoid their migration, municipalities have made tremendous progress and enrolled some 68,000 more children aged 0–6 from 1990 to 1996. Nevertheless, increased fertility and lower unemployment have resulted in extra demand for child care which is only to some extent countered by improved leave-of-absence schemes introduced in 1994 (though reduced gradually

since). The waiting list for child care has thus only decreased from 16,000 in 1996 to 12,000 in 1998 despite considerable expansion of child care and the introduction of child-care guarantees in the majority of municipalities.

In Finland, there has been a child-care guarantee for some time as municipalities have had an obligation to offer child care for children below 3 years of age. Finland was, however, only more or less universal in 1990. As unemployment soared in the following years, the proportion of children in child care and thus universality plummeted. This was partly due to unemployed people taking care of their own children to cut expenses, and partly due to municipalities barring unemployed parents from using child care in order to save money in times of austerity. Excluding the unemployed from making use of social services runs straight in the face of the idea of solidarity, ideal-typically associated with the Nordic welfare model. This phenomenon has been observed not only in Finland, but in many municipalities in the Nordic countries.

Paradoxically, it is perhaps the work of economists on work incentives and unemployment traps which has helped increase the degree of universality and solidarity in Finnish child care. At least, they have advocated increasing the scope and flexibility of child care, and action followed the words. In 1996, the child-care guarantee was extended to encompass all children under 7 years of age, resulting in a considerable increase in the number of children in child day care, some 27,000 more from 1995 to 1996. Families may also be given a home child-care allowance, which 55 percent of children between 9 months and 3 years made use of in 1996, despite a 23 percent reduction in the home child-care allowance the same year. In 1997, reform aimed to increase the use and flexibility of child care further. Partly as a result of these policy changes, universality increased steeply so that Finland was fairly universal by 1997.

In Sweden, from 1990 to 1997 no less than 45 percent more, or 145,000 extra children,

aged 0–6 became enrolled in child care. The dramatic increase is a result of a substantial expansion of child-care institutions and places together with fewer restrictions on private child minding. Sweden's degree of universality of child care has also increased significantly from being fairly universal in 1990 to being fully universal in 1997. Like Finland, Sweden has given parents rights to child day care if they work or study, although working and unemployed parents may be treated differently as a result of local autonomy.

In Norway, the number of children aged 0–6 in child care has increased considerably by some 38 percent from 1990 to 1996, particularly among the infants and toddlers. Nevertheless, the share of children enrolled in child day care remains comparatively low. Today, Norway can be described as being fairly universal. This can be explained by a number of factors. High fertility rates have led to extra demand whereas the extension of parental leave schemes and the introduction of a so-called 'time account' (allowing for reduced working time supplemented by reduced maternity leave for 6 to 29 weeks on top of the 42 weeks with full wage) have decreased the demand. Another factor may be that the process of switching from children being taken care of by their mothers or grandmothers to institutionalized care or family day care has not gone as far as it did in Denmark and Sweden in the 1960s and 1970s. Moreover, in 1998 a home child-care allowance was introduced for parents not making use of child day care. In sum, Norway, perhaps the most traditional of the Nordic countries, has undertaken quite substantial measures giving parents better opportunities for caring for their own children and for placing them in child or family day care.

Quality of child care

None of the Nordic countries can be said to belong fully to the set of countries with child

care of a high quality when measured by the child–staff ratio. Denmark moved from being more or less in the set of countries with high-quality child care in 1990 to being fairly in by 1993, as the ratio of children per staff fell from 5.8 to 4.7. In the same years, Finland's position worsened, as the child–staff ratio went from 5 to 5.2 children. Although only fairly in the set of countries with high-quality child care, Norway had the highest degree of quality in child care of the Nordic countries at 4.5 children to staff in both 1990 and 1993. Sweden declined from being fairly in to being more or less in the set of countries with high-quality child care. Unfortunately, there is no data for 1996/97, but it seems unlikely that the quality of child care as measured by child–staff ratios would have improved in times of such massive expansion of enrolment. Rather, it seems that in striving for more child-care places, the objective of universality in some cases has been paid for by compromising on an already less than satisfactory degree of quality.

