



# **Vulnerability and Multiple Deprivation Perspectives on Social Exclusion in Europe: A Latent Class Analysis**

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## ABSTRACT

In this paper we address issues relating to vulnerability to social exclusion and levels of social exclusion in Europe. We do by applying latent class models to data from the European Community Household Panel or thirteen countries. This approach allows us to distinguish between vulnerability to social exclusion and exposure to multiple deprivation at a particular point in time. The results of our analysis confirm that in every country it is possible to distinguish between a vulnerable and non vulnerable class in each country. Association between income poverty, life-style deprivation and subjective economic strain is accounted for by allocating individuals to the categories of this latent variable. The size of the vulnerable class varies across country in line with expectations derived from welfare regime theory. Between class differentiation is weakest in the social democratic countries but otherwise the pattern of differentiation is remarkable similar. The key discriminatory factor is life-style deprivation, followed by income and economic strain. Social class and employment status are powerful predictors of latent class membership in all countries but the strength of these relationships varies across welfare regime. Individual biography and life events are also related to vulnerability to social exclusion. However, there is no evidence that they account for any significant part of the socio-economic structuring of and no support is found for the hypothesis that social exclusion has come to transcend class boundaries and become a matter of individual biography. However, the extent of socio-economic structuring does vary substantially across welfare regimes. Levels of social exclusion in the sense of current exposure to multiple deprivation also vary systematically by welfare regime and social class. Taking both vulnerability to social exclusion and levels of social exclusion into account suggest that care should be exercised in moving from evidence on the dynamic nature of poverty and social exclusion to arguments relating to the superiority of selective over universal social policies.

# 1 Introduction

In recent years general agreement has emerged that, despite the continuing vagueness of the term 'social exclusion', its main value lies in drawing attention to issues of dynamics and multidimensionality (Berghman, 1995, Room, 1999, Sen 2000). However, there is a tension in the social exclusion literature between an emphasis on a heterogeneity of trajectories and, on the other hand, an accumulation of disadvantages involving a 'spiral of precariousness' (Paugam, 1996). This tendency is stressed in Room's (1999:171) discussion of notions of continuity and catastrophe in the social exclusion literature. Thus as Whelan and Whelan (1995:29) argue, while no one would wish to deny that social exclusion arises from a variety of processes or that it is experienced as involving a good deal more than an income deficit, an uncritical insistence on multidimensionality could paradoxically have the effect of obscuring the processes involved in generating social exclusion.

In this paper we wish to address the issue of multidimensionality by following recent contributions by Breen and Moiso (2003) and Moiso (2004, forthcoming) in applying latent class models in order to identify groups who are vulnerable to poverty and social exclusion. In order to apply such methods it is necessary to provide a theoretical justification of the indicators employed. Our focus will be restricted to a small number of dimensions but ones whose interrelationships we consider to be crucial to understand. The notion of social exclusion is not an entirely new one. Thus Townsend (1979) in his seminal work considered poverty to involve *exclusion* through lack of *resources*. The European Union has conceived poverty in a similar manner defining poverty as exclusion from the minimally acceptable way of life of the Member state one is resident as a consequence of inadequate resources (Atkinson *et al* 2002). This provides a rationale for relative income approaches to measuring poverty on the basis that such thresholds are intended to identify those falling more than a certain 'distance'; below the average and are as a consequence excluded from the minimally acceptable way of life.

The major problem with this approach is that low income turns out to be quite unreliable in identifying households experiencing distinctive levels of deprivation

(Ringen, 1987). However, to focus solely on deprivation would mean abandoning concern with the resources component of Townsend's definition and would seriously restrict our capacity to understand how deprivation is generated. In recent years it has been possible to further our understanding of the, apparently paradoxical, weakness of the relationship between income and deprivation. This involves trying to take into account unreported income, savings, and other assets, availability of support from family, friends and neighbours, non-cash income and differential needs (Perry, 2002). Despite such efforts, the conclusion to be drawn from a substantial portion of the literature on multi-dimensional analysis of social exclusion is that, not only do different methods lead to different conclusions regarding levels of exclusion, but quite different groups are identified as excluded depending on the indicator on which one focuses).<sup>1</sup> As Nolan and Whelan (1996b: 3) argue, until we successfully grapple with the issue of the limited overlap between income and deprivation, efforts to develop a multi-dimensional seem unlikely to be fruitful.

Here we intend to focus on three key indicators – relative income poverty, a measure of life-style deprivation that has been found to be more strongly related to income poverty than alternative measures relating to spheres such as housing and social environment and finally a measure of subjective economic strain (Whelan *et al* 2001). Our objective is to identify groups who are vulnerable to social exclusion in the sense of being distinctive in their risk of falling below a critical resource level, being exposed to life-style deprivation and experiencing subjective economic strain.

As Pasi (forthcoming) notes, implicit in the notion of multi-dimensional measurement of social exclusion is the assumption that there is no one 'true' indicator of the underlying concept. Instead we have a sample of indicators that tap different aspects of a complex phenomenon. If we are to move beyond the accumulation of a mass of descriptive detail we need to develop a measurement model that enables us to understand the manner in which our indicators are related to the latent concept. In this paper we make use of latent class modelling to achieve this objective. The basic idea of latent class analysis is long established and very simple (Lazarsfeld, 1950, Lazarsfeld and Henry, 1980). The associations between a set of categorical variables,

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<sup>1</sup> See Halleröd, Kangas and Ritakallio, 1998, Muffels *et al* 1992, Nolan and Whelan, 1996.

regarded as indicators of an unobserved typology, are accounted for by membership of a small number of latent classes. Latent class analysis assumes that each individual is a member of one and only one of  $N$  latent classes and that, conditional on latent class membership, the manifest variables are mutually independent of each others. Conditional independence is just a version of the familiar idea that the correlation between two variables may be a result of their common dependence on a third variable. The logic is identical but explanatory variable is unobserved and must be identified statistically.<sup>2</sup>

