Towards A European Socio-economic Classification

Final Report to Eurostat of the Expert Group

David Rose and David Pevalin

Institute for Social and Economic Research
University of Essex

and

Peter Elias

Institute for Employment Research
University of Warwick

with

Jean Martin

UK Office for National Statistics

January 2001

Towards A European Socio-economic Classification

Final Report to Eurostat of the Expert Group

David Rose and David Pevalin

Institute for Social and Economic Research
University of Essex

and

Peter Elias

Institute for Employment Research
University of Warwick

with

Jean Martin

UK Office for National Statistics

January 2001

Contents

Foreword

This is the final report of an expert group convened by Eurostat in order to make recommendations in relation to the development of a harmonised EU socio-economic classification. The authors are grateful to both the expert group and its chair, Lene Mejer, for all the advice and comment we have received both at our two meetings and in written responses to our various papers, reports and electronic documents.

Inevitably, given both the complexity of the issues we were asked to address and the limited opportunity of only two meetings at which to exchange views, our discussions have raised questions that require further examination. These are indicated in the report. Equally, we have not been able to take on board all the comments made by each group member. We have occasionally had to exercise our own judgements where there were genuine disagreements. In that sense, although this is a report on behalf of the expert group, as authors we take full responsibility for its contents, as well as for any errors of omission or commission.

David Rose and David Pevalin
Colchester

Peter Elias
Coventry

Jean Martin
London

January 31 2001

Towards A European Socio-economic Classification

Final Report to Eurostat of the Expert Group

Summary

1. This report is concerned with proposals for a harmonised European socio-economic classification. (Section 1)

2. Socio-economic classifications (SECs) are usually occupationally based measures, but they take different forms. In particular, some are continuous multi-dimensional measures of socio-economic position, while others are categorical measures. We favour the latter, partly because they are more narrowly defined measures based solely on labour market positions. SECs are particularly useful as a means of measuring and displaying structured socio-economic inequalities. Thus a European SEC (E-SEC) would be a key variable in examining the relationships between socio-economic position and life-chances in areas such as health and education. We illustrate this by reference to recent EU-funded research on health inequalities in eleven member states. The E-SEC would serve as an important background variable in social statistics and would have a wide range of policy and academic applications. (Section 2)

3. For an E-SEC to be useful in these terms, it must be conceptually clear, easily operationalised on a range of data sets, demonstrably valid and reliable as a comparative measure and applicable to the whole population. While occupationally based, the E-SEC must thus have associated rules for allocating those who are not formally employed. This also implies a nested classification. The E-SEC should also be applicable to households as well as individuals. (Section 3).

4. Existing SECs in Member States share many of these features. However, some national SECs are intuitively rather than conceptually derived. Nevertheless, all use similar variables for their construction – occupation, activity status, status in employment, etc. The unemployed and inactive are usually classified to their last main job. (Section 4)

5. The Expert Group's basic recommendations concerning the E-SEC are set out in paragraph 4.12. We advocate that it should be based on the concept of employment relations, thus using a basis common to several national SECs. It should be a categorical measure, constructed from harmonised variables. It should be flexible through the use of long and short forms. It should apply to the whole population in its long form. It should also be applicable to both households and individuals. And it must be validated. These points are further developed and discussed in subsequent sections of the report. (Section 4)

6. The recommended conceptual basis of E-SEC is discussed in section 5. Here, the employment relations approach is explained. Three basic SEC positions, for employers, the self-employed and employees, are discussed. A potential fourth basic position, for those excluded from employment relations, is also posited. The method by which different types of employee may be divided among E-SEC classes, through the form of employment regulation to which they are subject, is described and elaborated. Similarly, we show how distinctions may be made amongst different

types of self-employed and employer. The conceptual model may require some further elaboration at a future stage in E-SEC development work. (Section 5).

7. We present an outline or 'blueprint' for an E-SEC classification based on the employment relations approach. A two level, nested classification is proposed. Level 1 has nine 'classes'. Level 2 has 44 'socio-economic groups' (SEGs). Thirty-five of these SEGs collapse directly to one or other of the nine classes. The remainder must be treated using methods explained. Each of the SEGs within each class is defined and discussed. Some of these definitions may need further clarification. (Section 6).

8. Operational issues relating to the E-SEC blueprint are indicated. First, we discuss methods for establishing values for the key proxy variables that are required to operationalise E-SEC. Then we explain how an E-SEC derivation matrix may be constructed from these variables. We also show how E-SEC may be created in the absence of some of the required variables. Finally, we address the issue of a household level measure of the outline E-SEC. (Section 7).

9. Problems associated with the EU harmonised occupation and employment status variables, ISCO-88 (COM) and ICSE-93, are examined. A number of key areas where cross-national comparability of occupational statistics is wanting are identified and discussed. Methods for improving comparability are suggested. (Section 8).

10. Once derived, E-SEC must be validated. E-SEC must be shown both to be a measure of the underlying concept of employment relations and to offer added value over other existing variables that might be used in its stead. Validation methods are discussed and recommendations for both criterion and construct validation are offered. Initially, for the purposes of a feasibility study, we recommend that a derivation matrix using the unit groups of ISCO-88 (COM) should be constructed on the basis of UK employment relations data. (Section 9).

11. Finally, we suggest means by which the recommendations in this report may be taken forward. Specifically we advocate, first, short-term feasibility work funded by Eurostat and conducted by NSIs and experts. The initial task for this study will be to create a 'beta version' of E-SEC for testing. This will require the resolution of a number of outstanding issues as detailed in paragraph 10.2. Second, we argue for a longer-term programme of fundamental and applied research. This should be the subject of a Framework 5 application. (Section 10).

12. There are four appendices. The first explains the terms of reference for and the procedures relating to the project. Appendix 2 is an ISCO-88 (COM) user guide. Appendix 3 shows the structure of the LFS as an aid to understanding issues discussed in section 6. Appendix 4 examines validation procedures in more detail.

Towards A European Socio-economic Classification

Final Report to Eurostat of the Expert Group

David Rose, David Pevalin and Peter Elias
with Jean Martin

January 2001

1. Introduction

Structure of the Report

1.1 This is the final report of an Expert Group convened by Eurostat in order to make recommendations concerning a European socio-economic classification (Activity 1 as described in Appendix 1). A separate report will be submitted on revisions to the managerial categories used in the EU *Structure of Earnings Surveys* (Activity 2 in Appendix 1).

1.2 The report has ten sections and four appendices. In the remainder of this section, we discuss the role of the project within the overall Harmonisation Programme. Section 2 makes the case for a harmonised EU socio-economic classification. First, we explain what is meant by a 'socio-economic classification' (SEC). Second, we show why such a classification is required at the EU level. In Section 3 we set out our views on the desirable characteristics of a European SEC (E-SEC). Thus, here we discuss various measurement, conceptual and related issues. Section 4 examines existent national SECs in EU Member States and what lessons they offer for the development of an E-SEC. In Section 5 conceptual issues are discussed. An outline of (i.e. a blueprint for) an E-SEC based on the concept of employment relations is presented in section 6. Section 7 concerns operational issues relating to the outline E-SEC. Section 8 considers some of the mapping issues associated with the national occupational classifications and status in employment, the EU harmonised versions of these classifications and statistical requirements of an E-SEC. This section is thus concerned with various problems relating to harmonised occupational statistics. Section 9 discusses validation of the outline E-SEC. Finally section 10 summarises recommended next steps and our conclusions.

The Role of the Project in the Harmonisation Programme

1.3 Work on the harmonisation of social statistics began with the London Workshop in November 1996. Three Task Force Meetings between 1997-1999 and the Working Group meeting in Luxembourg, 2-3 May 2000 (see DOC. E0/HARM/21/2000) followed this. Harmonisation has been a topic in several Mondorf and Siena Group meetings. Representatives of the National

Statistical Institutes (NSIs) in the Member States and Eurostat have had the opportunity to discuss the theoretical background and practical implications of this work, and to offer guidelines for further work (see DOC E0/HARM/23 and 26/2000; for further details on the harmonisation of statistics, see Ostby *et al* 2000; Everaers 1998).

1.4 Work on harmonisation is in accordance with policy-statements from the Statistical Programme Committee. The Council Decision of 22 December 1998 on the Community Statistical Programme 1998 to 2002 (1999/126/EC: 23) states that '(t)he structuring/integration of household surveys and similarly between surveys and registers, will be pursued with a view to rationalising resources and improving comparability of output'.

1.5 The first step of the Eurostat harmonisation project is to harmonise definitions of variables and the associated value sets, and not questions or operationalisations. The aim is to create a common set of *core units, core variables* and *core classifications* for use in the main sources of social statistics at Eurostat and at national level. This does not mean that each survey has to include all variables, but *when* they are included, it is recommended that they follow the guidelines for harmonisation (see Ostby *et al* 2000).

1.6 One of the proposals for a harmonised variable is a European 'socio-economic' classification or E-SEC. Eurostat has suggested that a European SEC should be a derived variable based so far as is possible on other proposed core variables, especially main activity status, labour force status, status in employment, and occupation. Everaers (1998) anticipated that economic activity and educational attainment might also be involved. In the latter case, we do not agree as we explain in sections 2 and 3. If the E-SEC requires other variables than those already included in the core, the core will need to be adapted to this.

1.7 In order to make progress on the development of an E-SEC, Eurostat awarded a contract to the UK Office for National Statistics. In turn ONS sub-contracted the main work on Activity 1 to Professor David Rose, Institute for Social and Economic Research, University of Essex, and on Activity 2 to Professor Peter Elias, Institute of Employment Research, University of Warwick. Eurostat also appointed an Expert Group to oversee the work of the contractors and to make recommendations for an E-SEC (see Appendix 1).

1.8 Further details of the overall project are also provided in Appendix 1. The Expert Group met twice to discuss papers prepared by the contractors. Given the complexity of the issues involved, some details of the outline classification proposed in this report remain to be discussed, clarified and agreed upon. These yet-to-be-resolved details are flagged in the text or in footnotes and thus form the basis of some of the future work envisaged in Section 10.

2. Establishing Purposes and Uses: What is a SEC and Why is an E-SEC Required?

What is a 'socio-economic' classification?

2.1 In this section, we make the case for an E-SEC as a crucial harmonised variable in European social statistics and policy analysis. However, first we need to make a brief comment on what a 'socio-economic' classification is.

2.2 In this context, the term 'socio-economic' is merely a descriptive one. That is, it has no theoretical or analytic status whatever and so there can be no single definition of a 'socio-economic classification'. According to Jones and McMillan (forthcoming), 'socioeconomic' as a neologism was originally coined in 1883 by the American sociologist, Lester Ward, as a purely descriptive way of referring to one of the earliest concerns of sociology, namely the study of the intersection between the social and economic spheres of life. One of the first official attempts to classify the population in terms of both social and economic variables is found in the UK Registrar General's Social Class scheme of 1913. In this scheme, the 'classes' were groupings by occupation and industry (economic level) which had (or, rather, were supposed to have) equivalent social standing or 'culture' (social level). Indeed, 'culture' was more or less a reference to education, in the sense of knowing how to avoid risks, especially in relation to health (Stevenson 1928; *cf*. Szreter 1984). In the USA, the first similar attempt at classifying the population, in 1917, employed the term 'social-economic groups'. Here the groups were distinguished in terms of skill levels among 'manual' and 'non-manual' occupations (Edwards 1917).

2.3 In more recent times, as Ganzeboom and his colleagues (1992) have noted, social scientists have become divided between those who favour categorical approaches to socio-economic classification and those who prefer continuous measures. That is, some favour SECs that divide the population into a discrete number of categories or social positions. Others prefer measures that allow for 'an unlimited number of graded distinctions between occupational groups' which assume that 'differences between occupational groups can be captured in one dimension' represented by a single parameter (Ganzeboom *et al* 1992: 3-4). We shall briefly examine these two approaches, while noting that each uses occupational information for its derivation.

2.4 American research post-1945 led to attempts to construct quantitative socio-economic scales, scores or indices (see Jones and McMillan forthcoming). These continuous or hierarchical measures might be seen as more avowedly 'socio-economic' in the sense that they combine information on occupation, education and income, i.e. summarise social and economic variables relating to occupations. Their primary aim is to reveal the distributive aspects of social inequality (see Egidi and Schizzerotto 1996). For example, Duncan's (1961) 'Socioeconomic Index' or SEI brought together 'social' (in this case status or prestige) measures of occupations with educational and income measures in an attempt to predict status from information on education and income. In Duncan's view, the SEI made a link between occupation on the one hand and

education and income on the other. Thus, the overall status of each occupation was simultaneously estimated in terms of both its social status and its economic status. Thereby, the correlation of status with education and income became a matter of definition. This type of approach remains the commonest explicit description of a socio-economic measure. An internationally comparable SEI measure has been developed (see Ganzeboom *et al* 1992).

2.5 However, many social scientists would prefer to see occupation, education and income as separate dimensions relating to social stratification. In particular, they wish to explore the effects of occupational position alone. Thus, there is another tradition in socio-economic classification that is rather different from Duncan's unitary approach. This one sees individuals as occupying common positions in the social structure in terms of social power and thus concentrates on the *relational* aspects of inequality as well as the distributive ones. In other words, individuals possess certain resources and consequently face a range of possibilities and constraints in terms of their behaviour. Those who share similar resources, and thus similar structural positions, will share similar possibilities and constraints in terms of 'life-chances' (e.g. chances for educational attainment, health, material rewards and social mobility). Therefore, they may also be expected to act in similar ways. Hence, in this approach, the structural base of social power provides 'a link between the *organisation of society* and the position and behaviour of individuals' (Breen and Rottman 1995b: 455 emphasis added; see also Goldthorpe and Marshall 1992; Egidi and Schizzerotto 1996). While there are many bases of social power – age, race, gender, social status – it is generally agreed among sociologists that the most important in modern market-economy societies is that of social class, i.e. social power based on market or economic power (see for example Breen and Rottman 1995a; Scott 1996; Marshall 1997: Ch.1). Thus, we can also see categorical social class measures as being 'socio-economic' classifications.

2.6 In summary, then, social class is an important mechanism through which life-chances are distributed. The classes themselves are seen as 'sets of structural positions. *Social* relationships within *markets*, especially within *labour markets*, and within firms define these positions. Class positions exist independently of individual occupants of these positions. They are "empty places".' (Sorensen 1991: 72, emphasis added). Empirical research then addresses the issue of how structural position, as objectively defined in this manner, affects life-chances. This tradition is one influenced by the theories of both Marx and, especially, Max Weber. Again, a comparable international measure has been developed (see Erikson and Goldthorpe 1992 and Ganzeboom *et al* 1989). It is this approach to the meaning of the term 'socio-economic classification' that we advocate in what follows. This form of SEC, a typological classification, aims 'to arrange a set of entities into groups, so that each group is as different as possible from all other groups, but each group is as internally homogeneous as possible' (Bailey 1994). We expand on these points both in the rest of this section and in sections 3, 5 and 9. However, we can note that all existent SECs used by NSIs in the European Economic Area employ this typological approach (see Section 4; *cf*. Grais 1999 Appendix 2).

Why is an E-SEC needed?

2.7 Taking this approach to SECs, therefore, a harmonised E-SEC would need to summarise the social relationships that arise from the operation of the labour market and their consequences (see section 5). It would be used to provide tabulations for both comparative and national purposes relating to other key variables such as income, health status and education. That is, the E-SEC should be a vehicle by which we may monitor social structure and social change, one of the most crucial purposes of social statistics. In particular, given that politicians generally are concerned with the impact of social and economic policy on different social groups (see Egidi and Schizzerotto 1996: 249-250; see also Marshall *et al* 1997), an E-SEC should prove a useful diagnostic tool in this regard. It will also allow academic researchers to explore how far we are from the goal of greater equality and why. How are social inequalities generated? How far is social structure (in terms of the ways in which employment is socially organised) implicated? How might inequalities be reduced? To begin to tackle these questions, we need a classification that is authoritative through having an appropriate conceptual basis for reflecting labour market positions, and hence this crucial aspect of social organisation. The principal conceptual issues will be discussed in section 3 and particularly in section 5. Here we are solely concerned with elaborating on the purpose and uses of an E-SEC.

2.8 We would agree with Grais (1999:2-4) that SECs should both discriminate and structure. Thus, at its most basic or aggregated level an E-SEC should distinguish categories (that is, socio-economic or social structural positions) according to their typical production (work) and market situations.[1] This allows us to summarise the complexity of employment related processes in a manner that yields insights into them. It also permits us to examine their interrelationships with and relevance for other social and economic processes, such as education, income and health.

2.9 Thus, an E-SEC should help us to *understand* how socio-economic position relates to relevant key social indicators, variables and social domains (see sections 3 and 5; and see Breen and Rottman 1995a and b; Goldthorpe and Marshall 1992). These comprise not only the sixteen indicators identified for the harmonisation programme (see Ostby *et al* 2000 and Everaers 1998), but also those analytic benefits of an E-SEC identified by NSIs and experts (see paras 2.17, 3.3 and 5.4). These include the improvement of social statistics for the purposes of international comparison and dialogue.

2.10 Among the areas where the E-SEC should prove to be a useful discriminatory analytic tool for both policy and academic purposes are: fertility, mortality, morbidity, consumption, social behaviour, education, equal opportunities in age, gender and ethnicity, labour market processes, income, social exclusion, social stratification, social reproduction, mobility and various cultural practices. In all of these areas, a common measure such as an E-SEC will allow us to see if the effect on life-chances of social organisation, in the sense of structural position in the labour market, is significant and whether it is changing in importance over time (see para 5.7). An E-SEC should thus

provide a common language for international comparisons in relation to these issues.

2.11 We can point to a range of relevant analyses using SECs in fields such as education (e.g. Erikson and Jonsson (eds.) 1996) and health (e.g. Kunst and Mackenbach 1994; Kunst 1996; Vagero and Lundberg 1995). We can also point to some more general work on SECs (e.g. Shavit and Blossfeld (eds.) 1993; Erikson and Goldthorpe 1992; Egidi and Schizzerotto 1996; Rose and O'Reilly 1997). Here we shall discuss only comparative studies of health.

The example of health inequality

2.12 From the viewpoint of the need for a European SEC, the area of health inequality is perhaps the best exemplar. In general terms, an E-SEC would have the advantage of allowing us to see whether or not and how national differences in rates of health inequality are related to socio-economic structures. If there are differences, and if the E-SEC has a clear conceptual basis, we can explore further why these differences exist.

2.13 Why should socio-economic inequalities in health be measured? First, there is evidence from right across Europe that those people who are most disadvantaged socio-economically also suffer more than the advantaged in terms of both morbidity and premature mortality. This is a major challenge, not just for health policy but for broader social and employment policies. It is not simply a matter of unfairness, but also of efficiency. Reducing health inequalities would not only improve the average levels of population health: it would also reduce the burdens on health and social services budgets. However, we can only assess social inequalities in health, suggest possible remedies, and then see whether the remedies are effective or not and why, if we can quantify them. Equally, we can only say whether *inequalities* might also be regarded as *inequities* if we can develop knowledge of the causes of inequality. To achieve this at the European level requires that we have a genuinely cross-national measure of socio-economic position (see Kunst and Mackenbach 1996).

2.14 For an example of cross national health inequality research, we can refer to some of the recent work of Mackenbach, Kunst and their colleagues in the *EU Working Group on Socioeconomic Inequalities in Health* (Kunst *et al* 1998a and b). They developed a version of the Erikson-Goldthorpe-Portocarero social class schema (see Erikson and Goldthorpe 1992) in order to analyse premature mortality in eleven European countries. They claim that their studies show that socio-economic differences in mortality are both persistent but variable across European countries. This implies, they say, that health inequalities may be susceptible to change through policy intervention.

2.15 *Inter alia*, Kunst *et al* have demonstrated, first, large differences between nations in the contribution of the risk factors of specific diseases (such as the consumption of alcohol and tobacco) to socio-economic inequalities in mortality. Second, they have shown that the advantages of people in 'higher' social classes are independent of the precise diseases and risk factors involved.

Third, they have demonstrated larger than normal mortality rate ratios of 'manual' to 'non-manual' classes for men aged 45-59 in France, and larger differences in the Nordic countries for men aged 30-44. Fourth, they have found no evidence that mortality differences are smaller for countries such as Sweden that they regard as having more egalitarian social policies. Finally, they argue that 'occupational class membership' persists as a major determinant of both life styles and living conditions of European populations. However, they also note the problems that arise for their analyses because of the lack of an authoritative European SEC.

2.16 These examples serve to demonstrate some of the added value that a well-founded SEC may provide. Although operationalised through observables such as occupation and status in employment, a SEC measures a more comprehensive, and ultimately theoretically founded construct that is not directly observable, yet which is able to explain more than observable measures such as occupation (or indeed income) alone.

Other points to note

Expert views

2.17 Grais (1999) describes the purposes to which national SECs are already put. These purposes include all the areas discussed so far. Grais' work (which we discuss in section 4) is based on responses from NSIs to a Eurostat questionnaire on national SECs. However, Eurostat also issued a questionnaire to experts. We have analysed the twenty-six responses received. Some common points are made in most of these regarding the purposes and structure of an E-SEC. Comments on structure are discussed in sections 3 and 4. In terms of purpose, there was complete agreement on the need for an E-SEC to improve both international comparability and consistency of data. Experts also agreed on the improvements that could be made to European social dialogue through an E-SEC.

Construction of an E-SEC

2.18 Obviously, how we construct an E-SEC in terms of both levels and flexibility will depend in part on the typical data available for its derivation. For example, the UK National Statistics Socio-economic Classification (NS-SEC) has variants that allow its construction even when some of the operational elements in its algorithm are missing from a data set. This flexibility is necessary because not all the data sets to which it must be applied have all the data for the full algorithm. Obviously, flexibility may come at a cost in terms of validity or of the distinctions that E-SEC can make. These costs would need to be investigated for each member state. We shall discuss this issue in more detail in sections 3 and 7.

2.19 Thus, in considering the purposes and uses of an E-SEC, we must also take note of the data sets to which it is intended to apply. At the EU level, we have the Labour Force Surveys, the European Community Household Panel and the Household Budget Surveys. We assume also that the E-SEC will be applied to

other surveys, as well as to censuses for which NSIs are responsible. There may also be relevant administrative data sets such as some population registers. As has happened in some states with ISCO-88 (COM), an E-SEC may be adopted as a national standard in those six Member States that have no similar classification.

Summary

2.20 In summary, we can say that an E-SEC should serve as a general background variable in social statistics. It will therefore have a wide field of applications in both policy and academic research. It will be applicable to a range of national and international data sets, given its principal purpose as a means for international comparison and explanation. As one respondent to the experts' questionnaire put it:

> 'Most rigorous analyses of trends in employment and unemployment require the introduction of an occupational class variable, both for its intrinsic importance and as a control for the analysis of other factors. In the growing area of comparative European research, the lack of a comparative SEC severely hampers the progress which can be made in research' (UK academic specialising in employment policies).

Similar points have been made for other important policy areas like education and health, as we have seen. In the next section we briefly examine some of the desirable characteristics of a SEC. These characteristics will then be more fully explained in subsequent sections.

3. Desirable Characteristics of an E-SEC

Introduction

3.1 What does the above discussion concerning the purposes of E-SEC suggest about its desirable characteristics? The following basic issues need to be considered, each of which is discussed in more detail in this and subsequent sections (and see also Goldthorpe 1988):

1. *Theoretical and conceptual derivation*: how explicitly and coherently should the measure be related to either theoretical or conceptual ideas or is an 'intuitive' approach just as satisfactory?

2. *Capacity to display variation and analytic transparency*: how well does the classification or scale identify and display variation in those dependent variables that are of most interest and importance? Apart from this, how well does the classification help the analyst to see further just how associations are being brought about?

3. *Measurement:* here there are two basic issues. First, what should the classification measure? Second, should the E-SEC be multi-dimensional in the sense of some type of socio-economic index combining occupational information on income, education level, etc? Or, alternatively, should it be a more narrowly based categorical classification? We have already indicated our preference for the latter in section 2, but in this section and in section 4 we shall give our reasons for that choice.