Conformity to the Nordic model of family support

In the 1990s, considerable changes have taken place within child family support in the Nordic countries with respect to the generosity of family allowances and the universality and selectivity of child care. The changes described above, however, have not resulted in any country being excluded from belonging to the Nordic model of family support, although Sweden is now a borderline case after having been the 'leader' in 1990. Sweden and Denmark have therefore changed places. Norway has shown more stability whereas Finland managed to catch up after first being severely affected by the economic crisis. None of the Nordic countries, however, is close to the ideal Nordic model.

Many of the Nordic countries have faced an

uphill struggle in the area of child care. Substantial expansion of day care places has taken place during the 1990s in all four countries, but – due to a combination of increasing fertility rates, unemployment and new or extended parental leave schemes and home and private care allowances – this has not resulted in corresponding increases in universality. Nevertheless, universality is the only aspect where all countries improved, and Denmark and Sweden are now fully universal in the area of child care. The price for expanding child care, however, may be poorer quality of child care. Denmark is the only country that has slightly improved the child–staff ratio, but at the same time it is also the country with the smallest share of trained staff – another quality indicator. Clearly, all four countries have some improvements to make before they can be considered fully in the set of countries with high-quality child care.

Overall, the patterns of welfare reform are not identical in the four countries. Despite substantial cuts in family allowances Finland is still the most generous of the Nordic countries. Generally speaking, Denmark and – less so – Norway have improved their child family support systems. The most severe and visible cuts were introduced by Sweden, and, less so, by Finland, in particular in family allowances. However, all four countries have also introduced new or improved care allowances and expanded the universality of child-care places. In other words, both retrenchment and expansion can be identified in the four countries. Finally, we can note that the patterns of welfare reform have not resulted in any clear signs of either convergence or divergence between the national family support systems in generosity, universality or quality.

Unemployment measures

Ideal-typically, the Nordic model of unemployment measures has been associated with

Table 4 Using fuzzy-set theory to assess the conformity of Nordic countries to the Nordic model of unemployment measures, 1990–97

Country	Year	Accessibility of cash benefits (A)	Generosity of cash benefits (G)	Quality of employment policies (Q)	Nordic model of unemployment measures (A*G*Q)
Denmark	1990/91	1.00	.88	.87	.87
	1993/94	1.00	.87	.97	.87
	1996/97	.74	.80	1.00	.74
Finland	1990/91	.92	–	.87	.87
	1993/94	.65	.79	.43	.43
	1996/97	.72	.76	.54	.54
Norway	1990/91	1.00	–	.70	.70
	1993/94	1.00	–	.67	.67
	1996/97	.96	–	.64	.64
Sweden	1990/91	1.00	1.00	.81	.81
	1993/94	1.00	.97	.59	.59
	1996/97	1.00	.85	.69	.69

Notes: Unfortunately, no data are available on generosity for Finland 1990/91 and for Norway in general. However, it is unlikely that this will affect the conformity of Norway to the Nordic model, as its minimum is probably not given by the generosity of cash benefits, but rather the quality of employment policies.

accessible and generous cash benefits in combination with an emphasis on employment policies such as active labour market programmes (ALMP) of a high quality. Solidarity with the jobless underpins this model. The unemployed should not be further victimized than they already are, which leads to accessible and generous benefits. The helping hand of the state should aid them into the labour market via ALMP and policies with similar objectives. Similarly, efficiency arguments can be said to underpin all four aspects, as, to put it briefly, the generosity of the Nordic model cannot be sustained without high levels of economic activity. There is no consensus on the desirability or effectiveness of this model of unemployment measures nor of the particular programmes.

For our purposes, however, it is sufficient to identify three constitutive features of the model: accessible and generous cash benefits as well as high-quality employment policies. Expressed in fuzzy-set terms the Nordic model of unemployment measures is the ideal-typical

location: accessible*generous*quality. Table 4 reports the Nordic countries' membership in these three sets and in the model.