Although the analysis reported in this paper is based on cross-sectional data, a temporal dimension is implicit in our use of latent class analysis. Not all respondents identified as vulnerable to social exclusions are excluded at a particular point in time. However, by identifying individuals as vulnerable we clearly wish to convey that their prior or subsequent risk of such exposure is significantly greater than that of those allocated to the non-vulnerable class. This approach is entirely consistent with recognition that poverty is not a static phenomenon. Research based on panel data (Bane and Ellwood 1986; Jenkins and Rigg 2001, Fouarge and Layte, forthcoming) has shown that movements into and out of poverty are a great deal more frequent than had been supposed and that a far greater proportion of the population experience poverty than revealed by cross-sectional data. Using these findings and their own research based on German data on social assistance claimant spells, Leisering and Leibfried (1999) have gone on to argue that most poverty spells are actually of a very short duration, tend decreasingly to be associated with structured disadvantage, and are actively overcome by most people experiencing them. The broader context of this perspective is Beck's (1992) argument that individuals are increasingly forced to act on their own initiative to 'construct' their own life course'. Interpreted in a strong fashion the 'individualisation' thesis suggests that poverty and social exclusion are structured far more by life-course transitions than by factors such as social class and employment status, is structured. A weaker version would see conventional stratification variables as mediated by particular life events. However, we share with Moiso (2004) a concern that an interpretation of the evidence relating to poverty

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<sup>2</sup> For a recent discussion of applications of latent class models see McCutcheon and Mills (1998)

dynamics which views entry and exit events as the 'causes' of poverty, may obscure the structural context within which such events unfold.

In the analysis that follows we will seek to establish the role which traditional stratification factors play in structuring vulnerability to social exclusion within a framework that acknowledges the dynamic nature of poverty and potential impact of biography and life-events. We shall also seek to address issues relating to levels of social exclusion conceived as multiple deprivation. The process by which people come to be exposed to multiple deprivation has been a central concern of the social exclusion literature. Berghman (1995) views social exclusions as involving a social process in which the creation and reinforcement of inequalities leads to a state of deprivation and hardship from which it is difficult to escape. However, as Whelan et al (2002) note despite the influence this perspective has had on both academic and policy discussions, conceptual analysis has remained imprecise and empirical evidence modest. By incorporating both vulnerability and multiple deprivation issues in the same analysis we hope to overcome some of these limitations.

## **2. Data and Variables**

### **Countries and Welfare Regimes**

In this paper we make use of the European Community Household Panel (ECHP) survey as released by Eurostat in December 2002 under the User Data Base (UDB) format. The ECHP is a harmonised cross-national longitudinal survey focusing on household income and living conditions.

In the first wave (1994) a sample of some 60,500 households i.e. approximately 130,000 adults aged 16 years and over were interviewed across 12 member states. In wave 2 (1995) Austria, entered and wave 3 (1996) Finland joined the ECHP. For our present analysis we use data for eleven countries from the first wave and for Austria and Finland we draw on the third wave. Our choice of waves is motivated by need to have all three indicators available and to take advantage of large sample sizes to avoid the problems associated with sparse cell counts. Our unit of analysis is the individual.



Although we will not use welfare regime type as a variable in our analysis we shall address the extent to which the patterning of our results is consistent with this typology (Esping-Andersen, 1990, Goodwin *et al* 1999). In pursuing this issue we allocate Denmark, Finland to the social democratic regime with its emphasis on a substantial redistributive role, seeking to guarantee adequate economic resources independently of market or familial reliance. As Muffels and Fouarge, (2003) note, the Netherlands is something of hybrid having moved from being primarily a corporatist ‘breadwinner’ state to one characterised by active employment policies, more restrictive welfare policies but in a context of a safeguarding of principles of equality, uniformity and universality. For our present purposes we allocate it together with Germany, Austria, Belgium, and France to the corporatist regime with its emphasis on welfare as primarily a mediator of group-based mutual aid and risk pooling, with rights to benefits depending on being already inserted in the labour market. The UK and Ireland are located in the liberal regime, which acknowledges the primacy of the market and confines the state to a residual welfare role, social benefits typically being subject to a means test and targeted on those failing in the market. The Southern Mediterranean countries we will take as constituting a distinctive welfare regime with family support systems playing a distinctive role and the benefit system being uneven and minimalist in nature (Ferrera 1996, Arts and Gleisen 2002).

### **Income Poverty Measure**

The income measure we employ is total annual household disposable income of the year prior to that in which data collection took place, including transfers and after deduction of income tax and social security contributions. In order to take account of differences across households in terms of size and composition of the household we adjust the household income by using an equivalence scale. The poverty threshold is then calculated as the 70% median equivalised income line.

### **Deprivation Measure**

The ECHP supplies information about the living condition of the households and we identified thirteen household items, which could serve as indicators of a concept of

life-style deprivation. These items are considered to cover a range of what we term Current Life-Style Deprivation (CLSD). A further eleven items relating to housing and the environment, which in principle meet our definition of deprivation, have been excluded because they have been shown to form quite distinct clusters to the CLSD measure and to have significantly weaker correlations with income (Whelan *et al*, 2001). The format of the items varied, but in each case we seek to use measures that can be taken to represent enforced absence of widely desired items. Respondents were asked about some items in the format employed by Mack & Lansley (1985): for each household it was established if the item was possessed/availed of, and if not a follow-up question asked if this was due to inability to afford the item. The following six items took this form:

- A car or van.
- A colour TV.
- A video recorder.
- A micro-wave.
- A dishwasher.
- A telephone.

In these cases we consider a household to be deprived only if absence is stated to be due to lack of resources.

For some items the absence and affordability elements were incorporated in one question, as follows: “There are some things many people cannot afford even if they would like them. Can I just check whether your household can afford these if you want them”. The following six items were administered in this fashion:

- Keeping your home adequately warm.
- Paying for a week’s annual holiday away from home.
- Replacing any worn-out furniture.
- Buying new, rather than second hand clothes.
- Eating meat chicken or fish every second day, if you wanted to.
- Having friends or family for a drink or meal at least once a month.