4. *Information required*: how easily available across Member States is the relevant information required in order to construct the classification?

5. *Technical derivation*: how explicit and replicable is the method through which the classification is produced and its values determined?

6. *Population coverage and unit of composition or analysis*: to what population is the classification to be applied? (e.g. the employed? the economically active? active plus inactive? the whole population?) And, in terms of unit of analysis, should E-SEC be applicable to households as well as individuals?

7. *Robustness*: how robust is the classification for the different types of data to which it needs to be applied?

8. *Costs*: how much time and money would it take to build and apply the classification and then to maintain it over time?

3.2 For reasons set out below, we believe that any useful classification should be:

1. conceptually clear;
2. categorical rather than continuous or a multi-dimensional index;
3. occupationally or employment based;

4. demonstrably valid and reliable for the range of purposes required by users, especially those in Eurostat and NSIs, but also for academic and policy users;
5. easily operationalised on major EU surveys such as the ECHP and the LFS, as well as on certain administrative data sets;
6. while occupationally based, nevertheless applicable (through carefully defined rules) to the whole population and to both households and individuals;
7. therefore having different levels of aggregation through the use of long (disaggregated) and short (aggregated) forms; and robust through flexibility (see para 2.18);
8. clear in terms of operational rules for application;
9. clear in terms of maintenance rules so that the classification is amenable to revision from time to time.

As we shall see in section 4, existing national SECs share many of these characteristics (Grais 1999).

Conceptual clarity and analytic transparency

3.3 We believe that all users should know what it is that a European socio-economic classification is supposed to be measuring. In other words, it must be *conceptually clear*. Only then can users (a) apply it for comparative research; (b) use it correctly; (c) investigate whether the classification is valid and reliable for their analytical needs; and (d) more easily maintain the classification over time. It must also offer the possibility of allowing analysts to go beyond the mere display of variation by suggesting why variation occurs: it must have *analytic transparency*. These points will be further developed in the first part of section 5.

Measurement

3.4 Linked to the conceptual and analytic issues are those of measurement. As we have stated, our preference is for a narrowly defined categorical E-SEC measuring labour market position, rather than one which attempts to construct an index by combining a wider range of factors into one measure, say, occupation, education level and income, etc. Our reasoning here is straightforward.

3.5 A SEC should not include within it any element of what we might wish to use it to explain. Neither should it be constructed to highlight any correlation with, for example, race or educational attainment. We can illustrate our point by reference to an example which is extremely important in policy terms, that of the relationship between education (and more broadly human capital) and social position. SECs can be used to examine this relationship. However, if the SEC itself is partly measuring education, it cannot be used to explain how education relates to social position, too. As one person consulted by Eurostat put it: ‘Qualifications should not enter the SEC because it is an empirical question as to what extent certain qualifications lead to specific SEC positions’ (and in addition, we would add, to their inheritance).

What should E-SEC measure?

3.6 We have already seen that, whether categorical or continuous in form, all SECs measure aspects of occupations. There are sound theoretical reasons for this. Here we resume the argument set out at the beginning of section 2. Theory tells us that labour market position is the most vital stratifying factor in modern market-economy societies. There are compelling reasons, supported by a mass of empirical research internationally, for believing that an individual's (and ultimately a family's) position within labour markets and production units is a key determinant of life-chances, access to other types of social good and subjective quality of life. These positions are determined by both work situation (broadly position within authority structures at work) and market situation (source of income, economic security and prospects for economic advancement), and may be proxied by an employment or 'occupationally based' social classification. We elaborate on these points in section 5.

Information Required: The Operational Dimensions of an E-SEC

3.7 There are also sound pragmatic reasons for having an employment based SEC. The occupational data that commonly serve as the operational building blocks for SECs are widely and routinely collected - in registers, censuses and micro-censuses, and in the principal EU and national surveys (and in many academic surveys). It is unlikely that any other widely collected variables could provide a better basis for a social classification. Moreover, for all its problems, occupation is a much more stable indicator than potential alternatives; and an EU value set of the 'occupation' variable exists (ISCO-88 (COM) which is discussed in section 8 and explained in appendix 2). Indeed, one reason why SECs have proved to have so much discrimination is precisely that, after an initial 'search' period, most individuals do not greatly change their labour market position over their lifecourse. (Nevertheless, those that do, because for example they depend on 'casual' employment, may warrant some special consideration in an E-SEC.[2])

3.8 We leave detailed discussion of the precise information required about occupational positions in order to construct an E-SEC to section 4, where we discuss current national practices, and sections 5, 6, 7 and 9 where we discuss respectively conceptual, classificatory, operational and validation issues. However, when it comes to the operational dimensions to be included within a harmonised SEC, we should be aware once more of the issue of *accessibility*. That is, whatever the underlying conception, the SEC should be derivable from proxy variables and value sets that are commonly included in existing data sources, using other harmonised value sets as far as possible (see section 7).

Population coverage

3.8 While classification 'experts' are the most likely to be concerned with the conceptual and measurement issues discussed so far, both they and users of SECs also have important practical concerns. Of most concern in our experience is the issue of population coverage. In what follows, we first

discuss the general issue before examining the related one of how to classify non-institutional households, especially family households.

3.9 Strictly interpreted, employment- or occupation-based SECs will only cover that part (generally about half) of the population in formal employment. Nevertheless, there are methods for avoiding this problem in data collection and these must be applied to E-SEC.

3.10 Based on own occupation, employment based SECs most frequently exclude children, students, those who look after a home, unpaid family workers, the retired, the sick and disabled, the unemployed, and the never employed. They often understate the social position of those in temporary, post-retirement or part-time work. Many of these groups are vital to policy and research interests and so they should not fall through the classificatory net. In our experience, policy-makers often make this criticism of employment based SECs, (sometimes with the additional comment that the new, 'flexible' labour market is exacerbating these problems). In the UK, for example, child mortality is greatest among groups such as the unemployed and lone parents. Similarly, the mortality rates of the unemployed and disabled are higher than those for the lowest class of employees. Including these groups in a SEC significantly affects the overall results, as demonstrated in recent analyses of the UK National Statistics Socio-economic Classification (NS-SEC) using a separate class for the never worked and long-term unemployed (Bartley *et al* 1998).

3.11 The perceived problem of inadequate SEC population coverage has led both policy-makers and some academics and policy advisers to search for alternative measures. They argue that, for the most deprived groups, employment-based SECs are less important discriminators than income, consumption variables, housing conditions and household composition, i.e. deprivation indicators that can be measured for the whole population (see, for example, Goldblatt 1990). However, even though employment-based, rules can be provided to alleviate these apparent difficulties of SECs. We shall therefore return to this problem in section 6 when we discuss how we may classify those not currently in formal employment and other active groups such as unpaid family workers.

Unit of class composition or analysis: individual or household?

3.12 Whether individuals or families should be seen as the basic unit of analysis or 'class composition' has been much debated in sociology. Policy-makers and many academics would argue (and we think correctly) that only classifying individuals and ignoring their family circumstances yields a misleading picture. This is especially so given both the increasing polarisation between 'work-rich' and 'work-poor' family households and the different patterns of labour market participation between married men and married women. As Bakker and Jol (1997:48) have observed, there is therefore more to consider than the allocation of individuals to SEC positions. The characteristics of other adult household members may also be important in determining an individual's position and life-chances.

3.13 As we shall see in section 7, all methods for defining a household class measure have their problems. However, we note that, for those in family households, an individual's own labour market position is only of constant importance in respect of work-related issues. Thus, for example, the mortality rates of married women in Sweden (and we suspect elsewhere) are more related to their husband's labour market position than their own (see Vagero and Lundberg 1995). Vagero (2000) has concluded that mortality studies should use household class measures. Similar findings using British data on self-assessed health have also been reported (Arber 1997b). Hence, for non-work aspects of life chances and behaviour, family position needs to be measured whenever possible.

3.14 Current plans for statistical harmonisation allow only for a household structure variable, however, and not for a household measure of the type required for E-SEC and other purposes. Thus, a case needs to be made for the latter to be added to the list of harmonised measures. This is done in section 7.

Flexibility and robustness

3.15 We have to assume that the E-SEC will be used on data sets of variable quality and coverage. It must also be capable of addressing cross-national variability of socio-economic structures, such as occupational and industrial structures. It is therefore vital that the E-SEC is sufficiently flexible and robust in the face of such variability.

3.16 One aspect of flexibility that we believe to be important is reflected in many national SECs – 'nested hierarchy'. That is, many SECs have one or more long forms that can be successively collapsed or aggregated according to rules into an analytic variable with a relatively small (seven, eight or nine) number of categories. Equally desirable is to have a SEC whose underlying conceptual basis can still be applied with reasonable reliability even if some of its constituent observable (operational) elements are not present in a data set. Ultimately, if it were possible to derive E-SEC with reasonable reliability even when all one had was occupational data coded to ISCO-88 (COM) or some other standard occupational classification, this would be an advantage.[3]

Other issues

3.17 In addition to the issues raised above, we should specifically address some of the problems of creating a classification that is equally useful across EU member and candidate states. Thus, we should take account of issues such as the variable size of the agricultural sector, variations in the use of unpaid family labour, and in the treatment of public and private sector employees, etc. These problems are addressed in sections 6 and 7, but solutions sometimes remain to be agreed upon.

The views of experts surveyed by Eurostat

3.18 Finally, we note the comments provided from the inventories of experts consulted by Eurostat on the desirable characteristics of an E-SEC. In summary experts are agreed on the following.

3.19 First, they agree that the whole population should be included in the individual E-SEC at its least aggregated level(s), but not all agree that this is necessary or possible at the most aggregated level. The majority also argued that data should be collected in a form that allows, say, the unemployed and retired to be classified both in relation to their current activity status and by reference to their last main job.

3.20 Secondly, there was agreement that the E-SEC should cover both households and individuals. However, there was a distinct lack of unanimity on the issue of how to classify households, although use of a household reference person defined as the highest income earner was the most favoured option.

3.21 Thirdly, in terms of dimensions, it was generally agreed that activity status, occupation and status in employment are all necessary elements in the construction of a SEC. It was also agreed that measures of supervisory and management positions, as well as of enterprise size were needed for employees; and that the latter is also required for employers and the self-employed, along with type of enterprise (agriculture or not).

3.22 There was less agreement on the need to distinguish categories for public and private sector employees, indeed most were against this or had no opinion. The same applies to whether number of subordinates is required for supervisory status.

3.23 Finally, most were against using highest qualification as a component of an E-SEC (and see the earlier comments in para 3.5).

3.24 Experts were asked if they had any general comments that they wished to make. Most chose not to answer this question, but the following comments were made.

On the conceptual issues:

‘Should have a sound and clearly described conceptual basis’ (Official of international organisation)

‘A clear descriptive conceptual and operational definition of categories and the dividing lines between them’ (Official of international organisation)

‘Should develop a conceptual approach that is as open as possible from the scientific viewpoint. The most complete and most detailed concept is called for which gives most flexibility to potential users’ (German academic)

'I would like to see the EGP (Erikson-Goldthorpe-Portocarero) schema as the harmonised classification. Highest qualification should be a different dimension' (Dutch statistical official)

'We know that the EGP schema can be applied and extended for comparative research' (Dutch statistical official)

'An EU SEC would be very useful if a classification is chosen that is already commonly used in scientific research' (Dutch academic)

'This classification should as precisely as possible correspond to the classifications used in the main national or branch collective agreements, in order to be easily understood by companies while answering statistical surveys' (French civil servant)

Operational issues:

'A harmonised SEC must be defined in terms of currently available data – no additional burdens on respondents' (Irish statistical official)

'E-SEC (should be) mainly a mixture of occupation, economic activity and occupational (*sic*) status. More reference to these should be made because they are harmonised EU classifications' (Spanish statistical official)

Concluding comment

3.25 These views were all taken into account in the expert group's deliberations and attracted a wide measure of agreement, as we shall see. We have also taken account of an earlier report for Eurostat. This described and analysed data from an inventory of NSIs concerning their SECs. We now turn to this report and the conclusions we draw from it.

4. Existent SECs in EU Member States - what can be learned from them?

Introduction

4.1 We can now relate our comments on the desirable characteristics of an E-SEC to the current practices of NSIs in Member States that have their own SECs. The Grais Report (1999) provides an analysis of these. Here we reflect on that report. In particular, we examine what we might be able to learn from current national practices and thus apply to the E-SEC. We shall do this in terms of (a) concepts and measures; (b) operationalisation; (c) accessibility and cost; and (d) potential models for an E-SEC.

Concepts and Measures

4.2 Six Member States do not have a SEC. For those that do, Grais notes two contrasting approaches to the derivation of SECs, what he calls the 'theoretical' and the 'intuitive/empirical'. The latter are more common. Only the UK (for the new NS-SEC), the Netherlands and Sweden (but also Norway) have adopted a 'theoretical' approach, although we should note that the French PCS could be said to be 'theoretical', although of a more inductive type. Nevertheless, the real difference between the French approach and those of the UK, Netherlands and Sweden (all of which are based on or closely related to the Erikson-Goldthorpe-Portocarero (EGP) schema) is perhaps best summed up as a difference between *emic* and *etic* approaches to social science.[4]

4.3 We would agree with Brauns (1999), however, when she argues that the basic principles of PCS and EGP are relatively similar. It was for this reason that she and her colleagues were able to construct EGP based on French data. Therefore, we should not be concerned to over-emphasise differences between national approaches. What should be obvious from the appendices of the Grais report are the implied similarities of the classifications themselves in terms of categories and meanings. Very similar variables enter into the various SECs – occupation, activity status, status in employment, enterprise size, agricultural and non-agricultural sectors – and the categories of the theoretically based SECs are generally interpreted to have meaning as 'social' units. All the SECs, except for the Spanish, are what Grais refers to as 'multi-dimensional'; and also they are 'partially ordered' classifications. Nearly all have the flexibility previously referred to, with more and less aggregated versions.

4.4 Thus, if we examine Grais' analysis, it is clear that:

- all SECs distinguish both occupation and activity status (or what Grais refers to as 'job' or 'occupational' status), i.e. (a) persons in employment; (b) the unemployed; and (c) the inactive;

- for those in employment, SECs distinguish status in employment: (a) employers; (b) the self-employed; and (c) employees or 'wage earners' (and some SECs also distinguish family workers);

- employers are further distinguished in relation to size of enterprise, farm/non-farm enterprise and occupation;

- employees or wage earners are further distinguished by labour market position (managers, supervisors, and employees) and managers are further distinguished by size of enterprise or management level;

- the inactive are generally classified according to last main job, although in France, Denmark and Austria specific categories of inactive persons such as the retired are included in the most aggregated version of the SEC. Sometimes the inactive are classified according to the position of a household reference person;

- all states except France and Ireland have a household version of their SEC;

- all states except Spain and Austria include the whole adult population, although not always at the most aggregated level.

4.5 Thus, there are many common basic features to national SECs. To be sure, details differ on issues such as size cut-off for enterprises, definition of household reference persons and the precise treatment of the inactive. However, the principles, whether implicit or explicit, appear to be similar. Naturally, there needs to be a common language to describe the concepts embodied in these similar principles, and we make an initial attempt to do this in section 5.[5] Nevertheless, in this respect it is clear, for example, that both PCS and SECs related to EGP are similar in the following important ways:

(1) in making distinctions between employers, the self-employed and employees (although we believe that both the conceptual basis and operational procedures for drawing these distinctions, as for example with ICSE-93, might be improved: see section 8 and *cf*. Elias 2000);

(2) in distinguishing among employees based on types of employment contracts. In France, both wage scales and service grades enter into distinctions made between employees; with EGP the similar conception of 'form of employment regulation' (service relationship, labour (or spot) contract and intermediate between the two – see section 5 and Erikson and Goldthorpe 1992) is the key distinction;

(3) each has ways of treating the inactive by reference to former occupations;

(4) at the more abstract level, the PCS is officially described as bringing together 'occupational positions' (*situations professionelles*) that are similar in terms of activity, work content, employment relationship, source of income and working conditions and which suggest a common social identity and life style. This is surely not far removed from EGP that is similarly based on source of income (profit, salary or wage) and other typical aspects of market and work situations as expressed through the employment relationship.

Operational issues

4.6 We have already seen that occupation, activity status and number of employees are the three most common elements in national SECs (see Grais, 1999: table 10, p.13). We also believe that *labour market position* should be part of what a SEC measures, as in the cases of France, Austria and the UK (and Germany). In addition, in the context of an E-SEC, some measure of farm size is necessary, too. However, how, precisely, are these common elements to be measured?

4.7 *Occupation.* For the most part occupation is measured either by ISCO-88 (COM) or by a national occupational classification similar to it. France is exceptional in this regard. Nevertheless, we have to recognise that ISCO-88 (COM) is a core variable for the harmonisation programme and so is the obvious measure of occupation to use for E-SEC. Nevertheless, whether it is more appropriate for states to code to ISCO, or to improve the matching of their existing occupational classifications to it needs to be further considered. 'Cross-walks' to ISCO-88 (COM) could, and probably should be established for those states with their own occupational classifications (see section 8).

4.8 *Status in employment (SIE).* All SECs distinguish between employers, the self-employed (own account workers) and employees. In the EU context, we may need to add the category of family worker. Since the EU harmonised variable is ICSE-93, family workers will be distinguished. However, we should note that there are some ambiguities in the SIE categories that call for further investigation (see para 8.11 below).

4.9 *Number of employees.* The size cut-off for enterprise size in the non-agricultural sector varies across the national SECs: 1-9, 10+; 1-24, 25+; 1-49, 50+ or combinations of these. However, since ISCO-88 (COM) is the harmonised occupational classification, then the simple rule for E-SEC will need to be that employed by ISCO for managers and employers – 1-9 and 10+. Farm size also shows measurement variations in practice. Most countries do not use this variable. Of those that do, area in hectares is the common measure to distinguish small, medium and large farms, but Member States differ in terms of what is meant by 'small', 'medium' and 'large'. Thus, we shall need to determine the underlying concept for which 'small', 'medium' and 'large' are supposed to be a reasonable value set, so allowing NSIs to draw the dividing lines accordingly. One possible distinction between farmers and smallholders might be based on whether the business provides full economic support to the family or not (see section 6 for a fuller discussion).

4.10 *Labour market position.* While measurement of this is variable across Member States, we believe it is necessary to distinguish more than activity status. As in France and the UK, we should discriminate between employers (and by size), the self-employed, managers (and by size of enterprise or preferably level), supervisors and employees. Managerial status will be dependent on allocation to Major Group 1 of ISCO-88 (COM) (see section 6). Thus, labour market position involves a combination of ICSE-93, enterprise size and supervisory status.

Accessibility and cost

4.11 All the above suggest that there are readily accessible measures for constructing an E-SEC at little or no extra cost in terms of data collection and processing. Indeed, as previously noted, an E-SEC could be constructed so that it could be well approximated even in the absence of some normally necessary information, e.g. enterprise size (see paras 7.23-7.24 below), although the costs as well as benefits of this strategy would have to be assessed.

Potential models for an E-SEC.

4.12 We have already made it plain that we favour a conceptually based SEC rather than an 'empirical/intuitive' one. For reasons already stated, we believe that some combination of the PCS and EGP-type SECs is possible. These appear to share common principles and are similar in practice. Each distinguishes employers from the self-employed and employees. For employees each has a category of higher managers and professionals; one of lower professionals, technicians and supervisors; and a third of clerical, sales and service workers. Each also has categories for manual ('skilled' and 'unskilled') workers; and the inactive may be included, too. We know from previous research that clerical, sales and service workers are the groups whose position within an E-SEC is likely to be nationally variable (see Erikson and Goldthorpe 1992: 51). We also know that the treatment of the public/private sector divide is one about which there is disagreement across Member States. Some believe it is an important dimension to include in a SEC because of the distinctive employment relations of public sector employees, others do not share this view and/or argue that this dimension may be controlled for in analysis.

Summary

4.13 To summarise the argument so far:

1. E-SEC should have a clear conceptual base. Moreover, it should distinguish categories in terms of employment relations and conditions.

2. In measurement terms, E-SEC should be categorical (nominal).

3. Operationally, E-SEC should be constructed from the harmonised variables for occupation, status in employment, activity status and establishment size.

4. While employment-based, a variant of E-SEC should apply to the whole population. This can be achieved via nested hierarchy.

5. E-SEC should therefore be flexible through use of long and short versions and robust in relation to the variety of data sets on which it will be used;

6. E-SEC should be applicable to both individuals and households.

7. E-SEC should be demonstrably valid and reliable as a comparative measure and for user purposes.

4.14 The next five sections of the report flesh out these conclusions. First, we deal with the conceptual base of E-SEC (section 5). Then we apply this to an outline E-SEC that we believe could be constructed from other harmonised variables (section 6). Operational issues are addressed in sections 7 and 8 and validation in section 9.

5. The Conceptual Basis of E-SEC

Introduction

5.1 In section 2, we described a typological approach to socio-economic classification based on socio-economic groups or classes. We also noted in section 3 the importance of a conceptual approach, especially for comparative measures such as E-SEC. This section develops these arguments by addressing, first, some general conceptual and measurement issues. Second, we explain and discuss the conceptual base we propose for a categorical E-SEC measure. Finally, we reflect on matters arising from our overall conceptual approach.

The importance of conceptual approaches

5.2 If we wish to use an E-SEC to examine life chances across different national populations, how can we say what the cross-national patterns of life chances revealed by its application *mean*, if we are not clear what it is measuring? This concern for conceptual clarity is no academic quibble. The lack of a clear conceptual rationale has important consequences in limiting the scope for influencing policy, as we shall see presently.

5.3 Furthermore, a clear conceptual basis is, in any case, a *sine qua non* for a comparative classification such as E-SEC. Intuitive derivations for national SECs are possible only because, to an astute observer, national social structures are 'visible'. This is not so when we wish to create SECs that are applicable cross-nationally and are thus comparative in purpose. Only an explicit conceptual approach will suffice. We shall return to this issue in relation to measurement and again when we discuss both what we believe the conceptual basis of an E-SEC should be and how concepts underlying measures such as E-SEC should be viewed.

5.4 It has often been remarked that almost any sensibly derived intuitive SEC will have the capacity to *display variation*. However, it will not have *analytic transparency*. That is, without an E-SEC with a clear conceptual rationale, we shall not be able to understand the causal pathways which lead to the regular patterns revealed by its use in research (that is, the processes that generate empirical regularities: see Breen and Rottman 1995a). In addition, if we cannot get a handle on causal pathways, then it is not apparent how recommendations can be provided on relevant policy actions that might address these persistent variations. Examples include the difficulties encountered in setting targets for reducing health variations between states that can be linked to achievable policies and, more generally, in developing policies to target deprived groups. Needless to say, any SEC must also be used and interpreted correctly by analysts, if the benefits of analytic transparency are to be realised, as we explain in section 9.

5.5 Obviously, a clear conceptual rationale does not thereby remove all barriers to explanation. Not everything can be explained in terms of what a particular SEC is measuring. As we saw in section 2, there are many bases to social

stratification, not all of which will be measured by the E-SEC. Nevertheless, we would argue that a conceptually clear, properly constructed and well-validated SEC removes some barriers to the explanation of both empirical regularity and cross-national variability in respect of issues such as the distribution of life chances and welfare. It also facilitates a focus on other variables when searching for explanations of remaining differences.

5.6 Finally, the lack of a conceptual rationale renders the task of *validating* a classification impossible and of *maintaining* a classification over time much harder. As appendix 4 indicates, validation involves both demonstrating that a measure does indeed measure what it purports to measure (criterion validity) and that it usefully discriminates in theoretically predicted ways (construct validity). In addition, once (criterion) validated, a measure may be re-validated to assist with maintenance over time.

Why should E-SEC measure employment relationships?

5.7 Why should E-SEC be an employment-based measure? Here we return to issues first raised in sections 2 and 3.As Egidi and Schizzerotto have remarked:

> '(I)f we agree that, in market-economy societies, the overall life-chances of individuals and those who depend on them...are tied primarily to the position that they occupy in the social division of labour, and to the material and symbolic advantages that this position delivers to the market, then we may also agree that occupation is an acceptable indicator of the overall social position of individuals, families and groups' (1999: 250).