Accessibility of cash benefits

All the Nordic countries had fully accessible unemployment insurance schemes in 1990, except Finland, which, however, was almost fully accessible. By 1997, Denmark was only fairly accessible because of the new 'activation line' in Danish unemployment policy initiated in the late 1980s and given new impetus by the labour market reforms of 1994 and subsequently. Since 1994, participation in training and job offers no longer qualify people for re-entitlement to unemployment insurance. Previously there was a virtual recycling mechanism as the unemployed at risk of losing their benefits were made an offer that in turn requalified them for a new benefit period.

Thus, the stipulation of a seven-year maximum period in 1994 was actually a reduction of the renewable 2.5-year period previously in force. From having perhaps the most relaxed work requirement among western welfare states, things changed in 1997 when 52 weeks of work instead of 26 weeks within a three-year period became a requirement.

Unemployment insurance in Finland was almost fully accessible in 1990, despite the Finnish self-employed being excluded from coverage. In 1992, it became more or less accessible as participation in active labour market programmes was no longer a qualification for a renewed benefit period. The self-employed became covered in 1995. And in 1997, the minimum contribution period for unemployment insurance was strengthened from six to ten months, and the work requirement from 26 weeks to 43 weeks of work within a two-year period. As a result, Finland's unemployment insurance is now fairly accessible.

Nothing much changed to alter the full accessibility of the Norwegian unemployment insurance system, although in 1997 there was an increase in the amount of previous earnings to be made before becoming eligible. Sweden retained a fully accessible unemployment insurance system. This may come as more of a surprise than the Norwegian case against the backdrop of the very different economic development in the two countries. In 1994, the work requirement was raised from four to five months of work within a year. The work concept applied in the Swedish system, however, is still very broad and includes participation in labour market programmes and leave schemes.

Generosity of cash benefits

Denmark was almost fully generous in both 1990 and 1993, and fairly generous in 1997.

The slight differences in net replacement rates over time are mainly a function of real-wage developments and changes in the tax system, although the benefit level for young recipients was generally reduced to half in 1996. Finland and Sweden have been cutting benefit levels more consistently. In Finland this was invisible through the lack of indexation and by reducing the earnings base for calculating the benefit. Nevertheless, Finland was fairly generous in both 1994 and 1997. Swedish cuts were much more visible with the gradual reduction of the earnings-replacement rate from 90 to 75 percent (and now 80 percent). Fully generous in 1990, Sweden fell to almost fully generous in 1997.

Quality of employment policies

The quality of these policies has been measured here by success in keeping youth unemployment low, both in absolute terms and in relation to general unemployment. Measured in this way, the quality of Danish policies has increased from almost fully high in 1990 to fully high in 1997. This is primarily because of a relatively low ratio of young unemployed to general unemployed (around 1.4:1, that is 1.4 young unemployed aged 16–24 for every general unemployed) and to the reduction of youth unemployment from 14 percent in 1993 to around 10 percent since 1994. This can in part be ascribed to the 1994 and subsequent labour market reform adjustment targeting the young for 'special treatment'.

The quality of Finnish policies was dealt a severe blow by the crisis of the early 1990s. From being of an almost fully high quality in 1990, they deteriorated to more or less out of high quality in 1993. Although they have improved since, they are only more or less in by 1997. This is, of course, due to the immense pressure created by soaring unemployment. Despite a new emphasis on active

labour market programmes this has been more than an ordinary uphill struggle. By 1996, however, the scope of programmes towards youth had grown with 11.8 percent of youth aged 16–24 in ALMP compared to 10.9 percent and 4.2 percent in, respectively, Denmark and Norway. Similarly, the ratio of young to general unemployed fell from 2:1 in 1990 to 1.7:1 in 1996.