The final item relates to arrears; we consider a household as experiencing deprivation in terms of this item if it was unable to pay scheduled mortgage payments, utility bills or hire purchase instalments during the past twelve months. An index based on a simple addition of these thirteen items gives a reliability coefficient of 0.80. For our present purposes we use a weighted version of this measure in which each individual item is weighted by the proportion of households possessing that item in each country. As a consequence deprivation of an item such as a video recorder will be counted as a more substantial deprivation in Denmark as compared to Greece.

The weighted CLSD measure makes it possible to identify for each country and for the 70% median income poverty line a corresponding deprivation threshold. This deprivation threshold is simply the level at which a similar percentage of individuals who are defined as income poor are also deprived. In other terms if in Denmark we have identified 18% of individuals income poor the deprivation threshold is the score value where 18% of individuals have the highest score of deprivation.

### **Economic Strain Measure**

The subjective measure of economic strain we employ is based on the following question asked to all household reference persons in the ECHP:

“Thinking now of your household’s total income, from all sources and from all household members, would you say that your household is able to make ends meet?”<sup>2</sup> Respondents were offered six response categories ranging from “with great difficulty” to “very easily”. The Economic strain variable is constructed as being those reporting either “great difficulty” or “difficulty”.

As well as these three key variables we use a number of socio-economic characteristics of the reference person that include social class position and employment status. For social class position we employ an aggregated version of the CASMIN class schema (Erikson and Goldthorpe, 1992) and distinguish between:

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<sup>2</sup> The reference person in the household responds to the household questionnaire.

manual, self-employed and non-manual. Regarding the employment status we use the principal economic status of the reference person and we distinguish also three categories that are, being at work (at least 15 hours), being unemployed and being inactive.

### 3. Methods

In applying latent class analysis each of our indicators is taken as an imperfect indicator of social exclusion. In order to provide us with sufficient degrees of freedom our income poverty variable has four categories distinguishing between those below 50% median income, between 50-60%, between 60% to 70% and above 70%. Our results will be reported in terms of the conditional probabilities of being below each of the three median income lines. Our deprivation outcome reports the conditional probability of being above the threshold that corresponds to that relating to 70% of median income. The economic strain variable distinguishes those households that have difficulty in making ends meet from all others. Thus both the income and deprivation variables are defined explicitly relative to national standards while the economic strain variable allows for the impact of within and between country comparisons.

Given three dichotomous variables the latent class for variables A, B, C is

$$\pi_{ijkt}^{ABCDX} = \pi_t^X \pi_{it}^{\bar{A}X} \pi_{jt}^{\bar{B}X} \pi_{kt}^{\bar{C}X}$$

where  $\pi_t^X$  denotes the probability of being in latent class  $t=1 \dots T$  of latent variable X;  $\pi_{it}^{\bar{A}X}$  denotes the conditional probability of obtaining the  $i$ th response to item A, from members of class  $t$ ,  $I=1 \dots I$ ; and  $\pi_{jt}^{\bar{B}X}$ ,  $\pi_{kt}^{\bar{C}X}$  denote the corresponding probabilities for items B and C respectively.

Conditional independence can also be represented as a log-linear model

$$F_{ijkt}^{ABCDX} = \eta \tau_i^A \tau_j^B \tau_k^C \tau_t^X \tau_{it}^{\bar{A}X} \tau_{jt}^{\bar{B}X} \tau_{kt}^{\bar{C}X}$$

In this case the cell frequencies in the complete fitted table are represented as the product of asset of parameters corresponding to the fitted marginals of the conditional independence model. The model can be estimated using the EM algorithm. We use the LEM Programme to estimate the parameters of the model fit (Vermunt, 1993).

### **Vulnerability to Social Exclusion**

In Table 1 we display results for model fit, class size and conditional probabilities. While in the majority of case the model does not provide a strict statistical fit, nevertheless it does remarkably well across all thirteen countries. Full details of model fits for the independence and latent class models are provided in Appendix Table A1. In eight of the thirteen counties the latent class model reduces the independence  $G^2$  by over 99% and in no case is the reduction less than 96%. Focusing on the index of dissimilarity ( $\Delta$ ) or percentage of cases misclassified, which is unaffected by sample size, we find that the highest number of cases misclassified is 1.7% in Belgium and in seven of the thirteen cases the figure is less than one percent. Thus the evidence strongly supports the hypothesis that the relationships between the three indicators arise because of the division of the population into two latent classes.

*Table 1: Vulnerability to Social Exclusion: Class Size, Model Fits and Conditional Probabilities for Latent Class Models for Income Deprivation and Economic Strain*

	DK		FI		NL		DE		AT		BE		FR		UK		IE		IT		ES		PT		EL		
Class Type	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	
Class																											
Size	0.77	0.23	0.78	0.22	0.76	0.24	0.79	0.21	0.67	0.33	0.72	0.28	0.67	0.33	0.67	0.33	0.64	0.36	0.62	0.38	0.62	0.38	0.60	0.40	0.52	0.48	
G2	3.9		15.6		12.3		29.8		21.1		75.8		62.3		6.6		4.2		62.2		63.6		100.4		59.0		
DF	4		4		4		4		4		4		4		4		4		4		4		4		4		
$\Delta$	0.37		0.75		0.55		0.86		0.59		1.74		1.25		0.43		0.29		1.34		1.44		1.44		1.69		
<b>Income</b>																											
<70%	0.14	0.33	0.11	0.33	0.10	0.51	0.15	0.52	0.08	0.47	0.16	0.50	0.11	0.52	0.13	0.62	0.09	0.57	0.13	0.53	0.10	0.55	0.14	0.52	0.08	0.54	
<60%	0.08	0.18	0.04	0.21	0.04	0.30	0.10	0.36	0.05	0.33	0.10	0.34	0.07	0.36	0.09	0.47	0.04	0.40	0.09	0.40	0.06	0.41	0.09	0.42	0.05	0.43	
<50%	0.04	0.07	0.02	0.10	0.02	0.16	0.07	0.24	0.03	0.15	0.06	0.20	0.04	0.21	0.06	0.30	0.02	0.12	0.05	0.29	0.04	0.28	0.07	0.32	0.02	0.33	
<b>Deprivation</b>																											
	0.00	0.79	0.00	0.73	0.00	0.84	0.07	0.84	0.04	0.57	0.06	0.77	0.02	0.71	0.03	0.83	0.02	0.70	0.00	0.73	0.03	0.65	0.00	0.76	0.02	0.63	
<b>Economic Strain</b>																											
	0.20	0.76	0.36	0.89	0.12	0.96	0.18	0.87	0.39	0.96	0.13	0.91	0.26	0.94	0.25	0.91	0.51	0.98	0.34	0.99	0.53	0.98	0.66	0.96	0.64	0.99	