And, indeed, there are a variety of dependent variables, in a large number of fields, for which employment based classifications are good predictors. These range beyond the obviously societal to include, for example, morbidity and mortality. Despite the many claims to the contrary, there is no serious evidence that the importance of labour market position for life chances has diminished and many reasons for thinking it has increased. We thus require an empirical measure of labour market (i.e. of socio-economic or structural) position in order to test whether this continues to be the case and how far this is variable across states. If, as some allege, individual, consumption and cultural factors of various kinds have weakened the influence of social structure on life chances, we can only test this hypothesis if we have an employment-based social structural measure. As we argued in section 4, we believe we may achieve this by basing E-SEC on the concept of 'employment relations'. What does this mean precisely?

The employment relations approach

5.8 Conceptually, the E-SEC should aim to differentiate positions within labour markets and production units in terms of their typical employment relations (see Erikson and Goldthorpe 1992: 37-45). As we noted in section 4, this approach is also conceptually similar to that of the French PCS.

Fundamentally, therefore, E-SEC categories should be *positions defined by employment relations*, that is by social relationships as expressed through labour market relationships and employment contracts. Each E-SEC category should be as internally homogeneous as possible in these respects and as different as possible from all other categories. This conception, as we shall see in para 5.18 and in more detail in sections 6, 7 and 9, can be implemented in research through information on the typical employment relations of different combinations of employment statuses and occupations, using variables such as ICSE-93 and ISCO-88 (COM).

Basic E-SEC positions

5.9 The primary distinction made in an employment relations approach is that between: (1) *employers*, who buy the labour of others and assume some degree of authority and control over them; (2) *self employed (or 'own account') workers* who neither buy labour nor sell their own to an employer; and (3) *employees*, who sell their labour to employers and thus place themselves under the authority of their employer.[6] Thus any SEC based on employment relations, i.e. that defines positions in terms of social relationships at work, must include these three basic class positions. Why these basic positions exist should be obvious for any society based on the institutions of private property and a labour market. Additionally, we have allowed for the possibility of a fourth basic class position – the 'excluded', i.e. those who are excluded from employment relations because they have never worked (involuntarily) or are long-term unemployed. This is discussed in section 6. So, these are the basic SEC positions. We now need to see how they may be further differentiated for the purposes of developing a useful analytic classification. We begin with employee positions.

Employees

5.10 Employees account for anything up to 90% of the active population. Clearly, they do not all hold similar class positions. That is, employers do not treat all employees alike in respect of the explicit and implicit terms of employment contracts. There is differentiation in employers' relations with employees. Thus, crucial to our conception of an E-SEC is a further level of distinction relating to the employment relations of employees. How, therefore, do we make conceptual distinctions to reflect this and hence to produce class differentiation among employee positions?

5.11 To state that there are quite diverse employment relations and conditions among employees is another way of saying that they occupy different *labour market situations* and *work situations* as expressed through employment contracts. Labour market situation equates to issues such as source of income, economic security and prospects of economic advancement. Work situation refers primarily to location in systems of authority and control at work, although degree of autonomy at work is a secondary aspect. Hence, in this conceptual construction, variation in employment contracts provides the main basis for establishing its construct validity. That is, 'membership of the classes it distinguishes, as well as having differing sources and levels of income, also

have differing degrees of stability of both income and employment and differing expectations as to their economic futures that together condition both their life chances and many aspects of their attitudes and patterns of action' (Goldthorpe 2000a: 1578-9). The E-SEC categories must thus distinguish broadly different *positions* (*not* persons) as defined by social relationships in the work place – i.e. by how employees are regulated by employers through employment contracts (see Goldthorpe 2000b). Three forms of employment regulation are distinguished.

(1) The 'service relationship' in which the employee renders 'service' to the employer in return for 'compensation' in terms of both immediate rewards (e.g. salary) and long-term or prospective benefits (e.g. assurances of security and career opportunities). This relationship 'is likely to be found where it is required of employees that they exercise *delegated authority* or *specialized knowledge and expertise* in the interests of their employing organization' (Erikson and Goldthorpe 1992: 42 – emphasis in the original). Hence, within this relationship, employers must allow a certain amount of autonomy and discretion to the employee. Hence, also, employees must be encouraged to make a moral commitment to the employing organisation. The service relationship is designed to create and sustain this type of commitment. The service relationship typifies higher professional, senior administrative and senior management positions. This is where 'the largest responsibilities in decision-making attach and which will in turn offer the fullest range of beneficial conditions associated with the service relationship' (*ibid*: 43). However, the service relationship is also found in a more restricted or attenuated form in the lower levels of professional and managerial occupations, as well as in higher technical occupations.[7]

(2) In contrast with the service relationship, the 'labour contract' entails a relatively short-term exchange of money for effort. Employees are closely supervised and give discrete amounts of labour in return for a wage (or nowadays even a 'salary' in the limited sense of a direct payment to a bank account). Payment is calculated on or related to the amount of work done or required or by the actual amount of time worked. The labour contract is typical of 'working class' occupations, but again is found in attenuated forms, for example for supervisors and 'skilled' workers. That is, these occupations have slightly more favourable employment terms than others in the 'working class' where external controls (see para 5.13) can be fully effective.

(3) Intermediate or mixed forms of employment regulation that combine aspects from both forms (1) and (2). These are typical for clerical occupations, as well as for some technical,

sales and service occupations. They are especially prevalent in large, bureaucratic organisations.

5.12 The contrast between the service relationship and the labour contract is *ideal-typical*. In the real world, actual employment relations may only approximate these types. This is not only why we recognise the third form of intermediate regulation, but also why we should recognise in the actual classification 'attenuated' forms of both types (see section 6). That is, the service relationship and labour contract may each be actualised to different degrees (see Erikson and Goldthorpe 1992: 43; Goldthorpe 1997: 42).

5.13 Goldthorpe (2000b) discusses the reasons why these forms of employment regulation exist and are common across EU countries. Briefly, two factors are implicated in determining the form of employment regulation: (1) the degree to which work may be monitored by the employer (external controls) and (2) the specificity of human capital used by employees in their jobs. Thus, where employers have difficulty in monitoring the work of employees and employee human capital is high, a service relationship will exist. Where work is easily monitored and controlled and where human capital of employees is low, a labour contract will exist.

5.14 Erikson and Goldthorpe (1992: 42) have noted that the distinction between the service relationship and the labour contract is similar to the conventional distinctions made in several European countries. France distinguishes between *cadres* or *employés* and *ouvriers*; Germany between *Beamte* or *Angestellte* and *Arbeiter;* and the UK between *staff* and *workers.*

Employers and the self-employed

5.15 The proposed E-SEC must also separately identify categories for the other two basic class positions: employers and the self-employed. Employers need to be divided between 'large' and 'small'. The distinction here is between employers who delegate at least some managerial tasks ('large') and those who tend to undertake these tasks themselves ('small'). Similarly, because of their different market and work situations, we must distinguish between professional and non-professional small employers. The latter consideration also applies to the self-employed, as we shall see in the next section.

Concluding comment

5.16 Social scientists are more often in dispute over conceptual issues than any others. (This observation has certainly been confirmed by the discussions in the two meetings of the expert group and in subsequent exchanges.) It might thus be helpful at this point to make some distinctions and further comments.

5.17 As Goldthorpe (1990 and *cf*. Popper 1960) has noted, a conceptual approach such as that proposed here is advanced as a *nominal* proposition. It proposes that the world should be viewed in a certain way. That is what the E-SEC concept proposes, as we have tried to indicate in section 2. This is different from a hypothesis, which is a *real* proposition that says the world is a certain

way. It is with hypotheses that we should ultimately be concerned. However, we need a conceptual scheme before we can hypothesise and make relevant observations. Nevertheless, concepts are tools that must be evaluated. The best way of evaluating them is in terms of how useful they are. How well do our concepts aid in the investigation of the problems that concern us? Do they allow us to pose interesting questions and obtain illuminating results? This is why construct validation is important (see section 9). Concepts must always be judged in terms of their empirical consequences. They are neither true nor false in an empirical sense.

5.18 Secondly, in both section 2 and here, we have emphasised that the form of classification proposed is one of socio-economic positions as defined by employment relations – of empty places and not of persons. In this sense, the classification is a *schema*, a conceptual construction. To convert it into an empirical instrument, we need an algorithm that maps occupations and employment statuses onto the schema's categories. That is, we need a derivation matrix (see sections 7 and 8). In turn, to create this algorithm we require information on employment relations for employee occupations and status combinations within the matrix. Only then can we allocate people to the empty places and then validate the classification to ensure we have adequately measured the underlying concepts (criterion validation). Then we can see whether the classification does help us to understand the types of problem that it is designed to address (construct validation). We deal with these issues in section 9. First, however, we need to apply our conceptual approach to an outline of a possible E-SEC and then discuss how it might be operationally derived from other harmonised variables. This is the object of the next two sections.

6. E-SEC: An Outline Classification

Introduction

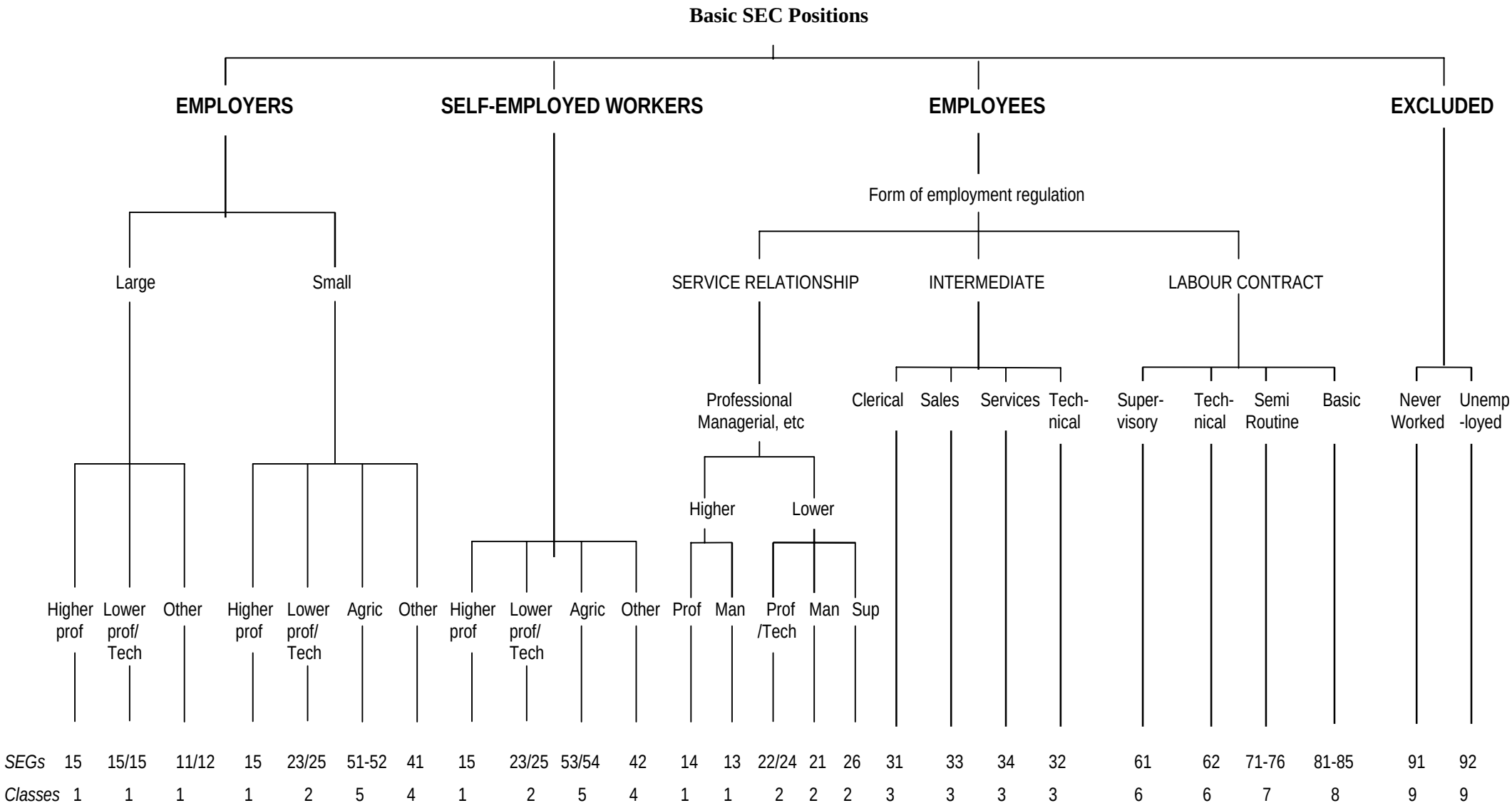
6.1 Many of the points discussed in section 5 should become more readily apparent from figure 6.1 on the following page. This shows how the four basic class positions and the three forms of employment regulation relate to the proposed socio-economic groups and especially the classes of E-SEC as discussed in this section. The figure does not show all the non-active E-SEC socio-economic groups, however. Inactive persons other than the never worked and long-term unemployed would be allocated according to rules discussed later in this section, as further elaborated in section 7.

6.2 In the remainder of this section, first we indicate the *possible* categories of a *potential* E-SEC for each of its proposed two levels. Secondly, we briefly describe this classification. Third, we look at other possible variants of E-SEC (i.e. alternative aggregations of the level 1 categories below) that may be derived from it. Fourth, we explain and define the category names in relation to conceptual and operational issues. The various groups of ISCO-88 (COM) referred to in this section and a general explanation of how this occupational classification operates are given in Appendix 2. *Finally, we cannot emphasise enough that the classification set out here is only a blueprint. It is an 'instrument du travail' in relation to our ultimate objective, not a tablet of stone. It is designed to help us think about the issues as part of the iterative process involved in deriving a final form for what is a complex type of classification.*

Possible E-SEC 'Classes' (Level 1)

1. Large employers, higher managerial and professional occupations
2. Lower managerial and professional occupations
3. Intermediate occupations
4. Small employers and own account workers
5. Employers and self-employed in agriculture
6. Lower supervisory and technical occupations
7. Semi-routine occupations
8. Basic occupations
9. Never worked and long term unemployed

Figure 6.1 The Conceptual Derivation of the E-SEC



Underlying E-SEC 'Socio-economic Groups' (Level 2)

Class 1 Large employers, higher managerial and professional occupations

11. Employers (other than in agriculture) with 10+ employees
12. Farmers with full-time employees (or 'large business' farmers)
13. Higher managerial occupations
14. Higher professional occupations (employees)
15. Self-employed professional occupations

Class 2 Lower managerial and professional occupations

21. Lower managerial occupations
22. Lower professional occupations (employees)
23. Self-employed lower professional occupations
24. Higher technical occupations (employees)
25. Higher technical occupations (self-employed)
26. Higher supervisory occupations

Class 3 Intermediate occupations

31. Intermediate clerical occupations
32. Intermediate technical occupations
33. Intermediate sales occupations
34. Intermediate service occupations

Class 4 Small employers and own account workers

41. Employers with 1-9 employees (excluding agriculture)
42. Own account workers (non-professional)

Class 5 Employers and self-employed in agriculture

51. Farmers with non-continuous employees (or 'medium' sized)
52. Own account farmers (or 'small')
53. Members of agricultural co-operatives

Class 6 Lower supervisory and technical occupations

61. Lower supervisory occupations
62. Lower technical occupations

Class 7 Semi-Routine occupations

71. Semi-Routine technical occupations
72. Semi-Routine service occupations
73. Semi-Routine sales occupations
74. Semi-Routine production/operative occupations
75. Semi-Routine agricultural occupations
76. Semi-Routine clerical occupations

Class 8 Basic occupations

81. Basic technical occupations
82. Basic service occupations
83. Basic sales occupations
84. Basic production/operative occupations
85. Basic agricultural occupations

Class 9 Never worked and long term unemployed

91. Long term unemployed
92. Never worked

Other active groups*

01 Other unemployed
02 Unpaid family workers
03 National service

Inactive groups

04 Retired
05 Students (full-time)
06 Children
07 Permanently sick and disabled
08 Looking after home

Not classifiable

00 Not classifiable (occupations not given or inadequately described etc.)

** The 'other active' and 'inactive' groups may be (re-) allocated to E-SEC classes, via methods we shall explain.*

A discussion of the classification

6.3 *Form of classification.* The outline classification takes the form of a two-level nested hierarchy, similar to classifications such as the French PCS. In its disaggregated form (level 2, what we term here 'Socio-economic Groups' - SEGs) it covers the whole population at the individual level.

6.4 *Population coverage.* In section 3, we noted the importance of ensuring full population coverage in our definition and construction of E-SEC categories. We can see from the outline classification that there are SEGs to cover various 'other active' and inactive groups. As we shall see, individuals who are allocated to these groups on the basis of current status may then be allocated to E-SEC classes in a variety of ways, depending partly on analytic purpose and partly on the group concerned. For example, recent research in the UK by Marshall *et al* (1996), using a class schema similar to that proposed here,

demonstrates that classifying individuals not currently in paid employment by their last main job is a satisfactory class allocation procedure. This is true even for those (fast diminishing in number among the non-retired population in most Member States) who have been out of the workforce for many years. Moreover, research reported by Arber using UK General Household Survey data demonstrates strong 'gradients' (or, more precisely, monotonic differences) in ill health for unemployed men and the retired (see Arber 1997a; Arber and Cooper 1998; and *cf.* Arber 1996). That is, for the retired, labour market position (in terms of last main occupation) continues to be associated with health throughout retirement. Also, for similar reasons, the unemployed, sick and inactive should always be asked for information on last main job so that both their current non-employment and past employment situations are recorded. This strategy is one designed to create flexibility for analysts. In order to improve population coverage at the individual level of E-SEC, therefore, those who are not currently in formal employment should be allocated to the category of their last *main* job. The main exceptions to this rule are for children and for full-time students.

6.5 *Full-time students* (SEG 05) under the age of, say 25 (i.e. 'continuous students') would not normally be allocated a position at the most aggregated level of a SEC. However, they may be recognised as a category at less aggregated levels for reasons of completeness. Obviously, since many students will have or will have had occupations, they could be classified by current or last main job if the analyst wished to do so. Normally, however, we would not expect students to be classified in this way. Conventionally, where full-time students are included in SEC analyses (e.g. in research on education), they are normally given their 'class of origin', usually that of a parent or, more generically, their 'main supporter'. This is because students' 'life chances' depend mainly on their main supporter. Hence, information regarding the employment of students' main supporters should be obtained in surveys.[8] Probable future occupation has been suggested as another means for classifying students. However, this method should not be used, for two reasons. First, it would introduce an unwonted constructed association between education and the E-SEC. Secondly, the probability of reaching specific occupations may be low for some forms of education. Nevertheless, to allow analysts maximum freedom of choice, data should be collected on the current or last main jobs of full-time students. *Children* (SEG 06) are included at E-SEC level 2, but given the E-SEC position of their family in analysis.

6.6 Those who have *never worked* (SEG 92) but are seeking, or would like paid work, may also be categorised. On the basis of comments in section 5, the outline classification suggests that they might even be included (along with the long-term unemployed in SEG 91) as a category in E-SEC level 1 (class 9). Similarly, therefore, in the case of the *'long-term unemployed'*, there is an argument that they should *not* be classified according to their last main job, but should be assigned to their own SEC category.

6.7 We recognise that some analysts may not wish to implement a category of never worked and long-term unemployed. They would thus have to exclude the never worked from the classification at its most aggregated level. They

would then classify *all* unemployed persons in respect of their last main job. However, since no one can prescribe on this matter, *information on last main job would be required for all unemployed persons, as well as for those looking after a home, the retired, sick and so on*. We thus recommend that, other things being equal, all surveys and censuses should collect data in a manner that would allow these classification rules to be implemented. However, a general category of the 'not formally employed' must never be created at the most aggregated level of the E-SEC because it would be far too heterogeneous. It would thus violate the typological classification rule of internally homogeneous categories.

6.8 In the case of particular data sets, we have to accept that some individuals and households may be excluded by the research design. For example, the UK Census does not ask employment questions of those who are over 75 years of age. Thus, while we strongly advise that an E-SEC should be as inclusive of the population as possible, this requirement needs to be married both with the limitations of existing data sets and with the E-SEC's conceptual and operational base.

6.9 *Classification rules for the individual level of E-SEC.* Two digits are used to identify each SEG. For SEGs 11-92, the first digit indicates the class to which the SEG belongs (and thus collapses) at the aggregated nine-category level (level 1) of E-SEC 'classes' and the second digit indicates the group itself. As we have just seen, the 'other unemployed' in SEG 01, unpaid family workers in SEG 02, national service personnel in SEG 03 and the inactive SEGs 04 - 08 do not immediately collapse to any class. Rather, individuals in these groups are (re-) allocated to the group of their 'career typical' (usually last 'main') job. These matters are further explained later.

6.10 *Household level rules.* The household level of this classification would work in a similar way, except that the E-SEC class position (level 1) would be allocated through a household class measure (see section 7). In this case, those in SEGs 01-08 and 00 would be allocated to their household class. Equally, those allocated to SEGs 11-92 would take on the E-SEC values of their household. These rules obviously apply only to non-institutional households. In the case of those living in institutions, other rules would have to be devised, relating individuals to their former private households.

6.11 *Public and private sectors.* The outline classification does not attempt to make distinctions between SEGs or class positions by sector. If it were thought necessary to distinguish between groups in the public and private sectors, an appropriate control variable could be introduced into analyses. However, any ISCO-88 (COM) OUG that is wholly or mainly in either sector will necessarily have employment relations for employees that reflect any sectoral differences that may exist.[9]

6.12 *Category names.* Some of the category names used for the E-SEC classes will be unfamiliar. For example, none of them refers to either 'skill' or to the 'manual/non-manual' divide. This is quite deliberate. The notion of skill has no part in the conception of the E-SEC; to use category names that refer to

skill would thus be inconsistent with an employment relations approach. What the categories describe are different forms of employment relations, not different skill levels. As for the manual/non-manual divide, changes in the nature and structure of both employing organisations and occupations has rendered this distinction both outmoded and misleading. The category names for socio-economic groups are obviously more descriptive and relate to their 'face validity'. As implied in section 5, all the SEGs within each E-SEC class share similar employment relations (and see below).

6.13 *Flexibility.* One of the advantages of a schema such as this is that it will permit analysts to look 'inside' classes. This will assist them in understanding how life-chances may vary between groups with the same employment relations. For example, do professionals in SEGs 14 and 15 have better health outcomes when compared with managers in SEG 13?

6.14 *Number of SEGs (1).* As far as the number of SEG categories to be recognised within each class is concerned, this is also partly an issue of face validity, i.e. of grouping together in sub-categories similar types of occupations that share similar employment relations. For example, one might wish to use the structure of ISCO-88 (COM) to inform the creation of SEG categories. Thus, the terms 'lower technical', 'semi-routine technical' and 'basic technical' would all refer to occupations in ISCO-88 (COM) major group 7 (Craft and Related Trades), i.e. to occupations with the same ISCO skill level but which have different employment relations. Equally, however, it should be noted that the SEGs within this outline classification are only *postulated* ones, designed to help illustrate how a possible two-level classification *might* work. Whether all the SEGs can be shown to exist 'in reality' (i.e. in terms of distinctive employment relations) is another issue. That is, whether we can demonstrate that there are in fact, say, 'basic service occupations' whose employment relations are such that they are similar to 'basic production/operative occupations' so that both would be in class 8, is an empirical matter. Thus how many categories we wish to recognise is an empirical issue, but also a matter of usefulness for descriptive or analytical purposes. The same applies to the 'classes' themselves, as for example whether we can recognise empirically (in terms of different employment relations) a 'semi-routine' class 7 separate from a 'basic' class 8 (see the conceptual discussion of SEGs within class 7 below).

6.15 *Number of SEGs (2).* However, it is the classes themselves that will need to be validated using the methods discussed in section 9. Which SEGs we then wish to recognise within each class will be largely a matter of contingency, depending upon, for example, what might be useful for the internal analysis of classes, face validity issues, etc. The question of which SEGs 'exist', therefore, relates to which useful class sub-divisions we might wish to make among those combinations of occupation and employment status that share similar employment relations. This conclusion follows logically from our discussions of nominal concepts in section 5, especially paras 5.16-5.18. The issues discussed here also relate to the next one.