Norwegian employment policies were of fairly high quality in 1990 but deteriorated to more or less high quality in 1997. This is particularly due to the increasing ratio of young to general unemployed. The position of Norway should be seen in the light of its new emphasis on what is called the 'work line'. According to this, priority should be given to combating unemployment and non-employment by increasing the efforts of ALMP and by making the so-called 'passive' doling out of cash benefits conditional on work or some other type of activity. The similarity to the Danish 'active line' is striking. So far, however, the Norwegian work line has not enjoyed the same degree of success as the Danish, possibly because the remedies applied have been more in words than actions. The 1994 reform is among the main initiatives, and this only entitles people under the age of 20 to training and education, supplementing the Youth Guarantee offering special labour market measures for the remainder of the young.

In general, Sweden has a longer tradition of active labour market policies than her Nordic sisters. Nevertheless, the quality of Swedish employment policies also suffered a blow from the crisis in the early 1990s – moving from a fairly high quality to only more or less high as youth unemployment jumped from a record low of 3.7 percent in 1990 to 18.4 percent in 1993. While youth unemployment decreased slightly to 15.7 percent in 1996, the ratio of young to general unemployed decreased from 2.5:1 in 1990 to 1.9:1 in 1996. As a result the quality of employment policies improved to fairly high by 1997.

Conformity to the Nordic model of unemployment measures

In the 1990s considerable changes have taken place with respect to the accessibility and generosity of cash benefits and the quality of employment policies. Most notably, Finland lost her place in the club of Nordic model countries as her unemployment measures were caught off guard by the severe economic crisis in the early 1990s. Today, however, she has more or less regained membership. Sweden also experienced some turbulence from its economic crisis, but is now fairly in the Nordic model. Norway and Denmark demonstrated a more stable membership. Nevertheless, all the Nordic countries experienced a reduction in their conformity to the Nordic model over the period.

Sweden and Norway had fully and almost fully accessible cash benefits throughout the period, but the labour market reforms of 1994 and since, in particular a strengthening of the work concept and of work requirements, led Denmark to be fairly accessible by 1997. Introducing a stricter interpretation of the work concept, and moving more in line with the other Nordic countries by extending coverage to the self-employed, Finland was as fairly accessible as Denmark by 1997.

The generosity of cash benefits decreased in general (no data for Norway). Nevertheless, cash benefits are still almost fully generous in Sweden, and fairly generous in Denmark and Finland. The crises in Finland and Sweden faced their employment policies, in particular for young people, with an insurmountable challenge. They were not able to retain their quality as measured by the ability to combat high relative and absolute unemployment for particular groups. Denmark is the only Nordic country showing an improvement, and its experience could point towards some type of compromise or relationship between the accessibility of cash benefits and the quality of employment policies, perhaps necessitating a rethink of the Nordic model of unemployment measures.

Table 5 Using fuzzy-set theory to assess the conformity of Nordic countries to the Nordic model of welfare for the elderly, 1990–7

<i>Country</i>	<i>Year</i>	<i>Universality of cash benefits (U)</i>	<i>Generosity of cash benefits (G)</i>	<i>Extensiveness of social care (E)</i>	<i>Nordic model of welfare for the elderly (U*G*E)</i>
Denmark	1990/91	1.00	.73	.96	.73
	1993/94	1.00	.73	.89	.73
	1996/97	1.00	.63	.91	.63
Finland	1990/91	1.00	.82	.80	.80
	1993/94	1.00	.82	.62	.62
	1996/97	1.00	.72	.56	.56
Norway	1990/91	1.00	–	.81	.81
	1993/94	1.00	–	.81	.81
	1996/97	1.00	–	.85	.85
Sweden	1990/91	1.00	.83	.64	.64
	1993/94	1.00	.80	.58	.58
	1996/97	1.00	.69	.66	.66

Notes: Unfortunately, no data are available on generosity for Norway. Generosity for Finland 1990/91 has been set at 1993/94 level.