Focusing on the patterning of conditional probabilities within latent classes we find strong evidence that they discriminate between those vulnerable to social exclusion and those who are entirely buffered from this experience. The key variable differentiating the classes is that referring to life-style deprivation. For those respondents vulnerable to social exclusion the risk of being found above the deprivation threshold varies from a low of 0.57 in Austria to a high of 0.84 in the Netherlands and Germany. In ten of the thirteen countries the proportion was above 0.70. In contrast in the non-vulnerable class the highest proportion above the threshold is again found in Germany where it reaches a level of 0.07. In ten of the thirteen countries the relevant proportion does not rise above 0.03. Thus the latter are almost entirely insulated risk of being above the deprivation threshold. On the other hand for those found in the vulnerable class, in every case a majority are found above the threshold and in most cases a significant majority.

For income poverty we find clear differentiation but less sharp than in the case of deprivation. The social democratic states constitute exceptions with the risk of being found below the 70% of median threshold if one is located in the vulnerable class being as low as one in three. For the remaining countries the relevant proportion lies in the extremely narrow range running from 0.47 in Austria to 0.62 in the UK, with nine countries being found in the range running from 0.50 to 0.57. The number below the 60% line, the figure does not rise above one in five for the social democratic countries with the remaining countries lying between 0.30 in the Netherlands and 0.47 in the UK. For the 50% threshold the figure does not rise above one in ten in Denmark and Finland and elsewhere ranges between 0.15 in Austria and 0.33 in Greece. For the non-vulnerable class the proportion below the 70% threshold ranges between 0.08 in the Austria and Greece and 0.16 in Belgium. For the 50% line the figure ranges from a low of 0.02 in a number of countries to a high 0.07 in Portugal.

Focusing on economic strain we again find a distinctive pattern of differentiation between vulnerable and non-vulnerable. Leaving Denmark aside, the proportion runs from 0.87 in Germany to 0.99 in Greece and is above ninety per cent in ten of the thirteen countries. Thus in most countries membership of the vulnerable class comes

close to guaranteeing experience of economic strain. The contrast between the vulnerable and the non-vulnerable classes is less sharp than in the case of deprivation because the risk of economic strain is considerably higher in the latter class. Within the non-vulnerable class there is also a striking contrast between the less affluent countries and the more affluent countries. For Ireland and the Southern European countries other than Italy the majority of the non-vulnerable class report economic strain with the proportion ranging from 0.51 in Ireland to 0.66 in Portugal. In contrast in the remaining countries the relevant proportion ranges from 0.12 in the Netherlands to 0.39 in Austria with six of the nine-countries reporting levels of one-in-four or below. Thus, while members of the vulnerable class are characterised by high levels of economic strain, it is a significantly less effective discriminator than deprivation and indeed income poverty.

Since the indicators are independent of each other within latent class the conditional probabilities indicate the proportion that are currently exposed to disadvantage on one of the other indicators who are also disadvantaged on the indicator to which the coefficient relates. For example for the vulnerable class in the UK 62% of those above the deprivation threshold are also below 70% of median income. Conversely 83% of those below the income threshold are above the deprivation threshold. In the non-vulnerable class hardly any of those above the income threshold in any of the countries are also found above the deprivation threshold.

In Table 2 we focus on the extent to which those found to fulfil the respective condition are located in the vulnerable class. For income poverty there is considerable variation across countries with the relevant percentage ranging from just over forty per cent in Denmark to close to ninety per cent in Greece. There is a broad contrast that involves income being a more powerful predictor in the liberal and residualist welfare states. The vast majority of those above the deprivation are also members of the vulnerable class. The lowest membership rate is found in the Germany where three-quarters of this group are vulnerable. In ten of the thirteen countries membership levels range between ninety to one hundred per cent. Although most members of the vulnerable class experience economic strain, substantial numbers of



those reporting economic strain are outside the vulnerable class. Membership rates range from just over two-fifths in Finland to a high of seven-tenths in the Netherlands.

*Table 2: Percentage Fulfilling Income Deprivation and Economic Strain Conditions Found in Class Vulnerable to Social Exclusion*

	<70% Median Income %	> 70% Deprivation Threshold %	Reporting Economic Strain %
DK	41.3	100.0	53.2
FI	45.8	100.0	41.1
NL	63.5	100.0	71.6
DE	48.0	76.1	56.2
AUT	74.3	87.5	54.8
BE	54.9	82.2	73.1
FR	70.0	94.6	64.0
UK	82.7	92.1	64.2
IE	78.1	95.8	51.9
IT	71.4	100.0	64.0
ES	77.1	93.0	53.1
PT	71.2	100.0	49.2
EL	86.2	96.1	58.8

### Socio-Economic Determinants of Vulnerability

Advocates of the individualisation thesis argue that poverty and social exclusions can not be traced back to common and easily identifiable causes. The poor are increasingly seen as constituting a heterogeneous group affected by variety of causal processes. We are not in a position to offer a comprehensive evaluation of the individualization thesis since its propositions relate to changes over time. However, a comparison at a point of time of the relative importance of different factors can clearly give us a sense of how far such a process has proceeded and to what extent we are required to significantly alter our understanding of the current determinants of social exclusion.