Other possible variants of the classification

Table 6.1 Five and three category variants of E-SEC

SEGs		***5 categories***		***3 categories***	
11-12	Employers in Large Establishments	1	Managerial and Professional occupations	1	Higher Occupations
13	Higher Managerial Occupations				
14-15	Higher Professional Occupations				
22-25	Lower Professional and Higher Technical Occupations				
21	Lower Managerial Occupations				
26	Higher Supervisory Occupations				
31-34	Intermediate Occupations	2	Intermediate occupations	2	Intermediate Occupations
41, 51	Small Employers and Farmers	3	Small employers and own account workers		
42, 52-53	Own Account Workers				
61	Lower Supervisory Occupations	4	Lower supervisory and technical occupations	3	Lower Occupations
62	Lower Technical Occupations				
71-76	Semi-routine Occupations	5	Semi-routine and basic occupations		
81-85	Basic Occupations				
91-92	Never Worked and Long-term Unemployed		Never worked and long-term unemployed		Never worked and long-term unemployed

6.16 *The number of E-SEC class categories* to be recognised empirically depends in part upon the amount of variation in employment relations, but also on both the analytic purposes at hand and the quality of available data. There are not *x* and only *x* number of classes. *Within what would be permissible in the conceptual model of employment relations and employment regulation*, it would be possible to have five- and three-category variants of E-SEC, as shown in table 6.1. Indeed, if analysts wished to keep professionals in SEGs 14, 15 and 22-25 separate from employers, managers and supervisors in SEGs 11, 12, 13, 21 and 26 a six-category variant may also be implemented. Equally, classes 4 and 5 could be collapsed into a single small employer/self-employed class, thus producing an eight class E-SEC. The nested relationship

between the operational categories and the analytic variables is given in table 6.1 above. SEGs 91, 92 and SEGs 00 (1)-08 would be treated as described earlier and as further indicated both at the end of this section and in section 7.

A cautionary note about other possible variants

6.17 It should be apparent that the proposed model for E-SEC *at the individual level*, as discussed both here and previously, has no 'single hierarchical principle from which a regular ordering of the classes could be derived' (Erikson and Goldthorpe 1992: 44) other than in the three-category variant. That is, the classification does not have a consistently hierarchical form.[10] The E-SEC does not attempt to describe societies on a layer-cake model (see Rose and O'Reilly 1998: 20-21). The three-category variant may be assumed to involve some kind of hierarchy. However, neither the five, nor the six nor the nine category forms can be regarded as ordinal scales, not least because of the recognition of self-employment as separate categories. However, some researchers may wish to have an ordinal scale. This could *ostensibly* be achieved, for example, by combining the self-employed in Classes 4 and 5 with, say, the intermediate Class 3. *This is not recommended*, not least, because the self-employed are distinctive in their life chances and behaviour. It is strongly recommended that analysts accept the theoretical and measurement principles of the new classification, take advantage of the conceptual base of the model for developing hypotheses linking it to outcomes of interest, and use appropriate analytic techniques for nominal data (see Rose and Pevalin 2000).

E-SEC Category Descriptions and Précis of Operational Issues

6.18 In this sub-section, our aim is to provide *initial* definitions of *potential* constituent SEGs within each E-SEC class. This should indicate what is common between the postulated SEGs in each class, i.e. why together they might form a class due to their similar employment relations, as discussed in section 5.[11] For each SEG, we also indicate relevant operational issues of the type to be discussed in detail in sections 7 and 9. To create the E-SEC from census or survey data will require a matrix of OUG by employment status units, also discussed under section 7. Possible elements of this matrix are anticipated whenever the relationships between SEGs and ISCO-88 (COM) groups are discussed below. We rely on especially collected UK Labour Force Survey evidence on employment relations for our interim conclusions on these matters. *Again we repeat that this outline of a possible E-SEC is only intended to be illustrative in relation to the conceptual model. We are not making claims to the empirical existence of all the SEGs, or even of all of the classes. That is a matter for the validation process.*

Class 1 Large employers, higher managerial and higher professional occupations

11 Employers (other than in agriculture and the professions) in large establishments

Employer positions in enterprises employing 10 or more persons (excluding those in agriculture or the professions) in which the incumbents employ others (and thus assume some degree of control over them) and delegate some part of their managerial and entrepreneurial functions on to salaried staff.

Conceptual issues

Employers constitute one of the three basic class positions identified in section 5. It might be thought, therefore, that large employers should really form a class of their own, the 'capitalist class' perhaps. However, practically this makes little sense in analysis – there are so few of them. More importantly, evidence from both the UK (Rose and O'Reilly 1998: 9) and internationally (Erikson and Goldthorpe 1992: 40-41) demonstrates that individuals classified here are mainly owners of independent enterprises such as hotels, restaurants, transport firms, etc. They are not 'heroic' capitalists.

We suggest that they are included with higher managers in E-SEC Class 1 for two reasons. First, typically they are involved in management as well as entrepreneurial activities. They are 'owner-controllers' and, unlike small employers in SEG 41, do not typically perform the same tasks as their employees (see Scase and Goffee 1982). Hence, 'they may be regarded as having a greater affinity with those salaried managers (in SEG 13) who have a substantial share in the ownership of the enterprises in which they work' (Erikson and Goldthorpe 1992: 40; see also para 5.15). Second, for employers there are often 'difficulties in capturing, across societies, different legal forms of incorporation, partnership, etc in *both* a sociologically meaningful *and* comparable way' (Goldthorpe 1997: 41). That is, the line between employer and employee statuses is often difficult to establish empirically and may be more a matter of legal and fiscal convenience than of real social relationships.

Operational issues

While ISCO-88 (COM) OUG 1210 (Directors and chief executives) partly defines this SEG, in fact large employers might be found anywhere in Sub-major group 12. They may also be coded, even if incorrectly, to other OUGs, based on their occupation. This is why it is wise to produce a derivation matrix that allows E-SEC values for all possible combinations of occupation by employment status, as we shall see in section 7.

Higher professionals and farmers who are also large employers are not allocated to SEG 11 but to SEGs 15 and 12 respectively (see below).

12. Farmers with full-time employees

Employer positions in which the incumbents employ full-time employees (and thus assume some degree of control over them) in agricultural enterprises.

The above is only a tentative definition. Issues regarding the treatment of employers and own account workers in agriculture are discussed under SEGs 51-53.

13 Higher Managerial Occupations

Positions in which there is a 'service relationship' with the employer, and involving general, higher level or 'executive' planning and supervision of operations on behalf of the employer.

Conceptual issues

The idea of a 'service relationship' has been discussed in section 5. The distinction between the 'higher' managerial occupations in this SEG and the 'lower' ones in SEG 21 refers to the degree to which the service relationship applies (see para 5.11 (1)). Hence, in relation to the work situation (see para 5.11), 'higher' managerial positions involve the widest range of employee discretion in terms of the exercise of authority in the workplace and the least amount of 'external' control by others. In respect of the market situation (see para 5.11), these positions tend to attract not only the highest incomes, but steadily rising ones, as well as the greatest employment perquisites and security. Thus, 'higher managers' refers to directors and senior managers, such as departmental heads, who have 'executive' functions.

Operational issues

A reliable measure of 'managerial level' (i.e. of position within an organisation's managerial hierarchy) might be devised for some specialist employment surveys in order to distinguish higher from lower managerial occupations. However, in general surveys and in censuses, the number of employees in the organisation usually provides a pragmatic rule to operationalise the distinction between higher managerial occupations in SEG 13 and lower managerial occupations in SEG 21. ISCO-88 (COM) already distinguishes Corporate Managers in sub-major group 12 from Managers of Small Enterprises in Sub-Major Group 13 using a size rule of 10+ employees and 1-9 respectively (see appendix 2). Hence, this distinction could be used to distinguish SEG 13 and SEG 21. However, the specialist managers in ISCO-88 (COM) minor group 123 might turn out to be largely composed of middle and junior managers who should thus go to SEG 21. Thus, the size rule need not always apply. We shall return to this issue in section 7.

14 Higher Professional Occupations (employees)

Employee positions which cover all types of higher professional work. Employees in this group have a 'service relationship' with their employer.

Conceptual issues

The problem here is to identify what 'higher professional' means in SEGs 14 and 15, as distinct from the meaning of 'lower professional' in SEGs 22 and 23. Most would agree that ISCO-88 (COM) Minor Groups 211-222 are higher professionals. However, how should we regard, say, nurses, schoolteachers and librarians? Here, as for managers, we suggest that aspects of the 'work situation' are the most effective means of distinguishing higher from lower professionals. In particular, higher professionals have more independence from managerial and other forms of work control. Hence, in relation to the work situation, 'higher' professional positions involve the widest range of employee discretion in terms of the exercise of expertise in the workplace and the least amount of 'external' control by others. In other words, higher professionals should refer to 'independent' professional occupations in the above sense, lower professionals to 'dependent' ones. On this basis, lawyers, doctors and scientists would be higher professionals, but teachers, nurses and librarians would be lower professionals. Obviously, if ISCO-88 (COM) permitted it (which it does not), it would be more in keeping with our conceptual base to regard, say consultant or specialist doctors as higher professionals and junior doctors as lower professionals. This is but another way of saying that the whole operationalisation of any SEC could be improved if we had less aggregated occupational unit groups to work with, operating at, say, a six digit rather than a four digit level.

Operational issues

While higher professional occupations will be found in ISCO-88 (COM) Major Group 2, not all the OUGs in this group will be in SEG 14. The practical problem is how we might distinguish those OUGs that are generally 'higher' professional in the sense given above. There is no pragmatic solution of the kind we can apply to managers (the organisational size rule). Nor do occupational classifications allow a distinction between senior and junior members of the same profession, say between a consultant surgeon and a junior doctor. This is an issue on which we need further discussion by experts from across the EU member states.

15 Self Employed Professional Occupations

Employer positions in organisations with 10+ employees in all professional and higher technical occupations; and small employers and self-employed in higher professional occupations.

Conceptual issues

As with large employers in SEG 11, it might be thought that employer professionals should form part of a separate 'capitalist' class. And as with

SEG 11, in theory this could be argued, but in practice it makes little sense. It does, however, make sense to have separate SEGs for professionals. This is because their work and market situations, whether as employers or employees, are based more on the exercise of specialised knowledge or expertise, rather than on the exercise of authority in the workplace, as in the case of employers in SEG 11 or managers in SEG 13. So, for example, a large employer who is occupationally classified as a scientist would be classified as a professional in this SEG and not as an employer in SEG 11. More practically, even to create a specific SEG for self-employed higher professionals, rather than including all higher professionals in one SEG, is problematic. Past research has revealed that self-employment or independent practice among professionals is often contingent, i.e. is dependent upon a variety of conventional and legal arrangements that vary from country to country. That is, for higher professionals independent practice and salaried employment are often indistinguishable, and true self-employment is difficult to identify. Thus it is difficult to depend on an employment status variable in order to make reliable distinctions between independent practice and salaried employment among higher professionals. Nevertheless, this is an issue that might be further resolved through the E-SEC validation process and so it is sensible to keep options open here by at least recognising this as a possible category.

Operational issues

Those designating themselves as employers or self-employed in ISCO-88 (COM) Major Group 2 OUGs that are defined as higher professional would be included here. Large employers in lower professional and higher technical occupations should also be included here. The grounds for this is that they are likely to have work and market situations more similar to those of SEGs 11 or 15 rather than to those of employees in the same OUGs (see SEGs 23 and 25).

Class 2 Lower managerial and professional occupations

21 Lower Managerial Occupations

Positions in which there is an attenuated 'service relationship', and where those employed in these positions generally plan and supervise operations on behalf of the employer under the direction of senior managers.

Conceptual issues

These occupations share fewer of the conditions associated with the service relationship when compared to SEG 13. Occupations in this SEG are located in the middle and lower ranges of the managerial hierarchy. Hence, in terms of work situation they involve the exercise of some degree of authority and discretion, while simultaneously being subject to more or less systematic control from higher in the managerial hierarchy.

Operational issues

As discussed under SEG 13, the ISCO-88 (COM), *faute de mieux* establishment size rule could be used as an indicator of the conceptual distinction between higher and lower managerial occupations. In that case, this group would consist of ISCO-88 (COM) sub-major group 13. However, minor group 123 might also be included here. Matters such as this are best considered at the next (validation) phase of the project.

22 Lower Professional Occupations (employees)

Employee positions covering lower professional occupations. Employees in these groups have an attenuated form of the 'service relationship'.

Conceptual issues

Employees in SEG 22 have fewer of the conditions associated with the service relationship when compared with those in SEG 14, especially in terms of work situation, i.e. in respect of independence or autonomy. Hence, occupations in this SEG involve the exercise of some degree of both expertise and discretion, while simultaneously being subject to more or less systematic control from positions higher in the professional or managerial hierarchy.

Operational issues

This group is likely to be drawn mainly from 'associate professionals' in ISCO-88 (COM) major group 3, but (as indicated previously) will also be in part composed of the more 'dependent' professional occupations in major group 2.

23 Self employed Lower Professional Occupations

Self-employed and small employer positions that cover all types of lower professional work.

Conceptual issues

Conceptually, similar considerations apply to this SEG as to SEG 15. Small employers and the self-employed in lower professional occupations are in SEG 23 rather than SEGs 41 or 42. The latter are reserved for non-professional work where the market situation is often less secure and predictable. However, lower professional employers in large establishments are in SEG 15 on the grounds that they are more similar to other large employers in Class 1.

Operational issues

This group is likely to be drawn mainly from 'associate professional' occupations in ISCO-88 (COM) major group 3 in which the incumbents are either self-employed or employ between 1-9 employees. However, it will also in part comprise self-employed and small employers in those managerially

'dependent' professional occupations in major group 2 where employees are allocated to SEG 22.

24 Higher Technical Occupations (employees)

Employee positions covering higher technical occupations. Employees in these groups have an attenuated form of the 'service relationship'.

Conceptual issues

Higher-grade technicians are similar conceptually to lower professionals. Hence, occupations in this SEG involve the exercise of some degree of both expertise and discretion, while simultaneously being subject to more or less systematic control by managers or professionals from above.

Operational issues

'Higher technical' occupations equate to 'technicians' in ISCO-88 (COM) major group 3. Obviously, employees from these occupations are allocated to this SEG.

25 Higher Technical Occupations (self-employed)

Self-employed and small employer positions which cover all types of higher technical work.

Conceptual issues

Conceptually, similar considerations apply to this SEG as to SEG 23. Small employers and the self-employed in higher technical occupations are in SEG 25 rather than SEGs 41 or 42. The latter are reserved for non-professional work. However, higher technical employers in large establishments are in SEG 15 on the grounds that they are more similar to other large employers and so should be in Class 1.

Operational issues

This group will be drawn from among 'technicians' in ISCO-88 (COM) major group 3 where the incumbents are either self-employed or employ between 1-9 employees.

26 Higher Supervisory Occupations

Supervisory positions having an attenuated form of 'service relationship' and which cover intermediate occupations in SEGs 31-34 and lower sales, service and clerical occupations in SEGs 72, 73, 76, 82 and 83. These positions involve formal and immediate supervision of others engaged in such occupations.

Conceptual issues

Typically, these higher supervisory positions are found in large bureaucratic organisations and involve the control of intermediate, semi-routine and routine clerical, sales and some service occupations. Employees in these positions supervise the work of others and thereby exert a degree of authority over them on behalf of the employer.

Operational issues

This group may be drawn from any OUG where employees are allocated to SEGs 31-34, 72/3/6 and 82/3. It might be expected that supervisors of employees in SEGs 72/3/6 and 82/3 would be in SEG 61, i.e. would be classified as lower supervisors. However, it is likely that many of those supervising employees in SEGs 31-34 would also be supervising employees in lower forms of sales, service and clerical work in classes 7 and 8, too. The most reliable way of establishing supervisory status in a survey would be to ask respondents whether supervision constituted the main job task.

Class 3 Intermediate Occupations

31 Intermediate Clerical Occupations

Positions not involving general planning or supervisory powers in clerical occupations. Positions in this group are 'mixed' in terms of employment regulation, i.e. are intermediate with respect to the service relationship and the labour contract.

Conceptual issues

The meaning of 'intermediate' forms of employment regulation was discussed in section 5. Although occupations in this SEG (and in all others in class 3) offer some features of the service relationship, they do not usually involve any exercise of authority (other than in applying standardised rules and procedures where discretion is minimal) and are subject to quite detailed bureaucratic regulation.

Operational issues

Probably, this SEG will mainly equate to ISCO-88 (COM) major group 4 (clerks). However, some OUGs in major group 4 may go to SEG 76. It is precisely the fact that it is problematic to judge empirically the extent to which a service relationship can be said to prevail over a labour contract which will distinguish the occupations in this SEG and SEGs 32-34 operationally (see section 5. above).

32 Intermediate Technical Occupations

Positions not involving general planning or supervisory powers in technical occupations. Positions in this group are 'mixed' in terms of employment regulation, i.e. are intermediate with respect to the service relationship and the labour contract.

Conceptual issues

The meaning of 'intermediate' forms of employment regulation was discussed in section 5. Although occupations in this SEG (and in all others in class 3) offer some features of the service relationship, they do not usually involve any exercise of expertise (other than in applying standardised rules and procedures where discretion is minimal) and are subject to quite detailed bureaucratic regulation.

Operational issues

Experience in the UK suggests that this SEG will mainly be drawn from ISCO-88 (COM) Minor Group 724 (electrical and electronic mechanics). Some computer technicians might also be included here.

33 Intermediate Sales Occupations

Positions not involving general planning or supervisory powers in sales occupations. Positions in this group are 'mixed' in terms of employment regulation, i.e. are intermediate with respect to the service relationship and the labour contract.

Conceptual issues

The meaning of 'intermediate' forms of employment regulation was discussed in section 5. Although occupations in this SEG (and in all others in class 3) offer some features of the service relationship, they do not usually involve any exercise of authority (other than in applying standardised rules and procedures where discretion is minimal) and are subject to quite detailed bureaucratic regulation.

Operational issues

This SEG will be predominantly from ISCO-88 (COM) major group 5 (service and sales workers).

34 Intermediate Service Occupations

Positions not involving general planning or supervisory powers in service occupations. Positions in this group are 'mixed' in terms of employment regulation, i.e. are intermediate with respect to the service relationship and the labour contract.

Conceptual issues

The meaning of 'intermediate' forms of employment regulation was discussed in section 5. Although occupations in this SEG (and in all others in class 3) offer some features of the service relationship, they do not usually involve any exercise of authority or expertise (other than in applying standardised rules and procedures where discretion is minimal) and are subject to quite detailed bureaucratic regulation.

Operational issues

This SEG will also be predominantly from ISCO-88 (COM) major group 5 (service and sales workers).

Class 4 Small employers and own account workers

41 Employers in non-professional occupations with 1-9 employees (excluding agriculture)

Employer positions in non-professional occupations (other than in agriculture) in which the incumbents both employ others (and thus assume some degree of control over them) and carry out all or most of the entrepreneurial and managerial functions of the enterprise but employ less than 10 employees.

Conceptual issues

Conceptual issues were discussed in section 5. Essentially, the SEGs within this class form the '*petit bourgeoisie*'. Employers form one of the three basic class positions identified in section 5. However, employers in small establishments, although they do employ others, do not usually devolve most of their management or entrepreneurial functions onto employees. Small employers remain essentially in direct control of their enterprises. Often they work alongside their employees, performing the same basic tasks. In terms of economic security and prospects, those in this SEG are more vulnerable when compared with the professional and higher technical self-employed in SEGs 15, 23 and 25.

Operational issues

As we saw in section 5, the operational distinction between large and small employers consists of applying a size rule cut-off of 10 employees. In fact, however, it is likely to be the case that the majority of small employers have only 1 or 2 employees. For this reason, most are in many ways similar to self-employed or own-account workers (in SEG 42). As we understand it, ISCO-88 (COM) includes small employers and the self-employed in sub-major group 13 if their tasks are mainly managerial. In other words, it may be assumed that many of those who belong in SEG 41 will have been coded to OUGs in this sub-major group. This will not always be the case, however (see Appendix 2). Thus, in the E-SEC derivation matrix small employer and self-employed

statuses should be allowed for all OUGs where self-employment is deemed possible. Exceptions would be for OUGs that are exclusively in the public sector, such as police officers.

42 Own Account Workers (non-professional, excluding agriculture)

Self-employed positions in which the persons involved are engaged in any (non-professional) trade, personal service, intermediate, semi-routine, basic or other occupation other than in agriculture, but have no employees other than family workers.

Conceptual issues

Conceptual issues were discussed in section 5. Essentially, this SEG is the true '*petit bourgeoisie*'. The self-employed form one of the three basic class positions identified in section 5. However, as own account workers they neither sell their labour to an employer, nor do they buy the labour of others, although they may be assisted by others in their own family. However, the terms under which they sell their services are less favourable than those of self-employed higher and lower professionals and higher technicians – in the main, they have weaker market situations.

Operational issues

By definition, this group is confined to those who are self-employed without employees. As we understand it, ISCO-88 (COM) includes the self-employed in sub-major group 13. In other words, it may be assumed that many of those who belong in SEG 42 will have been coded to OUGs in this sub-major group. This will not always be the case, however (see Appendix 2). Thus, in the E-SEC derivation matrix self-employment status should be allowed for all OUGs where self-employment is deemed possible. Exceptions would be for OUGs that are exclusively in the public sector, such as police officers.

Class 5 Employers and self-employed in agriculture

51 Farmers with non-continuous employees

Employer positions in which the incumbents employ others on a non-continuous basis (and thus assume some degree of control over them) in agricultural enterprises.

52 Own account farmers

Self-employed positions in which the persons involved are engaged in agriculture, but have no employees other than family workers.

53 Members of agricultural co-operatives

Positions in which incumbents are members of producer co-operatives engaged in agriculture.

Conceptual issues for SEGs 12, 51-53

The above definitions are all tentative and require more discussion. The same conceptual issues apply here as to SEGs 11, 41 and 42.

Operational issues for SEGs 12 and 51-53

We have not yet decided how best to make size distinctions in the agricultural sector. The EU variable for farm size (Standard Gross Margins – SGMs - per hectare or per head of livestock) cannot be operationalised in ordinary population surveys or censuses. Naturally, we could take average farm size in hectares in each country as a measure to work from. However, we could also distinguish between farmers with and without employees. This is likely to be a more effective measure than farm size in hectares in many member states, given that some forms of agriculture involve small areas of land, intensively farmed and where there is hired labour (e.g. vineyards, market gardens, intensive animal production, etc). In this case, we believe that proprietors in agriculture with any full-time non-family workers should go to SEG 11, thus allowing us to distinguish between large, medium and own account (small) businesses in agriculture. Thus, we would need only three SEGs for farmers within Class 5: 51 for those who have only part-time, temporary or seasonal employees (i.e. who do not engage employees on a continuous basis); 52 for own account farmers; and 53 for co-operative members. In the case of SEG 53, there may be a case for regarding this group (and members of any other co-operatives) as being more akin to employees. In that case, members of this group should be allocated to a new SEG in class 7 or 8. This is an issue for the validation project (see section 9).

However, it has also been suggested that no single rule, whether of farm size in hectares or of employees, could be applied to all member and candidate states. It may be that the only solution would be to allow each NSI to apply the best measure it can to the conceptual schema described in this report.

Class 6 Lower supervisory and technical occupations

61 Lower Supervisory Occupations

Positions having a modified form of 'labour contract', which cover occupations included in SEGs 62, 74, 75, 81, 84 and 85, and which involve formal and immediate supervision of others engaged in such occupations and thus the use of minor delegated authority.

Conceptual issues

The idea of a 'labour contract' was discussed in section 5. We noted that for some employees, the labour contract may be 'attenuated'. Lower supervisors are one such group. Thus, positions in SEG 61 have different (and better) employment relations and conditions than those SEGs in Classes 7 and 8, but similar conditions to those in SEG 62. In other words, supervisors are given superior employment contracts to those whom they supervise. This is because occupations in this group involve the exercise of some authority, within the context of close monitoring and control from managers. Equally, the typical contracts for occupations in this SEG still retain some of the basic characteristics of a labour contract, e.g. hourly pay, low job security, etc.