Welfare of people elderly

Old-age pensions can be considered the backbone of the Nordic welfare model as they are typically the first schemes to be implemented, take up the lion's share of public social expenditures and potentially affect the whole population. The universality of old-age pensions coupled with relatively generous benefits is supposed to be characteristic of the Nordic model. Similarly, social care for the elderly should be accessible to everybody in need irrespective of previous work and contribution record. Social care renders autonomy to elderly people and their relatives. In sum, the Nordic model of welfare for elderly people is the ideal of generous, universal old-age pensions coupled with extensive social care services. This can be expressed in fuzzy-set terms as the ideal-typical location: universal*generous*extensive. Table 5 reports the Nordic countries' membership in these aspects.

Universality of cash benefits

All the Nordic countries have retained universal cash benefits for elderly people. All citizens are covered by a guaranteed minimum pension today as they were at the beginning of the 1990s. This resilience, however, masks an internal restructuring in national pension systems between the roles of the basic and supplementary types of pensions.

In Denmark, the tax/benefit reform of 1994, among other things, introduced an income-test against earnings on the basic amount of the national pension. More importantly, the reform increased the relative size of the national pension supplements subject to income-test against other pension income, thereby building in a claw-back mechanism to partially defuse the so-called 'coming demographic time bomb'. Future pensioners with major income from supplementary pension based on collective agreements will have their national pension reduced. Recent expansion of these collective agreement pensions is also likely to affect the structure of the future Danish pension system.

The Finnish pension system consists of a national minimum old-age pension and a so-called 'employment' (supplementary) pension without any benefit ceiling. By introducing an income-test of the whole national pension, the Pension Reform of 1996 reinforced the role of the national old-age pension by providing only a minimum pension for people with below average income from the employment pension which, in turn, has the role of securing accustomed standards of living.

The guaranteed minimum pension in Norway consists of a national basic pension with a special addition for people with no or insignificant income from the supplementary pension. There are also additions for spouse and children. Eligibility to the earnings-related supplementary pension requires at least three years of insurance coverage.

The Swedish pension system consists of a basic and a supplementary pension. The basic pension consists of a basic amount and a supplement, both expressed in relation to the so-called 'basic amount' in Swedish social insurance. The supplementary pension is earnings-related. However, the Pension Reform of 1994 will gradually change the Swedish pension system to become a defined contribution system rather than a defined benefit system (see Palmer, 1998).

Generosity of cash benefits

The generosity of old-age patterns also follows strikingly similar patterns across the Nordic countries as they become somewhat less generous towards the end of the period studied than at the start, at least when measured as here. Danish pensions went from fairly generous in 1990 to more or less generous in 1997. The main reason is not so much changes in legislation as increases in real wages which are not fully paralleled by benefit increases due to the Danish indexation mechanism. Indeed, to make the national basic old-age pensions de

facto taxable, current pensioners were more than fully compensated in the Tax/benefit Reform of 1994.

Finnish pensions also became slightly less generous today than in 1994, but at both times the benefits can be described as fairly generous. This development can largely be explained by the Pension Reform of 1996, which reduced the generosity of pensions in four ways. First, it changed the indexation of employment pensions in payment from being based 50:50 on wages and prices to be 20:80, thereby gradually diminishing generosity relative to real-wage increases. Second, the setting of employment pension benefit levels will take into account the last 10 years of income instead of 4 years, with the possibility of disregarding a maximum of one-third of these years with less than half average earnings. Third, additions to the national pension are gradually being phased out. Fourth, as described above, the national pension has become fully means-tested against other pension income. The true impact of these changes, however, will only become apparent over time so that the Finnish pension system at the start of the next century, coinciding with the baby-boomers retiring, will not be as generous as in the 1990s.

In Norway, the additions for spouse and children became means-tested in 1991. The following year, an income-test was introduced according to which pension and earnings could not exceed previous income. At the same time, the benefit formulae of the supplementary pension were altered so as to make the maximum possible pension less generous. Despite lack of indicators, these changes cannot be considered retrenchment on any major scale. They are likely to be more than counterbalanced by the exceptional 18 percent or NOK1000 increase of the national pension in 1997.