In Table 3 we set out the relationship between social class and risk of vulnerability to social exclusion. The simplest model is one where social class influences latent class membership and has no further effect on the indicators. However, in order to achieve a satisfactory fit across the range of countries included in our analysis it also necessary to allow social class to have an effect on income poverty and economic

strain within latent classes.<sup>3</sup> The former is by far the most important effect, in particular, as it captures the impact of self-employment within latent class. Deprivation is affected by social class only through its impact on latent class membership<sup>4</sup>.

Information regarding the fit of this model and all others referred to in this section is provided in Appendix Table A2. The percentage of cases misclassified ranges from 0.6% of cases in Denmark to 2.5% of cases in Portugal. In all countries vulnerability levels are relatively low among the non-manual class. The risk level ranges from a low of 0.09 in Spain and Portugal to 0.24 in Italy. With the exception of Austria, the risk levels for the self-employed in Northern Europe are much closer to those for the non-manual class than the manual. In the Southern European countries on the other hand vulnerability rates for the self-employed are substantially higher and are much closer to those for the manual class. The risk rate ranges from 0.12 in Germany to 0.49 in Greece. In social democratic states risk rates for manual workers are close to one third. For corporatist countries they vary between one third and less than one half. In the liberal and residualist regimes the figure consistently reaches one in two.

In the final column of Table 3 we report the odds ratios for being vulnerable rather than non-vulnerable for manual as opposed to non-manual classes. These ratios are not affected by variations in levels and summarise the degree of inequality in risk level between the two groups. Three broad groups emerge. For the social democratic regimes together with Belgium and the Netherlands the odds ratio does not exceed three to one. For the remaining corporatist regime countries, together with the UK, the value ranges between four to five to one. Finally, the highest values are found in Ireland and than residualist welfare regimes, other than Italy, where the value ranges between approximately seven to one.

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<sup>3</sup> In all models employing class and employment status we allow for within latent class effects on income poverty and economic strain

<sup>4</sup> . In LEM syntax where A is income poverty, B deprivation and C economic strain, S social class and X the latent variable, the model is  $A|XS \ B|X \ C|XS$

Table 3: Vulnerability to Social Exclusion by Social Class

	Non-Manual	Self-Employed	Manual	Manual/Non-Manual Odds ratios
DK	0.20	0.14	0.35	2.15
FI	0.19	0.17	0.29	1.74
NL	0.14	0.19	0.32	2.89
DE	0.11	0.12	0.37	4.74
AUT	0.15	0.39	0.48	5.23
BE	0.18	0.15	0.34	2.35
FR	0.16	0.25	0.44	4.13
UK	0.18	0.27	0.48	4.20
IE	0.13	0.19	0.52	7.25
IT	0.24	0.34	0.49	3.03
ES	0.09	0.34	0.45	8.27
PT	0.09	0.34	0.48	9.33
EL	0.20	0.49	0.63	6.81

In Table 4 we look at the impact of employment status. The residualist welfare countries have relatively high proportions in work vulnerable to social exclusion. For the inactive we observe distinctively high values for the residualist welfare states. Finally, for the unemployed in no case do we find less than one-in-two in the vulnerable class. The countries with relatively low values are the social democratic countries together with the Netherlands and Portugal where the value ranges between 55% and 63%. In all other countries at least three-quarters of the unemployed are in the class vulnerable to social exclusion. When we look at the odds ratios for the inactive versus those at work we observe relatively modest variation. The highest value of approximately four to one is found in the liberal regimes. The remaining values are clustered in the range running from one and a half to three to one. For unemployment the sharpest contrast is between the social democratic countries where the odds ratio is six to one and the liberal welfare regimes where it ranges between three to four times that value. Considerable variation is observed within the corporatist and residualist regimes.

Table 4: Vulnerability to Social Exclusion by Employment Status

	At Work	Inactive	Unemployed	Inactive/At Work Odds Ratios	Unemployed/At Work Odds Ratios
DK	0.21	0.36	0.63	2.16	6.41
FI	0.16	0.29	0.55	2.14	6.42
NL	0.14	0.38	0.62	2.93	10.02
DE	0.16	0.23	0.55	1.57	6.49
AUT	0.27	0.35	0.78	1.44	9.58
BE	0.19	0.34	0.77	2.20	14.26
FR	0.27	0.35	0.76	1.45	8.56
UK	0.20	0.53	0.83	4.51	19.53
IE	0.18	0.45	0.84	3.73	23.92
IT	0.34	0.40	0.81	1.29	8.27
ES	0.26	0.53	0.78	3.21	10.09
PT	0.34	0.49	0.63	1.86	3.30
EL	0.40	0.64	0.89	2.33	12.13

The scale of the observed effects for both social class and employment status is difficult to reconcile with the notion that social exclusion has come to transcend traditional stratification boundaries and has become an experience or stage in the life-course (Leisering and Liebfried, 1999:23). However, the continued importance of conventional stratification factors is not all inconsistent with the notion that social exclusion is associated with particular life-course events and it is to these that we now turn our attention.