Operational issues

These positions are distinguished most easily by job title ('foreman' or 'supervisor') in an OUG which, when combined with employee status, is allocated to SEGs 62, 74, 75, 81, 84 and 85. However, ISCO-88 (COM) does not have OUGs devoted to supervisory jobs. The most reliable way of establishing supervisory status in a survey would be to ask respondents whether supervision constituted their main job task. This SEG will mainly be drawn from OUGs in ISCO-88 (COM) major groups 6-9.

62 Lower Technical Occupations

Positions in which employees are engaged in lower technical and related occupations and thereby have a modified form of the 'labour contract'.

Conceptual issues

The idea of a 'labour contract' was discussed in section 5. Lower technical occupations is another SEG for which the labour contract is attenuated. Thus, positions in SEG 62 have different (and better) employment relations and conditions than for those SEGs in Classes 7 and 8, but similar conditions to those in SEG 61. In other words, lower technical occupations are given superior employment contracts because occupations in this group involve the exercise of some discretion, within the context of close monitoring and control from above. Thus, because of the skilled nature of the tasks involved in their jobs, employees in this category are more likely than those in SEGs 71-85 to have some service elements in their employment relationship (e.g. more independence from supervisory control). Equally, the typical contracts for

occupations in this SEG still retain some of the basic characteristics of a labour contract, e.g. hourly pay, low job security, etc.

Operational issues

Operationally, job title does not help with the allocation of occupations to this SEG since not all 'skilled' OUGs in ISCO-88 (COM) major group 7 are likely to be included here. Some may be in SEG 32, others in SEGs71 and 81. Ultimately, allocation to this SEG depends upon the measurement of employment relations for particular occupations, i.e. the existence of a modified labour contract.

Class 7 Semi-routine Occupations

71 Semi-routine Technical Occupations

Positions in which employees are engaged in semi-routine technical occupations that have a slightly modified labour contract.

Conceptual issues

Employees in this SEG and in SEGs 72-76 are regulated by an only slightly modified labour contract. The category name of 'semi-routine occupations' is designed to indicate the fact that employers must perforce slightly improve on the basic labour contract for this group, i.e. that the work involved requires at least some element of employee discretion. Whether, in fact, it is possible to distinguish a 'semi-routine' class separate from the routine class 8 is a matter for empirical investigation. The distinction between these two classes in terms of the quality of employment relations was justified in the UK context, however.

Operational issues

This SEG may be drawn from several ISCO-88 (COM) major groups.

72 Semi-routine Service Occupations

Positions in which employees are engaged in semi-routine service occupations that have a slightly modified labour contract.

For conceptual issues, see SEG 71. This SEG is most likely to be drawn from OUGs in ISCO-88 (COM) major group 5.

73 Semi-Routine Sales Occupations

Positions in which employees are engaged in semi-routine sales occupations that have a slightly modified labour contract.

For conceptual issues, see SEG 71. This SEG is most likely to be drawn from OUGs in ISCO-88 (COM) major group 9 (OUG 9113 Door to door and telephone salespersons).

74 Semi-Routine Production/Operative Occupations

Positions in which employees are engaged in semi-routine production or operative occupations that have a slightly modified labour contract.

For conceptual issues, see SEG 71. This SEG is most likely to be drawn from OUGs in ISCO-88 (COM) major group 8.

75 Semi-Routine Agricultural Occupations

Positions in which employees are engaged in semi-routine agricultural occupations that have a slightly modified labour contract.

For conceptual issues, see SEG 71. This SEG is most likely to be drawn from OUGs in ISCO-88 (COM) major group 6.

76 Semi-Routine Clerical Occupations

Positions in which employees are engaged in semi-routine clerical occupations that have a slightly modified labour contract.

For conceptual issues, see SEG 71. This SEG is most likely to be drawn from OUGs in ISCO-88 (COM) major group 4.

Class 8 Basic Occupations

81 Basic Technical Occupations

Positions where employees are engaged in basic technical occupations which have a labour contract.

Conceptual issues

Employees in this SEG and in SEGs 82-85 are regulated by a basic labour contract. That is, these positions have the least need for employee discretion. The basic feature of the work situation is that those in these SEGs are in an entirely subordinate role and are thus subject to full external controls.

Operational issues

This SEG is likely to be drawn from ISCO-88 (COM) major groups 8 and 9.

82 Basic Service Occupations

Positions where employees are engaged in basic service occupations which have a labour contract.

For conceptual issues, see SEG 81. This SEG is likely to be drawn from ISCO-88 (COM) major group 9.

83 Basic Sales Occupations

Positions where employees are engaged in basic sales occupations which have a labour contract.

For conceptual issues, see SEG 81. This SEG is likely to be drawn from ISCO-88 (COM) OUG 9111.

84 Basic Production/Operative Occupations

Positions where employees are engaged in basic production and operative occupations which have a labour contract.

For conceptual issues, see SEG 81. This SEG is likely to be drawn from ISCO-88 (COM) major group 8.

85 Basic Agricultural Occupations

Positions where employees are engaged in basic agricultural occupations which have a labour contract.

For conceptual issues, see SEG 81. This SEG is likely to be drawn from ISCO-88 (COM) sub-major group 92.

Class 9 Never worked and long term unemployed

91 Long-term Unemployed

Positions which involve involuntary exclusion from the labour market and covering those who have been unemployed for twelve months or more while still seeking or wanting paid employment.

92 Never Worked

Positions which involve involuntary exclusion from the labour market and covering those who have never been in paid employment but are seeking or wanting it.

Conceptual issues

As we noted in section 5, both the 'long-term' unemployed and those who have never been in paid employment (although available for work) could be treated in employment relations terms as a separate category of those who are involuntarily excluded from employment relations of any kind. This would then constitute a fourth basic class position in the conceptual model.

Operational issues

Operationally, both the long-term unemployed and the never worked but available for work may be difficult to define in some surveys. Moreover, the problems here cannot be separated from the more general ones concerning the non-employed population.

Those who have 'never worked' but are seeking, or would like paid work, should be allocated to SEG 92. In the case of the 'long-term unemployed' who are available for work, there is an argument that they should not be classified according to their last main job, but should be assigned to SEG 91 (on the grounds that they are excluded from employment relations). Thus, they should be included with the 'never worked' when the E-SEC is collapsed to an analytic variable. Since Eurostat defines the long-term unemployed as those who have been out of work for twelve months or more, this rule could be used operationally.

Other active groups

01 Other Unemployed

Positions which involve involuntary exclusion from the labour market and covering those who have been unemployed for less than twelve months while still seeking or wanting paid employment.

Persons in this position are (re-) allocated to the SEG of their last main job

02 Unpaid family workers

Persons who are working without pay in the enterprise of a related person (usually) living in the same household.

Conventionally, unpaid family workers take the position of the household reference person. However, some unpaid family workers may work for a family member not in the same household. Ideally, in such cases classification should be to the SEG of the family member for whom they work. The essential point is that unpaid family workers are usually involved in a family strategy in which the family business is central. This is a prime case, therefore, illustrating the need for a household measure of E-SEC.

03 National Service n.e.s

Persons in national service who cannot be classified to any other SEG.

In some cases, those performing national service may be classified to their occupation, say within the armed forces or as a community worker. However, if all that is known is that a person is in national service, s/he should be allocated here. In the individual classification, such persons may be re-allocated to the class of last main job or, where appropriate, to another SEG such as full-time student. This category excludes 'regular' or permanent members of the armed forces, of course. However, it should be noted that the OUG for armed forces in ISCO-88 (COM) 88 makes no distinctions with regard to rank. Those coded to this OUG will thus be difficult to allocate satisfactorily to E-SEC.

The Non-Employed/Inactive

Where we are concerned to measure labour market or activity status for the whole population, it is necessary to allocate the non-employed and inactive to an appropriate SEG for their current status, as indicated for SEGS 01 and 02 and below. However, when it comes to the ultimate class position for persons in these categories, as we saw in section 3 the E-SEC at the individual level treats those who are not currently in paid employment by (re-) allocating them via their last *main* paid job or period of formal employment. We return to these issues in para 7.5. The main exception to the last main job rule is for full-time students and children (see above, para 6.5). For the household level E-SEC, most of the non-employed would be given the SEG and class position of the household reference person (see section 7). If that person were unemployed or inactive, his/her last main job would be used for E-SEC.

04 Retired

Positions in which the incumbents have retired from formal employment.

We would expect this group to include those persons in receipt of pensions following formal retirement. They should be (re-) allocated to the SEG/class position of their last main job. Persons who say they are retired but are not receiving pensions may also be included here and be allocated to the E-SEC via last main job.

05 Full-time Students

Persons over 15 years of age engaged in full-time courses of study in secondary, tertiary or higher education institutions.

Full-time students are recognised as a category in the full classification for reasons of completeness. Nevertheless, since many students will have or will have had paid occupations, they could be classified by current or last main job if the analyst wished to do so. Normally, however, we would not expect full-time

students to be classified in this way. Where full-time students are included in analyses, they could be treated as a 'free floating group'. However, in some analyses they would be given the class position of their family of origin.

06 Children

Persons under national minimum school leaving age.

Children are included for reasons of completeness. In analyses that involve the study of children (e.g. in health or education) they would be given the class position of their family of origin.

07 Permanently Sick and Disabled

Persons not seeking or available for work due to permanent sickness or disability.

Where possible, these should be (re-) allocated to last main job. However, those who have never worked because of sickness/disability should be classified to their household's E-SEC value. It would not be sensible to categorise them with the never worked in SEG 92. Those in the latter group must be looking for or wanting work.

08 Looking after home

Persons solely engaged in household duties in their own home.

Those who are looking after a home may be (re-) allocated to last main job at the individual level of E-SEC.

00 (1) Occupations not stated or inadequately described

There are always some cases where the occupational data requested in response to surveys and censuses is refused or is inadequately described or recorded for classificatory purposes. This category exists for such situations. It may still be possible to give such persons a household E-SEC value, i.e. if the household has an E-SEC position.

00 (2) Not classifiable for other reasons

Where data are lacking for other reasons, for example, if the research design excluded certain persons from being asked employment questions, such cases should also be allocated to category 00. As with the other element of 00, a household E-SEC might be possible.

Concluding comment

6.19 We repeat that both the conceptual issues raised in section 5 and the definitions of the SEGs and classes given in this section require more consideration before a 'beta version' could be produced and validated. However, we believe that within the aims and objectives of the current project we have given sufficient information to establish a sound basis for the initial discussions of the next phase in establishing an E-SEC. It is now time to turn to operational issues in more detail. The measurement of the employment relations of occupations, i.e. the operationalisation of the employment relations concept set out in section 5 and its measurement in respect of different occupations, is discussed in section 9. Before that, however, we discuss the operational issues relating to the proxy variables needed to derive the classification, such as occupation and employment status (section 7) and known problems relating to the EU harmonised variables ISCO-88 (COM) and ICSE-93 (section 8).

7. Operational Issues for E-SEC

Introduction

7.1 We have now described both a possible E-SEC and its recommended conceptual base in employment relations. In this section, we consider how the classification may be operationalised on existing surveys, censuses etc. In other words, we now examine how E-SEC may be derived from proxy variables usually present in current micro-data sets such as the Labour Force Survey (LFS). The underlying measurement of employment relations is discussed in section 9.

Operationalising E-SEC: Information Required

7.2 Taken together, the previous two sections suggest that the following variables may be involved in the derivation of SEGs and classes.

(1) economic activity situation
(2) occupation
(3) industry
(4) status in employment
(5) supervisory duties
(6) size of establishment
(7) length of current unemployment spell
(8) ever worked
(9) child under 15 or full-time student
(10) permanently sick and disabled
(11) in national service
(12) looking after home
(13) household reference person
(14) sector – private/public and
(15) type of pension received.

All of these variables can be derived from other harmonised variables (see Ostby *et al* 2000), except for household reference person (HRP). However, many existing national surveys and censuses do measure HRP, but not in a standard or harmonised way.

7.3 How do these variables relate to information requirements for allocation to the individual E-SEC for particular sub-samples of respondents? Table 7.1 gives a brief overview. Further details are in subsequent sections.

7.4 In most cases, the algorithms required to derive an SEG are thus quite simple. They will be more complex in some cases depending on the reference period being used, for example where we need to classify the non-active population to a past state. However, we have to accept that creating a full individual E-SEC means that the information for some respondents will relate to current situation, but for others to some past situation – may be even long past – or to someone else's situation.

Table 7.1 Information requirements for sub-samples

Status	Reference period	Information required
In employment	Last 7 days	Current economic activity Occupation (ISCO-88 (COM) OUG Industry (farm/non-farm) Status in employment (ICSE-93) Supervisory duties (Yes/No) Establishment size (local unit)
Unemployed	Last 7 days	Current economic activity Length of unemployment spell
	Last main job	Economic activity Occupation (ISCO-88 (COM) OUG Industry (farm/non-farm) Status in employment (ICSE-93) Supervisory duties (Yes/No) Establishment size (local unit)
National service	Last 7 days	Current economic activity
	Last main job	Economic activity Occupation (ISCO-88 (COM) OUG Industry (farm/non-farm) Status in employment (ICSE-93) Supervisory duties (Yes/No) Establishment size (local unit)
Sick and disabled	Last 7 days	Current economic activity
	Last main job	Economic activity Occupation (ISCO-88 (COM) OUG Industry (farm/non-farm) Status in employment (ICSE-93) Supervisory duties (Yes/No) Establishment size (local unit)
Looking after home	Last 7 days	Current economic activity
	Last main job	Economic activity Occupation (ISCO-88 (COM) OUG Industry (farm/non-farm) Status in employment (ICSE-93) Supervisory duties (Yes/No) Establishment size (local unit)
Retired	Last 7 days	Current economic activity
	Last main job	Economic activity Occupation (ISCO-88 (COM) OUG Industry (farm/non-farm) Status in employment (ICSE-93) Supervisory duties (Yes/No) Establishment size (local unit)
FT Student/child	Last 7 days	Current economic activity/age
HRP	Last 7 days[1]	Economic activity Occupation (ISCO-88 (COM) OUG Industry (farm/non-farm) Status in employment (ICSE-93) Supervisory duties (Yes/No) Establishment size (local unit)
Never worked		Ever worked? No.

Note: Or last main job. HRP's data will be required for any survey/census that requires E-SEC at the household level.

7.5 In the rest of this paper, we do not attempt to cover all possible circumstances that may arise for classification. We wish only to demonstrate in principle how it would be possible to derive the outline E-SEC from variables in existing data sets. In addition, the issue of what has sometimes been termed 'double classification' and the circumstances of its use need to be further examined. We have not finally resolved this. It would be possible to classify all individuals to their appropriate SEG (i.e. to their current economic activity status) and then re-allocate the non-employed to the SEG of an appropriate past situation. This would yield two possible E-SEC SEG distributions of the population. The first would be a measure of the labour market status of the population at a particular point in time or for a particular reference period. The second, which requires that we have information from the non-employed about some past state when they were in formal employment, would be a better basis for a more inclusive individual SEC measure and would be necessary for collapsing from SEGs to E-SEC classes. Alternatively, the individual classification could short-circuit this process by immediately allocating all relevant non-employed (i.e. those, other than the never worked, full-time students and children, who have experienced formal employment) to the class position of last main job. This could be achieved via appropriate questionnaire routing instructions for those not currently in formal employment and would yield only one E-SEC population distribution. It would not provide a measure of current labour market status. In all cases, however, we also need to decide whether there should be a minimum threshold of hours worked to warrant classifying an individual to E-SEC in respect of their employment situation. For example, is a student who works ten hours a week behind a bar in SEG 82 or SEG 05? And what if that student is also looking after a home? Conventionally, respondents are allowed to decide for themselves what their main activity is, but should we be content with this solution?

Economic activity status

7.6 In what follows, reference may also be made to Appendix 3 where relevant LFS variables and routing instructions are given. For all questions set out below, appropriate interviewer instructions (or information for respondents in self-administered surveys and censuses) will be necessary, too.

7.7 The first variable required is *economic activity status*. This is obtained by a series of questions to ascertain (for the seven days prior to interview) whether a person is:

1. in employment as an employee or as self-employed;
2. unemployed according to the ILO definition;
3. inactive because retired, looking after home, a full-time student, sick etc.

This will then allow us to produce an economic activity status variable with the following values:

1. Employee
2. Self-employed
3. (ILO) Unemployed
4. Retired
5. Student
6. Looking after home/family
7. Temporarily sick/injured
8. Permanently sick/disabled
9. National service
10. Never worked
11. Other

7.8 We can see from the recommended LFS structure in appendix 3 that prior to asking questions about economic activity status, age and household reference person will already be established. In the LFS, the following types of question are asked of all those above minimum school-leaving age except for national service personnel.

For activity status:

Did you do any work for pay or profit (during the previous (reference) week)?

Yes/No.

If no and age=15-64: Were you on a government employment training scheme?

Yes/No.

If no: Did you have a job or business you were away from or from which you were laid off?

Yes/No/Waiting to take up new job/business already obtained.

If no: Did you do any unpaid work in that week for any business that you own?

Yes/No

If no:…..or that a relative owns?

Yes/No

If not yes to any of these questions: in the past four weeks, were you looking for any kind of paid work or government training scheme at any time?

Yes/No

If yes: if a job or training place had been available in the last week, would you have been able to start within two weeks?

Yes/No

For how long have you been looking for paid work?

Less than 6 months/6 months or more

Then route to employment questions (for last main job).

If not looking for work or not available for work in next two weeks: What was the main reason you did not seek work in last four weeks/would not be able to start work in next two weeks?

1. Student
2. National service
3. Looking after family/home
4. Temporarily sick/injured
5. Long term sick/disabled
6. Retired from paid work/business
7. Other

Excluding seasonal, casual, holiday or other temporary work, have you ever had a paid job?

If yes, route to employment questions for last main job. If no = never worked.

We can now establish the required economic activity status variable as set out in para 7.7. We now need information about occupation and related items.

Occupation, industry, employment status, supervision and establishment size

7.9 *Occupation, employment status, etc* questions are usually asked of the household reference person (see below), although in censuses and in many surveys all adults may be asked these questions. The questions in the next paragraph will be asked of the active (including the unemployed) and all the inactive who have had paid work: the retired, the sick and disabled, those looking after home, etc. For the employed, we require information about current 'main job', i.e. for the last seven days. If there is more than one job, we might take that with the greatest number of hours, although we note that in some surveys the respondent is asked to choose what s/he regards as the main job. However, from the viewpoint of a SEC, we should note that current job may not be the 'career' job that we really wish to classify, e.g. for those in 'post retirement' work. The extent of this problem could be investigated using household panel data. Certainly, this issue will need to be further addressed. For respondents not in current employment, we need 'last main job'. Once again, we need information about the 'career typical' job. In the case of the retired, this might be obtained by asking respondents to give information about

their job at, say, aged 50. Other rules would have to be devised for the unemployed, homemakers, etc.

7.10 It should be noted that the minimum LFS requirement for being in paid work is that a person is working at least one hour per week. This threshold is rather low from the viewpoint of an individual level E-SEC. We would argue that the minimum hours worked to qualify for the individual level E-SEC should be around 16-20 hours per week. Further research is required on this issue and its implications, however. If such a rule were adopted, then there would also need to be priority rules to decide to which SEG a person falling below the threshold should be allocated if more than one might apply, such as the barperson/student/homemaker example in para 7.5.

7.11 *Outputs required.* We shall need the following outputs:

ISCO-88 (COM) OUG
ICSE-93
NACE Rev. 1
Establishment (local unit) size: 1-3; 4-9; 10+
Supervisor: Yes/No

7.12 Occupation and associated employment questions are given below. The problems of establishing 'cross-walks' between national occupational classifications and ISCO-88 (COM) and related recommendations are discussed in section 8.

For occupation:

What was your (main) job in the (last week)/last main job?
What did you mainly do in that job?

For occupation and industry coding:

(To assist with occupational coding) What did the organisation you worked for mainly do at the place where you worked?

For industry coding there would also need to be a question relating to the economic activity of the local unit.

Code occupation to ISCO-88 (COM) OUG. Alternatively, occupation could be coded by appropriately designed software to a national classification and ultimately to E-SEC. For industry, code to NACE Rev. 1 and then to farm/non-farm. Alternatively, farm/non-farm may be inferred from OUG, given that agricultural occupations may be identified from ISCO values. This might be preferable as it reduces the number of columns required in the E-SEC derivation matrix from ten to seven (see paras 7.13-7.22 below).

For employment status:

Were you working as an employee, as self-employed with employees, as self-employed without employees or as an unpaid family worker?

For whether a supervisor:

A standard question on supervision is:

IF EMPLOYEE: In your (last main) job, do (did) you have any formal responsibilities for supervising the work of other employees? (Yes = supervisor; No = employee)

The problem with this commonly used question is that it can lead to false claims to supervisory status. A question such as this used in Norway's Level of Living Surveys leads to about a third of the sample claiming supervisory status (see also Rose *et al* 1987). For our purposes, a supervisor is someone whose *main job task* is to supervise other employees. Therefore, we would prefer the following question on supervision:

In your job, is supervision of other employees your main task?

Some Member States (e.g. Germany) do not routinely enquire about supervision, even in the LFS. However, this is a vital question from the E-SEC viewpoint.

For establishment size:

IF EMPLOYEE: How many employees were there at the place where you worked? 1-3; 4-9; 10+ (or more categories if required. Also Don't know but less than 10/10 or more)

It should be noted that, ideally, we need information on the total number of employees in the employing organisation rather than at the particular workplace. However, respondents often cannot provide this information and so NSIs ask for workplace size.

IF SELF EMPLOYED: Were you working on your own or did you have employees? On own/ with partners but no employees; non-continuous employees only; no employees.

IF SELF-EMPLOYED WITH EMPLOYEES: How many people did you employ at the place where you worked? 1-3; 4-9; 10+ etc.

The E-SEC Derivation Matrix

7.13 For all eligible persons, we now have:

1. occupation coded to ISCO-88 (COM) OUG (or to a national classification – see para 7.12);
2. employment status coded to ICSE-93;
3. number of persons in the local employing unit (0, 1-3, 4-9, 10+);
4. industry – coded to farm/non-farm;
5. (for non-managers) supervisory responsibilities;
6. whether or not HRP.

7.14 As we noted in para 5.18, in order to classify persons to E-SEC categories (SEGs), we require a table that brings together information from the above proxy variables. (The household level E-SEC is derived using items 1-5 for the reference person, as we shall see.) The derivation can be achieved through use of a 'look up' table – an E-SEC 'derivation matrix' - that is matched onto an existing set of data. The data and the matrix are matched on the ISCO-88 (COM) (or national) OUG codes with the columns of the matrix forming ten new variables within the data (or seven if the agricultural sector is established via 'agricultural' OUGs). The E-SEC category for each case is then selected from these new variables by way of a derived 'employment status' (or employment situation) variable. The E-SEC values in each cell of the matrix reflect the typical employment relations for that combination of OUG and employment status, as determined by methods discussed in section 9.

7.15 The derived employment status variable (say, *empstat*) is created by combining data from (1) ICSE-93 on whether an individual is an employer, self-employed or an employee (family workers would usually be given the HRP value); (2) industry (farm/non-farm); (3) size of establishment; and (4) supervisory status. The full set of categories and associated values of *empstat* would thus be:

1. Self-employed (non-farm) with 10 or more employees;
2. Self-employed (non-farm) with less than 10 employees;
3. Farmer ('large');
4. Farmer ('medium');
5. Farmer ('small');
6. Self-employed with no employees;
7. Manager in an establishment with 10 or more employees
8. Manager in an establishment with less than 10 employees
9. Supervisor
10. Employee

7.16 E-SEC uses information on the number of employees in the 'workplace' in order to distinguish between employers in large and small establishments and, for some occupations, between higher and lower managerial occupations. Except for agriculture, the distinction between large and small employers is that made by ISCO and consists of applying a size rule cut-off of 10 employees. Individual employers in organisations with 10 or more employees are deemed to own 'large' establishments; those owning enterprises below this

threshold are classified as 'small' employers. In the LFS, size of establishment is related to the workplace, i.e. the local unit of the establishment at which the respondent works. As noted previously, for the purposes of E-SEC, size of employing organisation would be a preferable measure.