Sweden had almost fully generous pensions in 1990. Since 1993, however, the basic pension is no longer based upon 100 percent, but 98 percent of the basic amount. As a partial compensation, the means-tested supplement

tary part of the basic pension was increased. Net replacement rates did not decrease immediately, however, as there was also a nominal decrease in the earnings of the average production worker from 1992 to 1993. Indexation of pensions is inversely related to the public budget deficit. For this reason, in 1995 and 1996, the basic amount was not indexed fully, but only to 60 percent of price increases. However, this 60 percent indexation continued in 1996 and 1997 despite improved public budget deficits. As a result of all these changes, Sweden no longer has almost fully generous pensions, but rather fairly generous. In 1999, the basic pension will be based on 99 percent of the basic amount and in 2000 on 100 percent, the same as before the crisis hit Sweden.

Extensiveness of social care

During the 1990s, Denmark has had almost fully extensive social care for elderly people as measured by the proportion of elderly people living in service flats and institutions for the elderly or in receipt of home help services. From 1990 to 1997 the proportion of elderly people aged 80+ living in service flats and institutions for the elderly declined slightly from 24.6 percent to 22.6 percent, whereas the proportion of elderly aged 67+ in receipt of home help remained stable at a little over 19 percent. Under the 1980s slogan 'as long as possible in your own home', there have been some significant changes not revealed by these figures. In particular, recipients of the various types of social care have become older and frailer, and there has been a shift towards home help and service flats rather than nursing homes.

Finland experienced the most dramatic decline in the extensiveness of social care for elderly people of all the Nordic countries. From having close to an almost fully extensive system of social care in 1990, it fell to being

only more or less so by 1997. This is mainly due to a 50 percent drop in the extent of home help services, from 21.4 percent to 11.5 percent received by people above 65 years of age.

In Norway there was also a drop in home help services, but less marked, from 19 percent in 1990 to 15.6 percent in 1996. However, the proportion of people aged 80+ living in institutions increased by more as it went from 20.7 percent to 25.1 percent. As a result, Norway improved its social care from being fairly to almost fully extensive. As in Denmark, there is a move towards service flats and similar types of accommodation for elderly people. In 1997, the Norwegian parliament decided on considerable investment in social care for the elderly. Starting in 1998, the state will grant municipalities money to build more service flats and earmarked subsidies for social care work.

Sweden started and ended the period with more or less extensive social care for elderly people. This masks an increasing share of elderly people living in service flats and institutions, and a decline in home help. As part of a general decentralization of social care from 1990 to 1993, municipalities now have the overall responsibility for the long-term service and care of elderly people. One consequence has been a decrease in recipients of home help aged 65+ from 17.4 percent in 1990 to 11.3 percent in 1993, a level it has stayed at since.

The development in Denmark of fewer people in nursing homes, more people in service flats and more home help is reflecting a de-institutionalization process. This process cannot be observed to the same degree in the other Nordic countries, which have all experienced increasing shares of the elderly 80+ in service flats or institutions, partly because they were starting from a lower level than Denmark. But these countries have also seen reductions of home help services to levels which in Sweden and Finland approach half the level of Denmark. And this may, in turn, be partly explained by local government having difficulties in finding the necessary funding for social services in times of austerity.

Conformity to the Nordic model of welfare of the elderly

During the 1990s a series of changes have taken place with regard to the universality and generosity of pensions and to the extensiveness of social care. However, there is no retrenchment leading to the exclusion of any country from belonging to the Nordic model of welfare for the elderly as conceptualized and measured here. Hence, the changes in this welfare area have amounted to differences in degree and not in kind. The elderly in Finland experienced the biggest decline as their system went from being fairly in to more or less in the set of countries with a Nordic model of welfare for elderly people. Denmark also experienced a decline, but on a much smaller scale. Norway and Sweden, in contrast, moved slightly closer to the Nordic model. Today, Norway has by far the most Nordic model of welfare for elderly people of the Nordic countries.