#### Socio-Demographic Vulnerability to Social Exclusion

In this section we address the impact of key socio-demographic factors and associated discontinuities in the life-course such as separation/divorce.<sup>5</sup> We could find no evidence of a pattern of systematic variation by age group across countries and it is clear that such variation cannot account for the significant socio-economic structuring documented in the previous section.<sup>6</sup>

From Table 5 we can see that households headed by women are consistently more likely to be vulnerable to social exclusion. The strongest effects are found in liberal welfare regime countries and Belgium where the odds ratios range between three to

<sup>5</sup> Full details of model fits are provided in Appendix Table A3. For all variables except separation/divorce within latent class effects on income and economic strain were permitted

<sup>6</sup> Details of these results are available from the authors

four to one. Gender effects are weak in both the social democratic and residualist welfare regimes with odds ratios ranging from three to four to one. For both separation/ divorce and lone parenthood the weakest effects are found in the Southern countries which seems to reflect differences in patterns of household

*Table 5: Vulnerability to Social Exclusion by Gender and Life-events*

	Female		Divorced		Lone Parent		Odds Ratios		
	Yes	No	Yes	No	Yes	No	Female	Separated / Divorced	Lone Parent
DK	0.26	0.19	0.40	0.18	0.59	0.18	1.50	3.04	6.56
FI	0.32	0.19	0.40	0.20	0.44	0.20	2.00	2.67	3.14
NL	0.40	0.19	0.57	0.21	0.68	0.21	2.85	4.99	7.99
DE	0.34	0.18	0.43	0.19	0.50	0.20	2.35	3.22	4.00
AUT	0.41	0.27	0.60	0.31	0.63	0.36	1.88	3.39	3.03
BE	0.48	0.20	0.56	0.23	0.65	0.23	3.69	4.26	6.22
FR	0.55	0.30	0.54	0.31	0.60	0.31	2.85	2.62	3.34
UK	0.54	0.28	0.64	0.30	0.81	0.30	3.02	4.14	9.95
IE	0.53	0.22	0.82	0.33	0.66	0.32	4.00	9.23	4.13
IT	0.44	0.36	0.39	0.38	0.43	0.37	1.40	1.28	1.28
ES	0.55	0.36	0.61	0.37	0.48	0.37	2.17	1.57	1.57
PT	0.45	0.39	0.36	0.40	0.53	0.39	1.28	1.76	1.76
EL	0.61	0.45	0.57	0.47	0.59	0.47	1.52	1.62	1.62

formation and dissolution rather than welfare regimes as such (Berthoud and Iacovou, 2003). In no case does a relevant odds ratio exceed two to one. The largest effects are observed in the liberal welfare regimes where welfare rules seem to play a more significant role. Those separated/divorced appear particularly disadvantaged in Ireland and lone parents are worst placed in the UK in both cases the relevant odds ratio reaches nine to one. For the remaining countries there is little in the way of systematic variation. In the majority of cases odds ratios vary between two and four to one. Neither the scale, nor patterning of biographic or life event variables suggests that can come near to accounting for the socio-economic structuring of vulnerability to social exclusion documented earlier.

### Composition of those Vulnerable to Social Exclusion

Not only are manual workers and those not at work exposed to higher levels of vulnerability than other at risk groups they also constitute larger segments of the

population. In Table 6 the composition of the vulnerable group is broken down by the social class. In every case other than Greece manual workers form a majority of the vulnerable class. The Greek situation is accounted for by the fact that equally large numbers are drawn from the self-employed and manual workers.

Table 6: Social Class Composition of the Vulnerable Class

	Non-Manual %	Self-Employed %	Non-Manual %
DK	37.3	5.3	57.4
FI	38.8	10.1	51.1
NL	37.0	5.9	57.1
DE	26.6	4.0	69.4
AUT	20.6	16.9	62.7
BE	39.7	7.1	53.2
FR	20.8	9.5	69.6
UK	25.4	13.5	61.1
IE	11.9	14.0	74.1
IT	22.2	22.6	55.2
ES	18.7	21.0	60.3
PT	6.5	26.2	67.3
EL	9.0	46.3	44.7

Apart from Greece and Italy, where the self-employed play a significant role, the lowest manual composition levels are found for the social democratic welfare regimes together with Belgium where the relevant figure ranges between 51% and 57%. Even here manual workers are significantly over represented. For the remaining countries the relevant figure ranges between three-fifths and three-quarters. The lowest figures of between 7% and 12% for non-manual workers are found in Ireland, Portugal and Greece. In contrast the figure rises to close to four out of ten for Denmark, Finland the Netherlands and Belgium. In no case do we observe a pattern consistent with the notion of transcendence of class effects and even where the distribution is most heterogeneous in class terms a vulnerable respondent is substantially more likely to come from the manual rather the non-manual class despite the fact that the former are numerically superior.

### Levels of Social Exclusion

The process by which people come to be exposed to multiple deprivation has been a central concern of the social exclusion literature. In the analysis that follow we shall

document the extent to which respondents are currently exposed to social exclusion in the sense that they are simultaneously below 70 % of median income, above the corresponding deprivation threshold and experiencing subjective economic strain. This definition of social exclusion and the associated form of multiple deprivation is somewhat more circumscribed than many that have figured in the literature, which frequently make reference to factors such as social isolation. However, since the evidence for the significance of social isolation is weak<sup>7</sup> it seems sensible to focus first on dimensions where evidence of at least moderate correlation exists and whose relationships have been subjected to considerable scrutiny.

In order to calculate levels of social exclusion involving income poverty, life-style deprivation and economic strain we take advantage of condition of local independence whereby these indicators are independent of each other within categories of the latent class. Because of extremely low conditional probabilities for deprivation in the non-vulnerable class, calculation of social exclusion levels reduces to calculating them within the vulnerable latent class. It is also the case that within the vulnerable class, apart from Denmark, economic strain levels are so high that multiple deprivation levels involving all three dimensions are only marginally lower than those involving income poverty and deprivation alone. In Table 7 we show social exclusion levels for the vulnerable class and the population as a whole. The lowest levels are observed for the social democratic regime with one in five exposed to such deprivation. The Austrian level is also comparatively low with one in four fulfilling the necessary conditions. The UK is found at the opposite end of the spectrum with almost one in two experiencing multiple deprivation. Elsewhere variation is rather modest with levels varying between one in three and two in four.