7.17 Managers may only be allocated to occupations in ISCO major group 1. This negates the need to ask for self-reported managerial status and so respondents only need to be asked whether they have formal supervisory duties or is an employee. This information should either not be collected or be ignored for managers.

7.18 The derivation routine for the employment status variable varies with ISCO major group. If the OUG is in major group 1 then data are needed on (1) whether self-employed or employee and (2) size of establishment (see table 7.2). The size of establishment data can be collapsed prior to or during the derivation.

7.19 If the OUG code is in major groups 2-9 then data are needed on (1) self-employed or employee, (2) size of establishment and (3) supervisory status (table 7.3).

Table 7.2 Derivation of empstat for managers (ISCO-88 (COM) Major Group 1

First level	Self-employed			Employee	
Second level	10+ employees	<10 employees	No employees	10+ employees	<10 employees
Result	S/emp 10+	S/emp <10	S/emp none	Manager 10+	Manager <10
Empstat Value	1	2	6	7	8

Table 7.3 Derivation of empstat for ISCO-88 (COM) Major Groups 2-9

First level	Self-employed			Employee	
Second level	10+ employees	<10 employees	No employees	N/A	
Third level	N/A	N/A	N/A	Supervisor Yes	Supervisor No
Result	S/emp 10+	S/emp <10	S/emp none	Supervisor	Employee
Empstat Value	1	2	6	9	10

7.20 The rows of the E-SEC derivation matrix are the OUGs of ISCO-88 (COM) and the columns are the employment status derived variable (table 7.4). The structure of the matrix reflects the distinction made in ISCO between managers and other employees. Managers are coded to major group 1 only (see appendix 2). Accordingly in the matrix the managerial cells are only valid for ISCO codes 1110 to 1319. As a corollary, for these managerial OUGs the cells for other employees (including supervisors) are left blank because they are invalid (see codes 12xx and 13yy in table 7.4 below). For ISCO major groups 2 to 9, it is the managerial codes that are invalid, as managers in these occupations should be coded to major group 1. Therefore, the managerial cells are left blank (see codes 3xxx, 3yyy and 5xxx in table 7.4).

7.21 There would be other blank cells in the matrix corresponding to situations deemed not to arise, such as a self-employed police officer. In practice some responses to surveys and censuses may correspond to blank cells. These should be edited according to rules by either changing the occupation or the employment status code so as to achieve a permissible combination. While such editing can correct coding or keying errors, it could also be the case that the matrix does not allow for combinations that do appear on the real world. This can especially be the case for occupations where self-employment is deemed not to occur but where labour market changes have nevertheless created a new combination. In general, illicit combinations should be edited to the OUG value for the 'simplified' form of E-SEC – see below.

Table 7.4 Example illustration of parts of the E-SEC derivation matrix

	Empstat						
ISCO OUG	S/emp 10+	S/emp <10	S/emp None	Manager 10+	Manager <10	Super-Visor	Employee
12xx	11	X	X	13	X	X	X
13yy	X	41	42	X	21	X	X
3xxx	15	25	25	X	X	22	22
3yyy	15	25	25	X	X	22	22
5xxx	11	41	42	X	X	26	33

Note: in this table, for simplicity's sake, we assume a seven-category empstat (i.e. that 'farm' can be established via ISCO).

7.22 *Using employment status to allocate E-SEC.* The derived employment status variable (*empstat*) identifies which of the added variables corresponds to the E-SEC category to be allocated to each case. For example, in table 7.5, the respondent in row 1 has an *empstat* value of 1. This relates to the added variable se10p (i.e. se10p – self-employed with 10 or more employees - in the *empstat*

variable has a value of 1). This combination of OUG and *empstat* allocates the respondent to E-SEC category 11, as seen in the right-hand column. That is, this combination has employment relations that correspond to SEG 11 (large employers), in class 1 of E-SEC. Similarly, the respondent in the final row has an *empstat* value of 10 (employee) and so is allocated an E-SEC SEG category of 33 from the added variable, again on the basis of employment relations data for that combination of OUG and *empstat*. We shall discuss how we arrive at these E-SEC values in section 9.

Table 7.5 Extract from E-SEC Derivation Matrix

Existing	*Derived*	*Seven variables added from matrix*							*Derived*
ISCO OUG	Empstat	Se10p	Sel10	Seno	Man10p	Manl10	Super	Emp	E-SEC
12xx	1	11	X	X	21	X	X	X	11
12yy	7	11	X	X	13	X	X	X	13
3xxx	9	11	41	42	X	X	22	22	22
3yyy	6	11	41	42	X	X	26	33	42
5xxx	10	11	41	42	X	X	26	33	33

Note: in row 1, column 5, this OUG has been allocated to SEG 21 for lower managerial occupations, despite an establishment size of 10+. We noted earlier that the size variable could be over-ridden for managers.

Deriving the E-SEC - reduced and simplified forms

7.23 Some data sets may not contain all the elements required to create E-SEC in the prescribed manner. However, it would also be possible to produce a 'reduced' form of the E-SEC for use where data on establishment size are not given and a 'simplified' form for use with data where only occupation is recorded, as we noted earlier. Naturally, the costs and benefits of these forms would have to be assessed for each member state. The reduced form could be derived in essentially the same way as the full form of E-SEC, except that (ignoring the agricultural sector again) the employment status variable would only have five categories:

1. Self-employed with employees;
2. Self-employed with no employees;
3. Manager
4. Supervisor
5. Employee

The E-SEC category for self-employed with employees and for managers would be based on the modal employment status category for each occupation.

7.24 The simplified form of E-SEC would be for data sets in which only information on occupation (i.e. on OUG) is available. The primary rule would

be that occupations (OUGs) are allocated to the E-SEC category for employees, except where employees are in a minority within that occupation or an occupation has no employee status (e.g. managers). In these cases the E-SEC category of the modal occupation/employment status combination would be used. Hence, for example, if within a particular OUG supervisory status predominates, then the E-SEC value for supervisors in that OUG will apply.

The household level E-SEC

7.25 Most EU Member States have procedures for applying their SEC to households as well as to individuals and we believe that the E-SEC must do the same. The issue of a household class measure generally reduces in practice to that of the definition of a 'household reference person' (HRP) as we shall show. As Bakker and Jol (1997: 48) have commented, this is because:

> '…it is difficult and inefficient to classify individuals on the basis of information on all the household members, so…the usual practice is to select just one household member as a reference person and use the information on that person to classify the household as a unit. All the household members are then assigned the same (position): that of the household…The idea behind this procedure is that the reference person is the household member who best represents the household, as he or she exerts most influence on the household's circumstances and therefore on the quality of life of all its members.'

Nevertheless, a satisfactory HRP definition is not a simple matter. However, before we consider that problem, first, as noted in section 3, we have to make a case for a harmonised household measure.

7.26 *Making the case.* Traditionally in sociology, the unit of class composition (sometimes referred to as the unit of analysis) has been the conjugal family/household rather than the individual. That is, the (nuclear) family is given priority over the individual as the unit of class composition so that those living together in a family household are regarded as having the same class position. In other words, the family is the basic class structure element because of the inter-dependence and shared conditions of family members. As we saw in section 3, a family member's own class position may have less relevance to his/her life-chances than those of another family member may (see, for example, Vagero 2000). It is the family that is the unit of class 'fate' and the basic decision-making unit in terms of both consumption and labour market participation (see, for example, Erikson and Goldthorpe 1992: 232-239). Hence, lines of division run between, but not through families/households. This does not assume or imply that the family is egalitarian, but only that they share the same fate. Therefore, we need to be able to assign a household E-SEC value to all household members.

7.27 The simple practical solution to this problem has been to select one family or household member (usually the male breadwinner) and take that person's class

to stand for the whole household. Recently, however, especially because of the increased participation of married women in the labour market, there has been much discussion about whether this continues to be an appropriate strategy. Some have advocated that the individual should now be the unit of class composition. Without entering the details of this controversy (see Sorensen 1994 and Erikson and Goldthorpe 1992 *ibid.*), here we discuss different ways in which a SEC can be applied to households and families.

7.28 *Assigning household class: (1) 'highest income householder' and 'Chief Income Earner'.* Because of the overt sexism involved in the male breadwinner approach to the definition of the household reference person, two other methods have been developed. In the UK, ONS recently reviewed its procedures (Martin 1995, 1998; Martin and Barton 1995). It has decided that the household reference person should be the 'Highest Income Householder' (HIH), thus removing sex as a criterion for determining head of household. Here the householder is regarded as the person responsible for owning or renting or who is otherwise responsible for the accommodation. Where this definition yields joint householders, the person with the highest income takes precedence and becomes the HRP. Where incomes are equal, the older is taken as the HRP. This procedure increases the likelihood both that a female will be the HRP and that the HRP better characterises the household's social position. Analysts may therefore wish to use this procedure for determining household class. The Dutch CBS have developed a similar approach. However, this simply takes the 'chief income earner' (CIE) without qualification as the HRP (see Bakker and Jol 1997). From the viewpoint of E-SEC, *any* definition based on income is likely to reduce the number of HRPs classified as self-employed, since they tend to have (or declare) low incomes. HIH would probably be preferable to CIE.

7.29 *Assigning household class: (2) the 'dominance' approach.* There is an alternative approach that regards the household reference person as the one who is dominant in the labour market, the so-called 'dominance' approach (see Erikson 1984). From a social scientific perspective, this procedure is preferable to one that relies on income in the determination of household class, but it does require that we establish E-SEC values for all household members.

7.30 The dominance approach advocates two class concepts. In the first, work-related concept, individuals are the unit of classification because work is uniquely related to individuals. Hence it does not matter whether the individuals are male or female; each can be assigned a *work position*. In the second, market-related concept, families are seen as the classification unit. This is called the *class position*. Everyone has a class position, whether or not they are in the labour market. The problem is thus how to determine a class position for the family and then assign it to men and women alike. Erikson argues that class position may be derived as a function of individual family members' work positions based on an order of dominance. At first sight, this may appear to contradict our earlier statement that the E-SEC classes cannot be ordered. However, it should be recalled that the employment relation only applies to individuals, i.e. to the work position. Employment relations do not exist within families and so do not play a part in determining which family member's work position best represents the family's class position.

7.31 So how may we determine family class position? If only one household member is in paid employment, that person's work position becomes the family's (household's) class position. Similarly, if two generations are present in the household and each has a representative in employment, the person of the senior or *primary* generation takes precedence. However, where each of two or more members of this primary generation has work positions and these positions are different (i.e. place them in different individual level class categories), we need another dominance rule to determine (household or family) class position. As with any other method for determining the HRP, ultimately we need an ordinal variable to make the final selection. If the work positions are the same (as they often will be), then this becomes the family class position. Otherwise, we need to decide for each possible pairing of different work positions, which is likely to have the 'the greatest impact upon ideology, attitudes, behaviour and consumption patterns of the family members' (Erikson 1984: 504). *Note this ordering is not based on work position as determined by employment relations but on the basis of the life chances known to be associated with work positions*. It is in this sense that Erikson assumes there are dominance relations on various dimensions in which work positions may differ. Thus, higher qualifications dominate lower ones; non-manual work dominates over manual work; self-employment dominates over being employed; employers dominate over own account workers; and professional work dominates all other forms of work. Finally, the active dominate over the inactive. *All these assumptions flow from long-established results of research on class and life chances.* Erikson then tested these assumptions using data from the Swedish Level of Living Survey (*ibid*: 507-511).

7.32 On the basis of Erikson's research, where the E-SEC work positions (i.e. the individual SEG assignments) differ, the rules of precedence we suggest are as follows. First, individual work positions derived from full-time work are dominant over those from part-time work. Second, if each is in full-time work, or each is in part-time work something like the order of precedence in table 7.6 below should prevail from highest to lowest. This order would need to be validated, following similar procedures to Erikson's.

7.33 *Joint classification.* It will be noted that all three procedures we have discussed ultimately involve the assignment of a household or family class position in terms of the characteristics of one member of the household. Where more than one person has a work position, and especially where cohabiting partners each have a work position, why do we not advocate some kind of joint classification? As Erikson (1984) has observed, it is doubtful whether an average code of the individual class position of two or more members of a household is meaningful. Are a husband in E-SEC class 2 and a wife in class 6 ('average' = 4) in the same class as, say, a husband and wife who are each in class 4? Joint approaches to classification such as this, as well as more complicated alternatives, have been suggested. However, it is hard to see how these approaches could ever square with the sorts of concept which we believe should underpin the E-SEC (see Marshall *et al* 1995; Erikson 1984; Erikson and Goldthorpe 1992: 238).

7.34 *Recommendation.* We suspect that NSIs will prefer highest income householder as the most practical solution to the HRP problem. Certainly it is simpler and

cheaper to determine the HRP using this method and it can thus be applied in all types of survey. Nevertheless, we also recommend that dominance rules should be developed for E-SEC so that they may be adopted for use with data sets (such as the ECHP) that contain full employment information for all household members. Certainly, the dominance method is a more satisfactory alternative from a class analysis viewpoint.

Table 7.6 Possible Dominance Rules for Assigning Household E-SEC

SEG	Groups
15	**Higher professional occupations (employers/self-employed)**
14	**Higher professional occupations (employees)**
13	**Higher managerial occupations**
11	**Employers with 1-9 employees (exc. agriculture)**
12	**Farmers (large)**
51	**Farmers (medium)**
52	**Farmers (small)**
41	**Employers with 1-9 employees (exc. agriculture)**
53	**Own account farmers**
42	**Own account workers (non-professionals)**
54	**Members of agricultural co-operatives**
23	**Lower professional occupations (self-employed)**
25	**Higher technical occupations (self-employed)**
22	**Lower professional occupations (employees)**
24	**Higher technical occupations (employees)**
21	**Lower managerial occupations**
26	**Higher supervisory occupations**
31-34 [1]	**Intermediate occupations**
61	**Lower supervisory occupations**
62	**Lower technical occupations**
71-76	**Semi-routine occupations**
81-85	**Basic occupations**
93	**Other unemployed**
91	**Long term unemployed**
92	**Never worked**
05 [2]	**Students**

Notes: (1) where more than one SEG is included in a row, hierarchy is assumed to be equivalent for all SEGs in the class concerned. (2) For other categories of non-employed, first reclassify to SEG of last main job.

8. E-SEC, ISCO-88 and the International Classification of Status in Employment (ICSE-93): Some Mapping Issues

Introduction

8.1 This section considers some of the problems that are likely to arise in a programme of work to construct E-SEC, based upon information cross-classified by the 1988 International Standard Classification of Occupations (ISCO-88) and information using the 1993 International Classification of Status in Employment (ICSE-93). It examines briefly the extent to which countries of the European Union have achieved harmony in the production of statistical information classified to ISCO-88 and ICSE-93. It concludes by outlining the nature of two resource documents that would assist in the expert evaluation of proposed E-SEC categories

ISCO-88 and ISCO-88 (COM)

8.2 The 1988 International Standard Classification of Occupations, and its EU variant ISCO-88 (COM), utilise the concepts of the kind of work performed or *job*, and *skill* to structure the classification. A job is the statistical unit to be classified. Skill is defined as the ability to carry out the constituent tasks and duties of a given job (ILO, 1990; p2). Four broad skill levels are defined, which are given operational definitions in terms of the International Standard Classification of Education (ISCED).[12]

8.3 ISCO-88 (COM) is the agreed common interpretation of ISCO-88 for use within EU official statistical sources of occupational information (see Appendix 2). National Statistical Institutes have agreed to codify occupational data transmitted to Eurostat according to ISCO-88 (COM). This applies *inter alia* to Census data, the Labour Force Survey, and the Structure of Earnings Survey. During the period 1993 to 1996 considerable efforts were made by most National Statistical Institutes to align their national occupational classifications with ISCO-88 (COM) in a harmonised manner.[13]

ICSE-93

8.4 The International Classification of Status in Employment (ICSE-93) was approved at the 15th International Conference of Labour Statisticians in 1993. It classifies jobs 'by reference to the type of contract of employment between the person holding the job and other persons or legal organisations. Such contracts are classified according to the types of economic risk spread between the contracting parties and/or the authority relationships which are defined by and which may legally regulate the contract' (ILO 1993).

8.5 The ILO in 1997 (Elias 2000) conducted a survey of practices and problems relating to the classification of status in employment. Responses to this survey were obtained from the national statistical offices of all countries within the European Economic Area, the European Union and for all applicant countries. This information concerned:

the methods used to collect information about status in employment in different statistical sources;

the nature of instructions and guidance given to interviewers and respondents to help them determine the appropriate response to questions about status in employment;

the statistical treatment of a number of groups of workers which are difficult to classify by status in employment;

recent changes to their classification of status in employment.

Mapping from national occupational classifications to ISCO-88 (COM)

8.6 Previous work has attempted to establish the comparability of the mapping from national occupational classifications to ISCO-88 (COM). Table 8.1 below, extracted from Elias and McKnight (2001), gives the most up-to-date view of these 'comparability ratings'.

8.7 There are a number of key areas where the cross-national comparability of occupational statistics classified by ISCO-88 (COM) is susceptible to national differences of definition. These are as follows:

Major group 1: *Legislators, senior officials and managers*

There are two important issues here. First, the term 'manager' is used with less precision in the United Kingdom (and probably also in Ireland) than in most other European countries. Managers are defined in the former countries in line with the ILO definition, as those who 'plan, direct and co-ordinate the policies and activities of enterprises or organisations, or their internal departments or sections' (ILO 1990: 23). In revising its national occupational classification the UK made a significant effort to 'tighten' this definition of the managerial categories. However, it remains the case that a significantly larger proportion of occupations remains defined as managerial in the UK than in most other countries of the European Union.[14]

Second, the 'owner-manager' is classified within this major group in some countries, or to the relevant occupation in which they work in other countries. This has caused considerable problems with occupations that involve a significant proportion of managerial tasks, such as 'shopkeeper'.

Major groups 2 and 3: *Professionals and associate professionals*

There are issues here that relate to the 'professionalisation' of specific occupations, particularly teaching and nursing. Although the contractual conditions of employment within these occupational areas may be fairly similar between EU countries, their positioning into major groups 2 or 3 of ISCO-88 (COM) may vary.

Table 8.1 Comparability between ISCO-88 (COM) and national classifications

Countries	Classification	Mapping to ISCO-88 (COM)	Comparability rating
'Pre 1995' countries			
Belgium	INS-91	Simple	Average
Denmark	DISCO-91	Simple	Average
Germany	KldB-92 Rev	Complex (needs workplace size)	Good
Spain	CNO-94	Simple	Good
France	PCS-82	Complex (needs NACE, workplace size)	Good
Greece	STEP-92	Simple	Good
Ireland		Complex (needs NACE, workplace size)	Average
Italy	CP-91	Simple	Poor
Luxembourg	ISCO-88	Simple	Average
Netherlands	CBS 90/91	Simple	Average
Portugal	CNP-94	Simple	Good
United Kingdom	SOC-90	Complex (needs NACE, workplace size)	Poor
'Post 1995' countries			
Finland	AMK-97	Simple	Not known
Austria	ÖBS-72	Not available	Not applicable
Sweden	SSYK-95	Simple	Not known

Note: 'NACE' refers to the Classification of Economic Activities

Major groups 3 and 4: *Technicians and associate professionals and clerks*

The rapid integration of information and communication technologies (ICT) developments in these occupational areas has blurred the distinctions between clerical occupations on the one hand and technical occupations on the other. While this is not a specific problem relating to cross-walks from national occupational classifications to ISCO-88 (COM), the recent nature of these developments and the lack of resources to maintain ISCO-88 (COM) means that national practices in the treatment of occupations which sit at the boundary of these two major groups may vary.

Major groups 6 and 9: *Skilled agricultural and fishery workers, and elementary occupations*

The often-low quality of occupational information within statistical sources about the nature of jobs in major group 6 leads to a situation where virtually all agricultural workers and farmers are placed here regardless of skill level.

Major groups 7 and 8: *Craft and related trades workers, plant and machine operators, and assemblers*

The distinction between craft workers on the one hand and machine operators on the other is often difficult to operationalise in a consistent fashion between countries.

Status in employment: variations in national practices

8.8 The basic categorisations of status in employment are between the self-employed (or 'own-account' workers) without employees, employees and employers. The ICSE-93 recognises these groups, plus two others (contributing family workers and members of producers' co-operatives). Most European countries recognise some or all of these categories, plus others that may be at the boundary between these positions (e.g. owner-managers of incorporated enterprises, homeworkers, franchisees, etc.). Methods used to position jobs within categories vary between countries. Most use a pre-defined set of categories and allow respondents to self-select into an appropriate category. However, the number of categories is variable and instructions issued to respondents or interviewers may be more or less detailed.

8.9 Unlike ISCO-88 (COM), there is no agreement between National Statistical Institutes and Eurostat to classify jobs by status in employment according to a common standard such as the ICSE-93.

Constructing the E-SEC from ISCO-88 (COM) and ICSE-93

8.10. We have proposed that, operationally, an E-SEC should be created by defining classes in terms of ISCO-88 (COM) occupational groups in combination with other information, notably status in employment categories. Underlying this proposition is a strong assumption – that the E-SEC categories and classes will work reasonably well for all Member States. However, we accept that the relationship between terms and conditions of employment for the same occupational groups are unlikely to be so consistent between countries. We know this from previous work in constructing ISCO-88 (COM) (see appendix 2) and from the survey of practices relating to the classification of status in employment (Elias 2000). While the common classification of occupations represents an appropriate starting point for this work, it will be the case that the variations in terms and conditions of employment between countries for seemingly similar occupational groups will necessitate the need for a more 'tailored' approach to the final construction of the social classification.

8.11. To pursue this goal further we have identified two resource documents that need to be created. Each document would be designed specifically to assist national experts in social classification to understand the links between social categories, their national occupational classification and national practice with

regard to the classification of status in employment. The first such document, the *Mapping Manual*, would show for each country the structure of the proposed categories of the social classification in terms of its constituent national occupational categories, based upon the existing mappings from national classifications to ISCO-88 (COM). With the permission of the ILO, it could also present key information from the 1997 *Survey of Practice concerning Status in Employment* for each country. National replies to this survey might also form the basis for a dialogue with NSIs concerning the practical significance of the ambiguities in the SIE categories they are using and the associated questions they use in surveys.

8.12. The second document would be compiled from the EU version of the 1999 Labour Force Survey. This would provide a range of comparative employment statistics for each country (occupational structure by sectors, status in employment by occupations and sectors and by workplace size, etc.). This would facilitate the identification of areas of significant difference between countries within the proposed social categories. Examination of such differences, in collaboration with the *Mapping Manual* described above, would enable experts to target areas of the social classification for further study and elaboration in the national context. These conclusions bring us rather naturally to the validation of E-SEC.

9. Validating the E-SEC

Introduction

9.1 Once derived, the E-SEC must be validated. That is, two crucial issues need to be demonstrated. First, it must be shown that E-SEC is a measure of employment relations (as discussed in section 5) and that it has internally homogeneous categories, each as different as possible from one another. Secondly, we need to show that the E-SEC adds value by offering an improved understanding of other variables (such as health variables) compared with what we would get if we only used E-SEC's component variables (say employment status or ISCO-88 (COM)). The first issue is one of *criterion validation* and the second of *construct validation* (see Appendix 4). Construct validation would also involve other issues, such as an assessment of E-SEC as a comparative measure.

Criterion validation

9.2 A measuring instrument 'is valid if it does what it is intended to do. An indicator of some abstract concept is valid to the extent that it measures what it purports to measure…Validity concerns the crucial relationship between concept and indicator' (Carmines and Zeller 1979: 12). In the case of E-SEC, therefore, we need to know that it is a reasonably adequate index of the conceptualisation of the social structure set out in sections 2 and 5. There are two methods by which the E-SEC could be constructed in order for its criterion validity to be assessed.