Universality has remained a distinctive feature of the Nordic pension systems. Every Nordic citizen or resident is guaranteed a minimum old-age pension. For people with work and/or considerable income from pensions and other sources, however, there has been a shift towards more reliance on the national supplementary pension and less on the basic pension. This has happened primarily through changes to the basic pension such as the introduction or expansion of means-testing and/or greater relative weight given to pension supplements. Whether this claw-back mechanism will affect the political economy of universality is an open question.

This shift towards more reliance on supplementary pensions has, at the same time, resulted in somewhat reduced degrees of generosity of pensions (though there are no data available for Norway, which may run counter to this trend). Today, pensions in Sweden and Finland are fairly generous, whereas Danish pensions are more or less generous. If the Danish supplementary pensions based on collective agreements had been included in the

analysis, there might have been even closer intra-Nordic convergence than expressed here (see Øverbye, 1996). Convergence, however, is not what we see when we shift focus to the service side of the Nordic model of welfare for the elderly. Looking at the extensiveness of social care, we consistently find big differences between the Nordic countries, both in level and development.

The instruments of change are numerous. Less than full indexation of pensions has been a common way of reducing benefit generosity; another is the introduction or expansion of income-tests and/or increasing the relative size of income-tested pension supplements. Such technical devices are invisible to the layperson, have little immediate impact and so pain, and are time-consuming to explain (Pierson, 1996). Hence, they do not attract much attention, despite saving the public budget substantial amounts of money in the medium and long term. The universality of pensions has not been touched as – in contrast to the technical devices – this would have been highly visible, painful for limited groups and easy to track back to the responsible policymakers. Within social care, one way of saving money has been decentralizing – or keeping – authority of social care at the local level, in particular in the crisis ridden economies of Finland and Sweden. In more prosperous Norway and Denmark, more money has been flowing to the local level to improve the extensiveness and quality of social care for elderly people.

If Finland wishes to improve upon its membership of the Nordic model it should look to the extensiveness of social care where there is plenty of room for improvement. The same advice is valid for Sweden, although the scope for improvement is not as great. In Norway, some things can still be done concerning the extensiveness of social care, although it is likely that the quality of social care, as in Denmark, is – or will soon become – the ‘hottest potato’ in social care for elderly people. For example, Denmark has recently introduced Elderly Advisory Boards at

Table 6 Nordic countries' conformity to the Nordic model of welfare, 1990–7

Country	Year	Child family support (C)	Unemployment measures (U)	Welfare for people elderly (O)	Nordic model of welfare (harmonic mean of C, U and O)
Denmark	1990/91	.53	.87	.73	.70
	1993/94	.64	.87	.73	.74
	1996/97	.65	.74	.63	.67
Finland	1990/91	.63	.87	.80	.76
	1993/94	.51	.43	.62	.51
	1996/97	.62	.54	.56	.57
Norway	1990/91	.61	.70	.81	.70
	1993/94	.67	.67	.81	.71
	1996/97	.67	.64	.85	.71
Sweden	1990/91	.70	.81	.64	.71
	1993/94	.62	.59	.58	.60
	1996/97	.50	.69	.66	.61

regional level to monitor and decide on certain types of activities for elderly people with the explicit purpose of not only increasing levels of democratic participation, but also degrees of quality.

Discussion

The application of the fuzzy-set theory analysis above provides an empirical basis for discussing the overall development of national welfare policies at the same time as the patterns of welfare reform between the three chosen areas. Table 6 indicates the overall conformity of the countries to the Nordic welfare model over time, showing the harmonic mean of fuzzy membership scores in the three areas (Column 6). It also sets out the fuzzy membership scores of the countries in the Nordic models for families with children, the unemployed and older people (Columns 3–5).