The level of exclusion in the population depends not only on the level within the vulnerable class but also on the size of that class. In fact with the exception of the instances referred to earlier cross-national variation in levels of social exclusion depends almost entirely on variation in the size of the vulnerable class. The lowest level of one in twenty is found in the social democratic countries. This figure rises to

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<sup>7</sup> See Paugam *et al* (200:269) , Gallie *et al* (2003) Tsakloglou and Papadopoulous,(2002 Whelan *et al* (2002)

approximately one in five in the Netherlands and the corporatist countries and finally to between one in six and one in seven in the liberal and residualist regimes. This measure produces substantially greater variation across countries than that observed for income poverty. To illustrate this point in the final column of Table 7 we express the population figure as a percentage of the poverty rate at 70% of median income.

Table 7: Social Exclusion Levels

	Vulnerable Class	Population	Population figure as % 70% Median Income Poverty rate
	I +D+S %	I+D+S %	%
DK	19.8	4.6	25.0
FI	21.4	4.7	29.7
NL	41.1	9.9	49.0
DE	38.0	7.9	34.4
AUT	25.7	8.5	40.3
BE	35.0	9.8	38.4
FR	34.7	11.5	47.8
UK	46.8	15.4	52.6
IE	39.1	14.1	53.6
IT	38.3	14.6	52.1
ES	35.0	13.3	49.4
PT	37.9	15.2	52.9
EL	33.7	16.2	54.1

For the social democratic regime countries the figure is less than three out of ten. For the liberal welfare regime and residualist regime on the other the figure is close to one half. Within the corporatist countries the figure ranges between thirty to fifty per cent.

In Table 8 we look at the impact of social class on social exclusion levels. For the non-manual class levels are low in all countries. The highest level of seven per cent is found in Italy and the UK. For the remaining eleven countries the figure ranges between two and four per cent. For the self-employed the figure is a good deal more variable. It is at its lowest level of four per cent for the social democratic countries. It is not a great deal higher for corporatist countries such as Germany and Belgium but it rises sharply to in excess of ten per cent for Austria, the Netherlands and France. The UK has a level close to the former and Ireland has one that resembles the latter. Consistent with our expectations, levels are comparatively high in residualist welfare regimes, reaching levels of one in seven in Italy and Spain and one in five in Portugal



and Greece. While the self-employed are significantly less likely to be found in the vulnerable than manual workers, within this class they have particularly high probabilities of being below the income threshold. This is a significant factor in producing the observed levels of exclusion. In the social democratic states exclusion rates remain low even for manual workers and does not exceed six percent. Amongst

	Non-Manual	Self-Employed	Manual
DK	2.8	3.8	6.1
FI	2.9	3.9	6.3
NL	3.3	10.1	15.8
DE	4.3	5.0	13.0
AUT	2.5	12.6	9.5
BE	4.2	6.5	11.9
FR	3.9	12.1	17.6
UK	7.3	13.7	20.7
IE	2.5	6.3	19.7
IT	6.5	14.8	18.3
ES	4.0	14.4	17.0
PT	1.6	20.2	15.9
EL	2.7	21.6	14.1

the corporatist states there is a range of variation. Belgium and Austria are at the lower end of the continuum with rates of approximately one in ten. The Netherlands and France are at the upper end of the continuum with rates of approximately one in six. The highest level of social exclusion for manual workers is found in the liberal welfare states where the figure rises to one in five. Finally for the residualist welfare states there is a narrow range of variation running from one in seven in Greece to just less than one in five in Italy. For the UK and the Southern European countries their overall high levels of social exclusions are attributable to the relatively high levels experienced by both the self-employed and manual workers. For Ireland, on the other hand, its overall situation is almost entirely a consequence of the fact that manual workers are particularly disadvantaged.

## **Conclusions**

In this paper we have argued the need for a more explicit treatment of theoretical and measurement issues relating to the conceptualisation of social exclusion as multidimensional. In addressing these issue, rather than seeking to deal with a wide range of dimension, we have focused on a smaller number that we consider to be important on theoretical grounds and crucial building blocks in efforts to construct reliable and valid indices of social exclusion. We have also concentrated on dimensions where sufficient previous work exists to provide us with adequate confidence in the individual indicators and a body of knowledge concerning the observed relationships between them. From this starting point we have treated our measures as imperfect indicators of vulnerability to social exclusion. From such a perspective one can distinguish between vulnerability to social exclusion of a broader social group and risk of exposure to multiple deprivation at a point in time applying to some subset of this group.

Applying latent class analysis to the thirteen countries in our analysis we found that the latent class model was supported in every case. The risk of vulnerability to social exclusion varied across counties in manner broadly consistent with our expectations based on their allocation to welfare regimes. The social democratic regimes are distinctive not only in having a relatively small class vulnerable to social exclusion but also in exhibiting a weaker pattern of differentiation between the vulnerable and the non-vulnerable. For the remaining countries there is a striking similarity in the manner in which the latent classes are differentiated. In every case it is the deprivation indicator that has the greatest discriminatory capacity, followed by income poverty and economic strain. For this final indicator variation across country occurs primarily among the non-vulnerable class and involves a contrast between the affluent and non-affluent countries.

Our analysis thus confirms the value of a latent class approach to multidimensionality. Implicit in this approach is a dynamic perspective on social exclusion in which vulnerability is translated into the actual experience of social exclusion conceived as multiple deprivation. Thus, while at a particular point in time deprivation is the

primary factor differentiating the vulnerable and non-vulnerable classes, our findings are entirely consistent with a perspective that requires that social exclusion be understood as the outcome of a process in which the accumulation and erosion of resources over time interacts with variability in the demands with which households must cope (Nolan and Whelan, 1996). The clarity of the picture that emerges relating to the underlying structuring of social exclusion that can be contrasted with the impression of something close to apparent randomness that emerges when income is correlated with individual deprivation items (Mack and Lansley, 1985).