9.3 The first method would involve a special data collection exercise across the whole EU in which we directly measure employment relations at the level of OUG/employment status combinations, especially for employees. This could be achieved only through a large survey such as the LFS, yielding sufficient cases for national analyses at the OUG level. This would clearly be an expensive exercise and would take some time to initiate. It would involve the measurement and analysis of aspects of employment relations such as form of remuneration, job security, career opportunities, job autonomy, occupational perquisites, and so on, i.e. explicit and implicit aspects of employment contracts. An exercise such as this would be designed to measure the extent to which occupations may be grouped together according to the model of employment regulation and classes specified in sections 5 and 6. Issues of adequacy could also be applied to employment status categories. We could investigate, for example, the adequacy of a size cut-off of 10 employees between large and small employers (see, for example, McKnight 1997 and O'Reilly 1997b). We could also examine whether a special employment status category is required for part-time employees. This sort of exercise is feasible, as demonstrated in the UK case (see O'Reilly and Rose 1997 and 1998; Rose and O'Reilly 1998).

9.4 The second method would involve, first, the construction of an E-SEC derivation matrix like the one discussed in section 7. In this matrix, each cell is assumed to be internally homogeneous in terms of employment relations. The

best available evidence from official and academic data on terms and conditions of employment would guide the actual allocation of E-SEC values to the cells, as well as consultation with experts in sociology, economics and industrial relations. However, this would involve a greater degree of subjective judgement and guesswork than the alternative method of directly measuring employment relations (although even the latter cannot be a wholly 'statistical' matter: the search for an 'employment relations' variable whose values match directly on to E-SEC SEGs would likely prove elusive). For this reason, once the matrix is created, it should be subjected to criterion validation using independent data (see, for example, Evans 1992). An analytic exercise of this kind would be designed to see how far the E-SEC schema, as operationalised in this way, succeeds 'in capturing empirically the differentiation of classes that it is supposed to capture conceptually' (Goldthorpe 1997: 42).

9.5 We assume that the first type of exercise is not likely to be possible in the near future. It would be a time-consuming exercise – taking at least eighteen months to two years from the time data were collected and up to two years of planning – and, partly as a consequence, it would be very expensive. Following this, there would need to be a further year or so for construct validation analyses, including the assessment of E-SEC as a comparative measure. Given that Eurostat requires a SEC in the near future and at the smallest cost possible, only the second method would seem to fit the case – at least for the time being. How might this be undertaken?

Proposal for a criterion validation of E-SEC

9.6 First, we are fortunate to have a measure similar to E-SEC that has already been created and validated using the first method of collecting employment relations data at the level of occupations. This is the UK NS-SEC (see Rose and O'Reilly 1998). We can also build on previous European research aimed at developing a comparative measure of social structure similar to E-SEC, for example the Comparative Analysis of Social Mobility in Industrial Societies (CASMIN – see Erikson and Goldthorpe 1992).

9.7 Given the broad similarities of market economies and occupational and industrial structures across the EU, we can expect that employment relations will also be similar. Thus, it would be reasonable to begin by creating an E-SEC derivation matrix with cell values based on UK employment relations data. These data were collected in the 1996/97 winter quarter of the LFS. Questions were asked as follows:

(1) Which of the following best describes how you are paid in your present job?

Monthly salary plus performance
Monthly salary only
Weekly wage
Hourly paid
Piecework
Other

(2) Are you on a recognised pay scale with increments, either automatic or performance related?

Yes
No
Don't know

(3) If you decided to leave your job, how much notice are you officially required to give?

Less than one week
One week but less than one month
One month but less than three months
Three months or more
Don't know

(4) In your sort of work, are there opportunities for promotion, either in your current organisation or by changing employers?

Yes
No
Don't know

(5) Who decides what time you start and leave work?

Flexitime system
Employer decides
I decide within certain limits
Negotiated with employer

(6) Does your job require you to design and plan important aspects of your own work, or is your work largely specified for you?

I am required to design/plan my work
Work is largely specified by others
Other

(7) How much influence do you personally have in deciding what tasks you are to do?

A great deal
A fair amount
Not much
Or none at all

(8) Does your sort of work have a recognised career ladder?

Yes
No
Don't know

9.8 In selecting these as appropriate questions to use as indicators of employment relations and conditions among employees, the UK team was by no means working in the dark. Recent research suggested that there were three conceptually separable, although empirically correlated, respects in which employment relations might continue to be differentiated according to whether a service relationship, intermediate or labour contract form of regulation exists. These were (1) forms of remuneration; (2) promotion opportunities; (3) and autonomy, especially as regards time (see Goldthorpe 1997). Hence the questions that were asked as given in the previous paragraph. So, for example, salary payments, the presence of incremental scales, longer periods of notice and high degrees of autonomy, taken together, would indicate a service relationship. The absence of these criteria would indicate a labour contract. A mixture of positive and negative values would suggest intermediate regulation.

9.9 It should be noted, however, that only a few elements in a far wider potential set of employment relations items were covered by the UK LFS questions. Equally, limited space on the questionnaire meant that the questions themselves were rather crude. Moreover, there are real difficulties in producing reliable employment relations data in surveys of individuals. Better quality data could only come from employers and the analysis of the implicit and explicit terms of actual employment contracts, but this would present some real sampling difficulties if representative data were to be obtained. Consequently, for these and other reasons (such as small numbers in some OUGs), UK survey data on employment relations had to be supplemented wherever possible using both data from other sources (e.g. careers databases, employee and employer organisations, reports and academic studies) and expert judgements.

9.10 The resulting LFS data were analysed along lines described elsewhere (see O'Reilly 1997a; O'Reilly and Rose 1997 and 1998; Rose and O'Reilly 1998). Briefly, an employment regulation variable in the form of a 'service relationship score' (SRS) was calculated for all employee OUG/employment status combinations. A binary variable was created from each question to indicate the presence or absence of a service relationship. The scores on each item were then summed to produce the SRS. The reliability of the SRS scale was assessed and proven satisfactory; i.e. the linear combination of the employment relations variables formed an internally consistent scale in which no item was redundant. Each item thus captured a related but different aspect of employment relations. A derivation matrix was then constructed in which each cell was as internally homogeneous as possible with respect to employment relations. The resulting SEC was then validated using various methods of analysis (latent class analysis, logistic regression and OLS regression, for example). OUG/employment status combinations as differentiated by the SRS

were found to map onto conceptual class categories similar to those discussed in section 6.

9.11 The results of this exercise, although applied to a matrix using the UK Standard Occupational Classification, could also be applied to a matrix using ISCO-88 (COM) OUGs. How could the resulting E-SEC then be validated? Here we propose a similar exercise to that conducted by the CASMIN team.

9.12 The matrix should be submitted to a committee of experts with representatives from each Member State. These individuals would also be supplied with the fullest possible brief about the proposed E-SEC, including details of the UK validation exercises that underlie the draft E-SEC derivation matrix. This is crucial so that each expert, when examining the matrix allocations, has the correct allocation criteria in mind (rather than their own, possibly fallacious ones). Experts would then independently examine the matrix and would flag any allocations they thought incorrect for their state. In these cases, they would be required to provide evidence in line with the allocation criteria. They would each supply a report that would first be examined by another expert group. The convenor of the group would then call a workshop meeting of all the member state experts to discuss and agree upon matrices for each member state. A similar procedure could be adopted for the small-scale feasibility study discussed in section 10.[15]

9.13 Based on past research, we might expect some differences in the matrix across member states. For example, we know that public sector occupations might be differently allocated across member states. There might also be differences with occupations that are in the public sector in some countries, but the private sector in others. And lower sales and service occupations might vary in terms of their employment relations across states. Nevertheless, we would be surprised if a 'one-size fits all member states' classification did not emerge.

Construct validation

9.14 Once an E-SEC matrix was agreed upon for each state, the classification could be applied to the analysis of relevant data. Now the issue would be whether E-SEC added value to the explanation of life-chances. Is E-SEC a better measure to use than, say, ISCO-88 (COM) major groups? Does it improve upon current comparative instantiations of the EGP schema? How does it compare with existing national socio-economic classifications? How useful is it for the investigation of relevant problems? These are issues of construct validation: judging a concept and its measurement in terms of empirical consequences.

9.15 However, such comparisons cannot be settled by statistical measures alone. What we should be concerned about, as we noted in paras 3.3 and 5.2-5.5 above, is whether using E-SEC improves our understanding of social processes, not just with whether it produces higher (or lower) correlations with dependent variables. Construct validation must be a theoretically driven process. As noted in appendix 4 (para 17):

> ‘If the variable is intended to reflect a particular *construct*, to which attach certain *meanings*, then hypotheses can be constructed and tested based on what we understand about the construct. In other words, “construct validity focuses on the assessment of whether a particular measure relates to other measures consistent with theoretically derived hypotheses concerning the concepts (or constructs) that are being measured.”’

9.16 Hence, in all construct validation exercises, the following must be noted and understood. Conceptually, the E-SEC is based on a well-defined sociological proposition that employment relations and conditions are central to delineating the structure of socio-economic positions in modern societies. The positions defined by the E-SEC categories exist independently of the individuals who occupy them at any particular time, but they condition and shape the lives of their occupants. That is, the life chances of individuals and families depend mainly on their position in the division of labour and on the material and symbolic advantages that derive from it. Thus, for example, health inequalities are differences between E-SEC categories in respect of morbidity and mortality. The study of these inequalities renders the social factors in the production of health outcomes more visible. We are therefore linking health with social organisation. This is vital for a range of public policy and monitoring issues (e.g. WHO targets for reducing social differences in health).

9.17 To be sure, one may use other independent variables than a SEC to study outcomes (see Kunst and Mackenbach 1996: 12). Examples include income, education level, housing tenure and other aspects of consumption (e.g. car ownership). However, and as we explained in section 2, none of these alternatives measures the basic structuring principles of a market society in quite the way that a SEC does (and *cf.* Ostberg 1996: Ch.1). Thus, when we pose questions about how the social structure shapes outcomes or life-chances, our SEC variable should be of prime importance, as we also noted in section 2. Hence, again, we need to keep the idea of what the SEC measures analytically distinct from the possible consequences that the occupancy of a SEC position may give rise to, e.g. income, consumption or housing (see Breen and Rottman 1995a). This separation will allow us to examine the mechanisms that link the SEC to outcomes.

9.18 Take the example of the E-SEC/mortality relationship. First, we accept that there may be situations where, for example, the relationship might reduce or disappear when other variables are introduced into a model. Equally, however, we need to be clear about what this might mean. Second, we also have to think of the basic modelling and measurement issues, i.e. are our procedures technically correct and appropriate to the problem? For example, we should be careful in our analyses not to set up a ‘variable race’ between different independent variables that do not have a common metric (see, for example, Breen and Goldthorpe 1999: 7). Third and most importantly, *we have to think theoretically before we think*

statistically. We need an explicit causal or explanatory narrative formed into testable hypotheses about the class ---> mortality relationship. In analyses using variables such as housing tenure and income to explain mortality, we would argue that these variables are themselves conditioned by E-SEC position. It could certainly be argued that E-SEC might have direct relations with aspects of health; but it might also be mediated *via* the life chances that derive from class position. Introducing life chance or deprivation measures into a model investigating the E-SEC ---> health relationship could then be expected to reduce the direct effects of E-SEC position, but it would be a mistake then to conclude that this reduces the contribution that E-SEC makes to our understanding of health outcomes. On the contrary, *such a finding would be in line with a class causal narrative*. Therefore we need first to think not of relations between variables, but of *social relationships* - and E-SEC is, precisely, measuring a crucial form of social relationship.

9.19 Thus, clear causal narratives are vital to the construct validation exercises. Breen and Rottman (1995a: 467) have pointed to the need to "hypothesise and test a number of different intervening variables that would represent alternative mechanisms linking class and outcome", i.e. specifying causal narratives. For example, there is growing evidence that the amounts of control and autonomy a person has at work are important factors in explaining heart disease (Bosma *et al* 1997). The service relationship's 'prospective perspective' associated with secure, career employment among top managers and professionals has components such as greater control and autonomy at work, more self-esteem, greater self-care with regard to factors such as diet and exercise, more choice over medical treatment and so on. This we have learned, for example, from the Whitehall Studies in the UK which show that, contrary to popular belief, it is those at the bottom of employment hierarchies who are most stressed (Marmot *et al* 1991; Bosma *et al* 1997; and see also Davey-Smith et al 1997 and 1998). Similarly, Jonsson (1993) and Jonsson *et al* (1996) have demonstrated the capacity of a classification such as that we propose to display variations in educational attainment of a theoretically expected kind.

9.20 What we require, therefore, are multivariate analyses that show how the effects of E-SEC position are mediated via specific intervening variables. How class has its effect will vary according to what it is we wish to explain. We must thus construct and test different models designed to link a range of different outcomes with what the E-SEC and its components measure.

9.21 Finally, it should also be noted that the use of SECs in research is not simply to act as a proxy for income where income data themselves are unavailable. We use SECs because they are measures designed to help us identify essential forms of *social relations* to which income is merely epiphenomenal.

Proposals for construct validation

9.22 Measuring and understanding health inequalities is clearly one of the most crucial policy areas to which E-SEC should contribute. Therefore we suggest that one project should be devoted to comparative analyses in this area. Moreover, the recent *EU Working Group on Socioeconomic Inequalities in Health* offers a platform for this work (see paras 2.14-2.16 above; see also Kunst 1996; Kunst and Mackenbach 1994.).

9.23 A variety of analyses could also be performed using the European Community Household Panel (ECHP). An existing international group, the European Panel Analysis Group – EPAG – is already being funded by the EU for policy-related longitudinal research under Framework 5.

9.24 The LFS is another key EU-wide data set that could be analysed. We would expect E-SEC to be a crucial explanatory variable with regard to unemployment, for example (see Elias and McKnight 1998). LFS data could also be used to examine the relationships between E-SEC and income (see Elias and McKnight 1997; McKnight and Elias 1998).

9.25 These are but a few construct validation examples. It would be possible to suggest others.

10. Next Steps

10.1 Eurostat has put aside some resources for the further development of E-SEC in 2001. These resources will be available as grants to NSIs. This will allow Eurostat to organise a 'feasibility study' of the recommended prototype or *beta version* of E-SEC, once this is produced. So far, INSEE, StaBu, ONS and Statistics Norway have all expressed an interest in being involved in this work However, we strongly recommend that all participating NSIs also employ social scientific experts in social classifications to assist in this work. Moreover, we believe that there should be one co-ordinating expert whose role would be to ensure compatibility between the various NSI projects.

10.2 The feasibility study would be conducted using existing data, especially the LFS and the ECHP. In the case of the latter, the EU-funded European Panel Analysis Group might be involved. *However, first, before a beta version of E-SEC can be developed, the study would need to address some of the issues which the expert group has not had time to resolve or wishes to see considered in more detail.* These issues are discussed at various points in this report. They include:

(1) the treatment of casual employment and the related issue of a minimum number of working hours to qualify for inclusion in the E-SEC at the individual level;
(2) the extent and nature of employment experience, as well as its timing relative to the observation period, which facilitates classification to an SEG group;
(3) the classification of full-time students;
(4) further clarification of conceptual issues and category definitions, such as those relating to the distinctions between 'higher' and 'lower' professionals, the treatment of 'employer' professionals and conceptual distinctions between 'higher', 'intermediate' and 'lower' types of occupations as well as between 'semi-routine' and 'basic' (but see the comments in para 6.14);
(5) a 'crisp' definition of a potential employment relations variable and its value set which supports and clarifies the distinctions between the different E-SEC classes and SEGs (but see para 9.4);
(6) the treatment of the 'other active' and the 'inactive' groups in the classification, i.e. agreement on the classification of groups marginal to or outside the labour market;
(7) definitions of farm business size;
(8) definitions of managerial level;
(9) definitions of public and private sectors; and
(10) definition of 'career typical' job.

10.3 One other vital issue that has not been detailed here, because there was no time for the group to discuss it, is how the classification should be implemented in each member state. The feasibility study requires the immediate construction of a draft derivation matrix, using ISCO-88 (COM), on the basis of UK employment relations data as discussed in section 9. Expert evaluation of this draft matrix (i.e. by social scientists familiar with the

conceptual model in section 5 and its application in research) would then be required for each participant NSI. Some NSIs might then wish to apply this matrix to their own national occupational classification through existing crosswalks to ISCO-88 (COM). The first point to be determined for each country would relate to the problems involved in creating E-SEC from their data (see section 8). This could best be determined for each EU Member State using the LFS and ECHP in the first instance. This would give some indication of any comparability problems.

10.4 However, a full-scale evaluation of E-SEC would require rather more resources than Eurostat has at its disposal for 2001. Thus, we recommend that a bid should be prepared for funding under what is currently Cross Programme Action line 8 (CPA8) of the fifth Framework Programme. This would allow a full validation exercise as recommended in sections 8 and 9 above. While the complete specification of such a bid requires further discussion between potential participants, we can give some idea of its likely content and a strategy towards its achievement.

10.5 First, the bid must relate clearly and strongly both to the aims and objectives of this Cross Programme Action and to the 2001 Eurostat-funded programme of feasibility work. CPA8 is concerned with the 'definition, measurement and exploitation of new socio-economic statistical indicators for the Information Society'. In other words, it will not be sufficient to show that our proposed work programme will lead to an E-SEC. We must also show how E-SEC will measure social changes that relate specifically to the developing 'information society'. Additionally, the research proposed should itself exploit best practice in terms of related software developments and networked distributed information. With this in mind, three main areas of research should be included in a CPA8 bid, each of which will break down into smaller work packages.

10.6 The first research area is *validation of a proposed E-SEC*. This would build upon the 2001 feasibility work. While the latter will utilise the LFS and ECHP, there are other sources that will facilitate more detailed and interesting validation work. These include national household panel studies such as the German Socio-economic Panel and the British Household Panel Study (see Rose 2000, table 1.7 and *passim*). The intention here would be to demonstrate the value of E-SEC in terms of its ability to differentiate persons/households in terms of long-term outcomes (e.g. health, morbidity and mortality).

10.7 The second research area would have a specific focus on *socio-economic change and the information society*. Here work would concentrate on the measurement and monitoring of changes within and across the EU that relate to implementation and diffusion of ICT-led changes (in product markets, capital markets and government-induced) and which are thought to bring social changes in their wake. What are the changes and (from research area 1 above) how are they likely to affect EU citizens?

10.8 The third research area would be *new tools for the measurement of social change*. We have noted at our expert group meetings that the normal approach

to the creation of harmonised instruments for the production of social statistics are difficult to apply, maintain and update. For example, the use of occupation as a proxy for the nature of the employment relationship brings with it all the problems already encountered in the harmonisation programme for ISCO-88 (COM). We would propose here to develop further the open-systems software for occupational coding to provide a tool that NSIs can tailor to their country-specific circumstances and which facilitate the production of harmonised information.

10.9 To make progress with these ideas, we propose the following. First, that work should begin immediately towards a CPA8 application for the round to be announced in February next with a June closing date (work to commence in 2002). We need to be in a position to move rapidly once that call is opened. Second, and towards that end, Eurostat and the expert group should exchange information and ideas concerning both the nature of the work programme and potential partners - NSIs, social classification experts and classification software experts. Third, with both our preliminary ideas and agreed core of partners in place, we should hold a meeting in March to progress our proposals, ensure they fit with any current E-SEC feasibility work financed by Eurostat, and to address any perceived weaknesses in the proposal.

Conclusion

10.10 Our progress on this project gives us full confidence that we can meet the objective of creating a harmonised E-SEC. The results of UK research (Rose and O'Reilly 1997 and 1998) demonstrate that employment relations and conditions as we have both conceived them here and propose to measure them do discriminate classes. We have also shown why an E-SEC conceived in the manner we propose has advantages as a comparative tool for policy and research purposes. These advantages relate in particular to the explanatory power that our approach offers. We are also greatly encouraged that recent research on inequality, notably in the area of health (Kunst *et al* 1998a and b), is also converging towards the kinds of explanatory models that we advocate.

Notes

1. A measure of socio-economic or structural position based on work and market situations does not imply that only those who are currently in formal employment may be classified, however. For example, the unemployed and retired may be classified according to a previous employment situation. That is, we can derive algorithms for allocating many non-employed persons to the same categories as the currently employed. We address this issue in more detail later (see sections 3, 4, 6 and 7).

2. This issue of how to deal with casual employment is one which remains to be discussed in future work on the E-SEC.

3. This does not imply that the SEC would ever be measured according to the principles of the occupational measure used to operationalise it. Rather it means that we could classify all occupational unit groups in terms of their typical employment relationships (see, for example, Rose and O'Reilly 1998: 21-22).

4. An *emic* approach concentrates on describing the indigenous values of a particular society. An *etic* approach applies broader theoretical models applicable across a number of societies. PCS appears to take the emic form and EGP the etic one. For reasons already stated, the latter approach is required for a comparative measure such as E-SEC. However, there is another conceptual difference between French and Anglo-Saxon approaches that should be noted because of its importance to the contents and purposes of this report. This is the difference between *essentialism* (alternatively known as *realism* or *idealism* - Platonic and Aristotelian in origin) and *nominalism*. Thus, for example, in referring to a 'socio-economic classification', the French sociologist will tend to assume that the term has a real, intrinsic or essential meaning that may be investigated. Pragmatic or 'empiricist' Anglo-Saxons regard a term like 'socio-economic classification' as words that are merely a useful instrument of description (see Popper 1960). We shall return to this point in para 5.16.

5. Further discussion on how the conceptual issues should be described and explained will also be required in the next phase of the project.

6. Note that these conceptual terms ('employer', 'own account worker') are used here in the context of class positions, not employment statuses. Similarly, some other terms used in this report (e.g. 'unpaid family worker') may not always have the same meaning as that normally given to them in official statistics.

7. The terms used here to describe occupations will be more fully explained in the next section.

8. The classification of students within the E-SEC is another issue that is not entirely resolved. Some members of the group believe that they are best classified as students only, i.e. as a 'free-floating' group.

9. Definitions of what constitutes 'public' and 'private' sectors for each member state need to be considered in the next phase. Whether employment relations for similar combinations of occupations and employment statuses differ between the two sectors is an empirical issue. If there were found to be systematic differences, it would imply either that the derivation matrix should have an additional dimension for sector or that a sector variable should always be used in analysis.

10. At the household level, a form of ordering is possible. That is, within households it is possible to construct rules to determine which member's individual class position is likely to be of most importance in determining the life chances of household members. This provides one of the bases through which we can assign a household reference person. We return to this point in section 7.

11. We do not suggest that these initial definitions of E-SEC SEGs are sufficiently precise to avoid the need for further consideration. Clearly, more discussion of them, leading to greater definitional clarity, is required.

12. ISCED is used only to assist in identifying the level of skills required to carry out relevant tasks. It is not intended to imply that the associated levels of education are prerequisites for these tasks.

13. Given these attempts at harmonisation, we recommend that all coding indexes, whether manual, automatic or computer assisted, should include not only the national classifications of occupation and industry but also the EU harmonised codes, ISCO-88 (COM) and NACE rev.1 respectively.

14. The problem is significant. Recent analysis (Elias and McKnight, 2001) shows that the proportion of managers in the UK remains about twice the EU-15 average.

15. We should also note here that experts might find it easier to agree on an E-SEC with less than the nine classes in the outline model. For example, they might find it easier (in the absence of employment relations data) to agree on one 'basic/semi-routine' class than on two separate classes. Provided that decisions were made within the possibilities allowed by the concept of employment relations (see paras 6.16-6.17 and table 6.1), this would be quite acceptable. The issue is: how much variation in employment relations among employees do we wish or are we able to recognise?

References

Arber, S. (1997a) 'Insights about the non-employed, class and health: evidence from the GHS' in D. Rose and K. O'Reilly (Eds.) *Constructing Classes: Towards a New Social Classification for the UK*. Swindon: ESRC/ONS.

Arber, S. (1997b) 'Comparing inequalities in women's and men's health: Britain in the 1990s', *Social Science and Medicine*, 44: 773-787.