Nordic countries fared differently during the 1990s in terms of their conformity to the Nordic welfare model. Finland experienced the most dramatic developments as she moved from being fairly in to more or less in the

Nordic welfare model; Sweden's deterioration was less significant; and Norway and Denmark remained stable. This pattern, however, masks variations in development across welfare areas. For example, the situation of families with children in Denmark has improved, but not that of unemployed and elderly people. In Sweden, welfare for the elderly has been stable, but families and the unemployed became worse off. In other words, national economic success or failure does not automatically translate into corresponding expansions or cut-backs in welfare policy. We cannot even identify similar patterns for countries experiencing, respectively, good or bad economic times.

Perhaps the most striking feature of welfare reform in the Nordic countries in the 1990s is the extent of resilience and restructuring. None of the countries has left the club of countries belonging to the Nordic welfare model despite the adverse national economic performance in Finland and Sweden and the significant changes in the surrounding world.

The results of the empirical analysis suggest not only that the Nordic countries demonstrate a high degree of resilience in their membership of the Nordic model but also that welfare areas and programmes with a high

degree of membership are also most liable to cut-backs, and areas and programmes with a low degree of membership tend to be most liable to expand. This shows how impossible it is to reach the ambitious goals set out by the Nordic welfare model, and that very generous areas are likely to be trimmed, or even severely cut, in economic hard times. But importantly it also shows that there are limits to cut-backs beyond which politicians and populations are unwilling to go. Policies move within upper and lower limits. This raises the issue of whether there are not only limits to growth, but also to cut-backs.

Curiously, the pendulum mechanism can also be identified at the level of nations belonging to the same ideal type when we compare welfare reform over a longer time span. Whereas Denmark and Norway fared well in the 1990s, this was not the case a decade earlier; and vice versa for Finland and Sweden (Marklund, 1988). This role reversal not only suggest that the Nordic countries are different with regard to the timing of welfare reform, but also that they follow the same trajectory depicted by the Nordic welfare model.

Whether welfare reform in the 1990s has led to greater overall intra-Nordic convergence can be examined through the *sum of extreme value differentials* for countries' fuzzy membership scores. This is a measure of the difference between the maximum and minimum values for countries' fuzzy membership score in the Nordic model of welfare in the respective years. Using this measure we find that the start of the period is characterized by significant divergence as a result of Finland's marked decrease in membership from 1990 to 1993. However, as Finland improves its membership in the second period and Denmark decreases hers, convergence characterizes the period from 1994 to 1997. Overall, Nordic countries are slightly less similar at the end of the period than they were in the start of the 1990s.

Conclusion

The comparison of policies and the assessment of the impact of changes have been made possible by using fuzzy-set theory as advocated by Ragin (forthcoming). We hope that we have demonstrated a series of advantages to this approach with regard to traditional qualitative case-oriented methods and quantitative variable-oriented methods. First, informed by theory and substantive knowledge, fuzzy-set theory demands an explicit definition of the subject under investigation (here the Nordic welfare model), thereby stimulating the exchange of ideas and knowledge accumulation. Second, looking at combinations or configurations of aspects, rather than seeing them as existing independently of each other, allows for a holistic view of cases not present in conventional statistical methods. In this study, these aspects were seen as the constitutive elements of the Nordic model. Third, cases in fuzzy-set theory can have partial membership of the various aspects and so better approach and convey the diversity of the real world than dichotomies of yes/no assignments common in case-oriented approaches. This makes it possible, fourth, to investigate the conformity of cases to ideal-typical locations and to evaluate the homogeneity of cases. In particular, fuzzy-set theory gives us the opportunity to compare diversity – differences in kind and degree – across countries and over time in ways that were not possible before. The main contribution of fuzzy-set theory in the examination of ideal-types is thus the bridging of the gap between case-oriented and variable-oriented approaches.

Acknowledgements

Cross-national research draws on the data, knowledge, and inspiration of many people. In particular, I would like to thank Charles Ragin, Stein Kuhnle, Peter Werther Andersen, Dorothy and Adrian Sinfield, Hans Hansen, Mikko Kautto, Jens Alber, Axel West Pedersen, and Maja Iben Nielsson.

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