This pattern of predictable social structuring continues when we examine the impact of socio-economic characteristics of the household reference person on vulnerability to social exclusion. While we are not in a position to examine trends over time, the consistency and scale of both social class and employment status effects seem entirely inconsistent with the notion that poverty and social exclusion has come to transcend social boundaries. However, while there is clear evidence of socio-economic structuring across the range of countries, there is also significant variation. Social class effects are particularly strong in liberal and residualist welfare regime countries with self-employment effects being particularly strong in the latter. Employment status effects are even stronger but are relatively weak in the social democratic regimes and particularly powerful in the liberal regime countries. Membership of the vulnerable class clearly does extend to the non-manual class but in every country except Greece, where the self-employed play a crucial role, manual workers constitute a majority of the class and in all but four countries the latter taken together with the self-employed comprise three quarters of the socially excluded.

Such socio-economic structuring is entirely consistent with differentiation by individual biography and life –situation. However, age effects were found to be a good deal weaker and more variable. Gender effects were more uniform but again modest in comparison with socio-economic effects. Separation/divorce and lone parenthood were clearly associated with increased vulnerability, but apart from the exceptional impact of the former in Ireland and the latter in the UK, could not be interpreted in welfare regime terms. Indeed such effects were uniformly weak in the Southern European countries.

As with analysis of poverty dynamics our analysis has implications for the debate on universal versus selective policies. As Moiso (forthcoming) notes an emphasis on the transitory nature of poverty and arguments for individualisation focus attention on the events that trigger poverty and seem to carry, at least implicitly, a recommendation for active targeted policies. The findings we have presented here regarding the structuring of social exclusion are consistent with recent analysis of poverty dynamics by Breen and Mioso (2003) who argue that poverty mobility has been overestimated and that there is a clear distinction between those who are almost entirely protected from poverty and those who move in and out of that condition. Although operating on the basis of cross-sectional rather than longitudinal relationships and focusing on rather different outcomes we are led to a similar conclusion to Layte and Whelan (2002:231) that it is necessary to direct attention away from highly targeted policies aimed at multiply deprived groups and encourage a focus on more generalised responses directed at groups who may not be currently socially excluded but whose vulnerability means that a range of factors may precipitate this situation. As Kleinman (1998) notes one of the consequences of employing the term ‘social exclusion’ to denote multiply deprived groups is that it defines the key social cleavage as between a comfortable majority and an small excluded socially isolated minority. Despite the accumulating evidence which challenges this assumption<sup>8</sup> there is likely to be considerable since, as Whelan *et al* (2002: 103) note, it directs attention to macro and expensive policies relating to the factors contributing to the vulnerability of broad class and status groups and thus refocuses attention on issues such as access to education, employment and operation of the tax and welfare system.

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<sup>8</sup> See also Tsakoglou and Papadopoulos (2002) and Whelan *et al* (2002)

Appendix Table A1: Model Fits for Income Poverty Deprivation and Economic Strain

	Independence (df=10)		Latent Class (df=4)		% RG <sup>2</sup>
	G <sup>2</sup>	Δ	G <sup>2</sup>	Δ	
DK	1572.9	16.8	3.9	0.4	99.76
FI	2,106.5	14.6	15.6	0.8	99.26
NL	8,423.9	29.9	12.3	0.6	99.90
DE	3,406.5	20.4	29.8	0.9	99.13
AUT	2073.8	16.7	75.8	1.7	96.35
BE	3,442.2	25.2	62.3	1.3	98.19
FR	7,033.2	24.5	6.6	0.4	99.91
UK	6,735.9	27.8	62.3	1.3	99.08
IE	4,611.1	19.8	4.2	0.3	99.91
IT	9,906.1	25.1	62.2	1.3	99.37
ES	5,936.6	17.8	63.6	1.4	98.93
PT	3,261.0	15.2	100.4	1.4	96.92
EL	4,194.2	16.5	59.0	1.7	98.59

Appendix Tables A2: Model Fits for Models with Social Class and Employment Status as External Variables

(Models Heterogeneous on Deprivation and Economic Strain)

	Social Class (df=16)		Employment Status (df=16)	
	G <sup>2</sup>	Δ	G <sup>2</sup>	Δ
DK	15.1	0.6	40.2	1.1
FI	89.3	1.7	145.5	2.4
NL	52.8	1.1	122.2	1.7
DE	37.9	1.3	94.2	2.0
AUT	64.4	1.8	61.8	1.1
BE	141.0	2.7	151.5	2.7
FR	169.1	2.1	195.5	2.2
UK	109.1	2.4	147.0	2.6
IE	110.6	1.7	78.8	1.7
IT	98.4	1.6	146.0	1.8
ES	184.3	2.4	215.3	2.3
PT	188.8	2.5	171.3	2.3
EL	110.7	2.0	110.1	2.0

Appendix Table A3: IDE Model Fits for Socio-demographic Characteristics and Life Events

	Gender (within class effect on income)		Age (within class effects on income and strain)		Divorce		Lone Parent (within class effect on income)	
	df=12		df=22		df=18		df=12	
	$\Delta$	$G^2$		$G^2$	$\Delta$	$G^2$	$\Delta$	$G^2$
DK	1.7	23.2	1.8	87.9	1.6	80.8	1.3	52.0
FI	1.3	68.4	1.8	120.7	1.8	85.9	1.8	70.4
NL	1.2	66.5	1.1	80.0	1.6	147.3	2.4	154.0
DE	1.7	71.3	1.8	89.4	1.7	106.3	1.6	88.6
AUT	?	?	2.6	122.3	2.0	77.7	4.0	308.6
BE	3.2	145.9	1.1	80.0	2.6	136.5	3.1	172.6
FR	1.8	129.7	1.6	138.7	2.0	152.9	1.8	125.2
UK	2.1	124.2	2.2	99.2	1.2	52.7	1.6	138.7
IE	1.5	45.6	2.3	140.0	1.6	115.1	1.6	121.8
IT	1.7	89.7	1.7	144.6	1.9	157.6	2.1	155.2
ES	1.9	124.6	2.1	187.0	1.6	125.0	1.8	140.3
PT	2.1	121.8	2.6	298.6	1.6	80.6	2.4	181.9
EL	1.8	86.0	2.0	115.3	2.2	130.2	2.2	151.1

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