Arber, S. (1996) 'Integrating Nonemployment into Research on Health Inequalities', *International Journal of Health Services*, 26, 3: 445-481.

Arber, S. (1995) 'Never-worked, full-time students and the age for assigning social class'. *Mimeo.* Guildford: Department of Sociology, University of Surrey.

Arber, S. and Cooper, H. (1998) 'Validation of new SEC Classifications: Health comparisons using 1994-5 GHS'. *Mimeo*. Guildford: Department of Sociology, University of Surrey.

Bailey, K. D. (1994) *Typologies and Taxonomies: An Introduction to Classification Techniques.* Thousand Oaks: Sage.

Bakker, B. and Jol, C. (1997) 'Socio-economic status: the choice between reference persons', *Netherlands Official Statistics*, Summer 1997, 48-55.

Bartley, M., Lynch, K., Sacker, A. and Dodgeon, B. (1998) 'Social variations in health: relationship of mortality to the ONS Socio-economic Class (SEC) Schema'. Paper prepared for the Workshop on the NS-SEC. London: UCL (*mimeo*).

Bosma, H. et al (1997) 'Low job control and risk of coronary heart disease in Whitehall II (prospective cohort) study', *British Medical Journal*, 314: 558-565, February 22.

Brauns, H. (1999) 'Comparative considerations on the construction of the EGP-Class Schema based on official statistics of Germany, France and the UK'. Paper presented at the LASMAS Seminar on the Harmonisation of Classifications, December 6.

Breen, R. and Goldthorpe, J. H. (1999) 'Class inequality and meritocracy: A critique of Saunders and an alternative analysis', *British Journal of Sociology*, 50, 1: 1-27.

Breen, R. and Rottman, D. (1995a) *Class Stratification: A Comparative Perspective*. London: Harvester Wheatsheaf.

Breen, R. and Rottman, D. (1995b) 'Class Analysis and Class Theory', *Sociology*, 29, 3: 453-473.

Carmines, E. G. and Zeller, R. A. (1979) *Reliability and Validity Assessment*. Beverley Hills: Sage

Davey-Smith, G. *et al* (1997) 'Lifetime socioeconomic position and mortality: prospective observational study', *British Medical Journal*, 314: 547-552, February 22.

Davey-Smith, G. *et al* (1998) 'Education and occupational social class: which is the more important indicator of risk?', *Journal of Epidemiology and Community Health*, 52: 153-160.

Duncan, O. D. (1961) 'A Socioeconomic Index for all Occupations' in A.J Reiss (Ed) *Occupations and Social Status*. New York: Free Press.

Edwards, A. M. (1917) 'Social-Economic Groups of the United States. Gainful Workers of United States, Classified by Social-Economic Groups or Strata', *Publications of the American Statistical Association*, 15: 643-661.

Egidi, V. and Schizzerotto, A. (1996) 'Social Stratification and Mobility. Concepts, Indicators and Examples of Application', *Proceedings of the Siena Group Meeting, June 1996*. Paris: INSEE.

Elias, P. (2000) 'Status in Employment: A world survey of practices and problems: *ILO Bulletin of Labour Statistics*, 2000-1.

Elias, P. and Birch, M. (1994) *Implementing a Common Classification of Occupations across Europe*. Coventry: IER, University of Warwick.

Elias, P. and A. McKnight (2001) 'Skill Measurement in Official Statistics: recent developments in the UK and the rest of Europe' *Oxford Economic Papers*, (forthcoming).

Elias, P. and McKnight, A. (1997) 'Earnings, occupations and social classification' in D. Rose and K. O'Reilly (Eds.) *Constructing Classes: Towards a New Social Classification for the UK*. Swindon: ESRC/ONS.

Elias, P. and McKnight, A. (1998) 'Unemployment measures and the new SEC'. *Mimeo.* Coventry: Institute for Employment Research, University of Warwick.

Erikson, R. (1984) 'Social Class of Men, Women and Families', *Sociology*, 18:4:500-514.

Erikson, R. and Jonsson, J. O. (Eds.) (1996) *Can Education Be Equalised? The Swedish Case in Comparative Perspective*. Boulder: Westview Press.

Erikson, R. and Goldthorpe, J. H. (1992) *The Constant Flux*. Oxford: Clarendon.

Evans, G. (1992) 'Testing the Validity of the Goldthorpe Class Schema', *European Sociological Review*, 8:211-32.

Everaers, P. (1998) 'A Framework for Harmonisation: Key Social Indicators, Core Variables and a Framework for the Joint Use of Administrative Sources, Register and Survey Data'. Luxembourg: Eurostat Directorate E.

Ganzeboom, H., De Graaf, P. and Treiman, D. (1992) 'A Standard International Socio-Economic Index of Occupational Status', *Social Science Research*, 21: 1-56.

Ganzeboom, H., Luijkx, R. and Treiman, D. 'International class mobility in comparative perspective', *Research in Stratification and Mobility*, 8: 3-79.

Goldblatt, P. O. (1990) *Mortality and Social Organization*. LS Series No. 6. London: HMSO.

Goldthorpe, J. H. (2000a) 'Rent, Class Conflict, and Class Structure: A Reply to Sorensen', *American Journal of Sociology*, 105, 6: 1572-1582.

Goldthorpe, J. H. (2000b) 'Social class and the differentiation of employment contracts' in J. H. Goldthorpe *On Sociology: Numbers, Narratives, and the Integration of Research and Theory*. Oxford: OUP.

Goldthorpe, J. H. (1997) 'The "Goldthorpe" class schema: some observations on conceptual and operational issues in relation to the ESRC review of government social classifications' in D. Rose and K. O'Reilly (Eds.) *Constructing Classes.* Swindon and London: ESRC and ONS.

Goldthorpe, J. H. (1990) 'A Response' in J. Clark, C. Modgil and S. Modgil (Eds.) *John H. Goldthorpe: Consensus and Controversy*. London: The Falmer Press.

Goldthorpe, J. H. (1988) 'Making class and status operational – concept formation, application and evaluation'. Paper presented at the ESRC/SCPR Survey Methods Seminar on *A Fresh Look at Social Classifications*. Oxford: Nuffield College.

Goldthorpe, J. H. and Marshall, G. (1992) 'The Promising Future of Class Analysis: a Response to Recent Critiques', *Sociology*, 26, 381-400.

Grais, B. (1999) *Socio-economic Classifications Used in the Official Statistics of the Member States of the European Union.* Luxembourg: Eurostat.

International Labour Office (1993) *Report of the Conference*. Fifteenth Conference of Labour Statisticians, Geneva, 18-28 January. ILO: Geneva.

International Labour Office (1990) *International Standard Classification of Occupations ISCO-88*. Geneva: International Labour Office.

Jones, F. L. and McMillan, J. (forthcoming) 'Scoring Occupational Categories for Social Research: A Review of Current Practice with Australian Examples', *Work, Employment and Society*.

Jonsson, J. O. (1993) 'Persisting inequalities in Sweden?' in Y. Shavit and H-P. Blossfeld (Eds.) *Persisting Inequality*. Boulder: Westview Press.

Jonsson, J. O., Mills, C. and Muller, W. (1996) 'A half century of increasing educational openness? Social class, gender and educational attainment in Sweden, Germany and Britain' in R. Erikson and J. O. Jonsson (Eds.) *Can Education be Equalized? The Swedish Case in Comparative Perspective*. Boulder: Westview Press.

Kunst, A. (1996) *Socio-economic Inequalities in Morbidity and Mortality in Europe*. Copenhagen: WHO Regional Office for Europe.

Kunst, A. Groenhof, F., Mackenbach, J. and the EU Working Group on Socioeconomic Inequalities in Health (1998a) 'Mortality by Occupational Class among Men 30-64 Years in 11 European Countries', *Social Science and Medicine*, 46, 11: 1459-1476.

Kunst, A. Groenhof, F., Mackenbach, J. and the EU Working Group on Socioeconomic Inequalities in Health (1998b) 'Occupational class and cause specific mortality in middle aged men in 11 European Countries: comparison of population based studies', *British Medical Journal*, 316, May 30: 1636-1641.

Kunst, A. and Mackenbach, J. (1994) *Measuring socio-economic inequalities in health*. Copenhagen: WHO Regional Office for Europe.

McKnight, A. (1997) 'Social classification and employment relations and conditions: the effect of workplace size, public sector employment and non-response'. *Mimeo*. Coventry: Institute for Employment Research, University of Warwick.

McKnight, A. and Elias, P. (1998) 'Differentiating earnings by social class categories'. *Mimeo*. Coventry: Institute for Employment Research, University of Warwick.

Marmot, M. et al (1991) 'Health Inequalities among British Civil Servants: the Whitehall II Study', *Lancet*, 337: 1387-1393.

Marmot M.G., Bosma, H., Hemmingway, H., Brunner, E. and Stansfeld, S. (1997) 'Contribution of job control and other risk factors to social variations in coronary heart disease incidence', *Lancet*, 350: 235-239.

Marshall, G. (1997) *Repositioning Class: Social Inequality in Industrial Societies*. London: Sage.

Marshall, G., Roberts, S. and Burgoyne, C. (1996) 'Social Class and Underclass in Britain and the USA', *British Journal of Sociology*, 47:1:22-44.

Marshall, G., Roberts, S., Burgoyne, C., Swift, A. and Routh, D. (1995) 'Class, Gender and the Asymmetry Hypothesis', *European Sociological Review*, 11:1:1-15.

Martin, J. (1995) 'Defining a Household Reference Person', *Survey Methodology Bulletin*, 37:1-7.

Martin, J. (1998) 'A New Definition for the Household Reference Person', *Survey Methodology Bulletin*, 43:1-8.

Martin, J. and Barton, J. (1996) 'The Effect of Changes in the Definition of the Household Reference Person', *Survey Methodology Bulletin*, 38:1-8.

O'Reilly, K. (1997a) 'The Service Relationship Score'. *Mimeo*. Colchester: ESRC Research Centre on Micro-social Change, University of Essex.

O'Reilly, K. (1997b) 'Establishment size and the SEC'. *Mimeo*. Colchester: ESRC Research Centre on Micro-social Change, University of Essex.

O'Reilly, K. and Rose, D. (1997) 'Criterion Validation of the Interim Revised Classification' in D. Rose and K. O'Reilly (Eds.) *Constructing Classes: Towards a New Social Classification for the UK*. Swindon: ESRC/ONS.

O'Reilly, K. and Rose, D. (1998) 'Changing Employment Relations? Plus ca change, plus c'est la meme chose? Reflections arising from the ESRC Review of Government Social Classifications', *Work, Employment and Society*, 12, 4: 713-733.

Ostberg, V. (1996) *Social Structure and Children's Life Chances*. Stockholm: Swedish Institute for Social Research Dissertation Series 26.

Ostby, L., Everaers, P., Gassemyr, S. and Mejer, L. (2000) 'Harmonisation of recommended core units, variables and classifications'. Luxembourg: Eurostat Directorate E.

Popper, K. R. (1960) 'Essentialism versus Nominalism' in K. R. Popper *The Poverty of Historicism*. London: RKP.

Rose, D. (2000) 'Household panel studies: an overview' in D. Rose (Ed.) *Researching Social and Economic Change: the Uses of Household Panel Studies*, 3-35. London and New York: Routledge.

Rose, D., Marshall, G., Newby, H. and Vogler, C. (1987) 'Goodbye to Supervisors?', *Work, Employment and Society*, 1, 1: 7-24.

Rose, D. and O'Reilly, K. (1998) *The ESRC Review of Government Social Classifications*. London and Swindon: ONS and ESRC.

Rose, D. and O'Reilly, K. (Eds.) (1997) *Constructing Classes*. Swindon and London: ESRC and ONS.

Rose, D. and Pevalin, D. (2000) 'Social class differences in mortality using the NS-SEC - too little, too soon: a reply to Chandola', *Social Science and Medicine*, 51: 1121-1127.

Scase, R. and Goffee, R. (1982) *The Entrepreneurial Middle Class*. London: Croom Helm.

Scott, J. (1996) *Stratification and Power: Structures of Class, Status and Command*. Cambridge: Polity Press.

Shavit, Y. and Blossfeld, H-P. (Eds.) (1993) *Persisting Inequality*. Boulder: Westview Press.

Sorensen, A. B. (1991) 'On the Usefulness of Class Analysis in Research on Social Mobility and Socioeconomic Inequality', *Acta Sociologica*, 34: 71-87.

Stevenson, T. H. C. (1928) 'The Vital Statistics of Wealth and Poverty', *Journal of the Royal Statistical Society*, 91: 207-230.

Szreter, S. R. S. (1984) 'The Genesis of the Registrar General's Social Classification of Occupations', *British Journal of Sociology*, 35, 4: 522-546.

Vagero, D. (2000) 'Health inequalities in women and men: Studies of causes of death should use household criteria', *British Medical Journal*, May 13, 320: 1287-1288.

Vagero, D. and Lundberg, O. (1995) 'Socioeconomic differentials among adults in Sweden' in A. Lopez et al (eds.) *Adult Mortality in Developed Countries. From Description to Explanation*. Oxford: Clarendon Press.

Appendix 1

Timetable, Work Plan and Role of the Expert Group

The Project

1. As part of its programme on the harmonisation of social statistics, Eurostat awarded a contract to Jean Martin of the UK Office for National Statistics (ONS) to undertake work towards the development of a European socio-economic classification (SEC). In turn, ONS sub-contracted work under Activity 1 of this project to Professor David Rose, University of Essex, and under Activity 2 to Professor Peter Elias, University of Warwick. In addition, Eurostat appointed an expert group to advise the contractors.

2. The main aims of Activity 1 were:

    i) to prepare a paper outlining the role, objectives and organisation of expert group meetings;
    ii) to analyse the two inventories on the need for and use of a European SEC;
    iii) to prepare a report for the expert group on the need for and uses of a SEC for the EU. This report would contain the results of the inventory analyses plus our own comments on key issues;
    iv) prepare a report on the conclusions of the first expert group meeting;
    v) consult with Eurostat, NSIs and key experts concerning desirable properties of an SEC;
    vi) produce a report for the expert group on the conceptual, technical, methodological and other issues surrounding a proposed design for the SEC;
    vii) following the expert meeting, to produce a report on its conclusions regarding best practice for an SEC;
    viii) produce a final report on the conceptual model for the SEC and a statement of the substantive research necessary for deriving and validating it for all the Member States, the costs of the work involved and a timetable for it.

3 Under Activity 2, Peter Elias has

    i) reviewed the practices of Member States for the classification and grouping of managers and document the problems with the classification of management occupations; and
    ii) prepared a report for the Working Group on Labour Cost Statistics describing the problems and recommending a classification for a classification of the occupational group of managers.

Timetable

1. **January–mid-February**

The contractors prepared a short paper for Eurostat on the role, objectives and organisation of the expert group and advised on its membership (see below).

2. **February – June 30 2000**

The contractors then prepared a meeting of the expert group on June 30. They:

(i) undertook further analyses of the information contained in the Grais report on SECs in EU Member States, especially concerning the similarities and differences between existing SECs employed by Member States in terms of use, concepts employed, relevant data, operationalisation, etc.

(ii) undertook analysis of the inventory for expert users on their needs from an EU SEC and on desirable features of an EU SEC.

(iii) considered the potential, and thus made a preliminary assessment, of different national SECs as a basis for an EU classification, taking account of issues such as comparability, accessibility, simplicity and cost.

(iv) summarised the results of the above in a report for the first meeting of the expert group. This report will be circulated on or about June 15.

3. **July**

The first meeting of the expert group was held on June 30 at ONS. Based on the paper(s) prepared by the contractors and its discussions of them, the expert group gave its response and advice. In particular, the group drew interim conclusions on what it believes are the need for and use of an E-SEC, on what it saw as the main requirements of a SEC and on the most promising means of developing a comparable, simple and accessible classification. The contractors set out this interim advice in an interim report delivered to Eurostat. Apart from the conceptual, among the other issues discussed in that report was the criteria for assessing or validating the classification. This depended, first, on a clear statement of what the proposed classification is expected to achieve, and the properties it is required to have. This statement was informed in part by our analyses of the NSI and expert user inventories and discussion of these within the expert group. Other important issues considered included extent of population coverage, unit of analysis and ease of implementation and use, especially given that the E-SEC must be reliably employed across fifteen states. The group was also presented with a report on Activity 2, subsequently submitted to Eurostat as part of the interim report.

4. **July – November 28**

The interim conclusions of the expert group were used as the basis for further discussions with Eurostat, NSIs and expert users on the desirable properties of an E-SEC and on feasibility issues. Based on these further investigations, the contractors produced further papers for a second meeting of the expert group in Luxembourg on November 28. These papers made detailed recommendations on conceptual, methodological and operational issues, thus dealing with the steps that might be taken to implement an E-SEC and any anticipated problems.

5. **December – January 31 2001**

The contractors then produced draft reports on each activity. The first report presented the conclusions and recommendations of the group with regard to a proposed E-SEC. The report also included a discussion of substantive research necessary in order to validate and test the SEC and the likely costs involved. By the end of January 2001, following discussions of the expert group's report, the contractor presented Eurostat with a final report on activity 1. Similar procedures led to the production of a report on activity 2.

THE EXPERT GROUP

1. This section discusses the membership, role, objectives and organization of the expert group for the EU SEC project.

Membership

2. It was agreed that the group should be small and should offer a balance between academic and official experts as well as EU states. It was obviously desirable that members should have some experience of the problems associated with comparative research using socio-economic classifications.

Role

3. To advise Eurostat, through the contractor, on the need for, use of and best means for developing a European Socio-economic Classification for use as a general background variable in social statistics.

Objective

4. To recommend via the contractor an EU SEC which is:

- conceptually clear;
- comparable across Member States;
- accessible in terms of data requirements, thus employing EU harmonised variables for its operationalisation;
- simple as a measure;
- valid and reliable for the range of purposes required by Eurostat and NSIs;
- clear in terms of operational and maintenance rules.

Organisation

5. The group met twice, in late June and late November 2000. Eurostat appointed Lene Mejer as group chairperson and principal liaison with the contractor. At each of its meetings, the group was provided with an agenda and papers for discussion and members were invited to comment and give advice on specific issues relating to its role and objective. Members of the group were also consulted individually, as and when this proved necessary.

Membership

NSI:

Bakker, Bart (CBS, NL)
Goux, Dominique (INSEE, F)
Martin, Jean (ONS, UK)
Skrede, Kari (SSB, N)

Private experts:

Brauns, Hildegard (MZES, D)
Wirth, Heike (ZUMA, D)
Schizzerotto, Antonio (I)
Erikson, Robert (S)

Consultants:

Rose, David (Uni. Essex, UK)
Elias, Peter (Uni. Warwick, UK)

International organisations:

Hoffmann, Eivind (ILO)
Mejer, Lene (Eurostat and Chair of the Group)

Appendix 2

ISCO-88 (COM) A Guide for Users

Peter Elias and Margaret Birch

Introduction

This document describes the European Union variant of the new International Standard Classification of Occupations (ISCO-88), referred to as ISCO-88 (COM). The new International Classification of Occupations replaces the previous version, known as ISCO-68. The following sections discuss the conceptual framework for the International Classification of Occupations[1] and detail the main differences between ISCO-88 and ISCO-88 (COM) that have arisen as a consequence of the harmonisation of national occupational classifications across the European Union.

ISCO-88 (COM) represents the culmination of a series of lengthy and detailed investigations in the twelve countries of the EU, combining the knowledge of experts in occupational classification in each country with practical considerations for coding occupational information collected by census and survey techniques and addressing the requirement for an EU-wide standard. It should not be regarded as a different classification from ISCO-88, but rather it is the result of a co-ordinated effort by National Statistical Institutes to implement ISCO-88 for census and survey coding purposes.

The Conceptual Framework of ISCO-88

ISCO-88 organises occupations in a hierarchical framework. At the lowest level is the unit of classification - a job - which is defined as a set of tasks or duties designed to be executed by one person. Jobs are grouped into occupations according to the degree of similarity in their constituent tasks and duties. Thus, for example, the following jobs are grouped together in ISCO-88 to form the occupation unit group *3472 Radio, television and other announcer*s: News announcer; radio announcer; television announcer; compare; disc jockey; media interviewer; newscaster. Although each job may be distinct in term of the output required from the person who executes the constituent tasks, the jobs are sufficiently similar in terms of the abilities required as inputs into these tasks for them to be regarded as a single occupational unit for statistical purposes.

Skill levels and skill specialisations

For the purpose of aggregating occupations into broadly similar categories at different levels in the hierarchy, ISCO-88 introduces the concept of skill, defined as the *skill level* - the degree of complexity of constituent tasks and *skill specialisation* - essentially the field of knowledge required for competent performance of the constituent tasks. Only a few broad 'skill level' categories can usefully be identified for cross-national comparisons. ISCO-88 uses four skill levels to define the broad structure of the classification at its most aggregate level, the *major group*s. These four

skill levels are partly operationalised in terms of the International Standard Classification of Education (ISCED) and partly in terms of the job-related formal training which may be used to develop the skill level of persons who will carry out such jobs. The four skill levels are reproduced from the *International Classification of Occupation; 1988* (ILO, 1990) in the box opposite.

ISCO-88 Skill Levels and ISCED Categories

ISCO Skill Level	ISCED Categories
First skill level	ISCED category 1, comprising primary education which generally begins at ages 5-7 years and lasts about 5 years.
Second skill level	ISCED categories 2 and 3, comprising the first and second stages of secondary education. The first stage begins at the age of 11 or 12 and lasts about three years, while the second stage begins at the age of 14 of 15 and also lasts about three years. A period of on-the-job training or experience may be necessary, sometimes formalised in apprenticeships. This period may supplement the formal training or may replace it partly or, in some cases, wholly.
Third skill level	ISCED category 5 (category 4 has been deliberately left without content) comprising education which begins at the age of 17 or 18, last about four year, and leads to an award not equivalent to a first university degree.
Fourth skill level	ISCED categories 6 and 7, comprising education which begins at the age of 17 or 18, lasts about three, four or more year, and lead to a university or postgraduate university degree or the equivalent.

Source: ILO (1990) pp2-3

Skill levels, formal education, training and experience

The use of ISCED to define skill levels does not mean that skills can only be obtained by formal education or training. Most skills may, and often are, acquired through experience and through informal training, although formal training plays a larger role in some countries than in others and a larger role at the higher skill levels than at the lower. For the purpose of the ISCO classification system, the decisive factor for determining how an occupation should be classified is the nature of the skills that are required to carry out the tasks and duties of the corresponding jobs - not the way these skills are acquired.

'Skill specialisation' is related to subject matter areas, production processes, equipment used, materials worked with, products and services produced, etc. Therefore words describing subject matter, production processes, etc. have to be used as labels for the core sets of skills with which occupations are concerned.

Classification Structure

ISCO-88 defines four levels of aggregation, consisting of:

10 major groups

28 sub-major groups (subdivisions of major groups)
116 minor groups (subdivisions of sub-major groups)
390 unit groups (subdivisions of minor groups)

Many users of the 1968 ISCO found that its top aggregation level of nine groups meant that the differences within each group were too large for the groups to be useful for description and analysis. However, the next level of aggregation, with 83 groups, represented too much detail for many types of analysis, as well as for international reporting of occupational distributions, especially if the data are obtained through sample surveys. ISCO-88 therefore includes the 'sub-major groups' as a new level in the aggregation system –between the major and minor groups.

Unit groups in most cases will consist of a number of detailed *occupation*s. For example, as a separate occupation *nuclear physicist* belongs to ISCO-88 unit group 2111 *Physicists and astronomer*s, which belongs to minor group 211 *Physicists, chemists and related professional*s, which is part of sub-major group 21 *Physical, mathematical and engineering science professionals* of the major group 2 *Professional*s. The major group structure of ISCO-88 is shown below in Table 1.

Table 1

ISCO-88 major groups and skill level		
	Major group	**ISCO skill level**
1	Legislators, senior officials and managers	-
2	Professionals	4th
3	Technicians and associate professionals	3rd
4	Clerks	2nd
5	Service workers and shop and market sales workers	2nd
6	Skill agricultural and fishery workers	2nd
7	Craft and related workers	2nd
8	Plant and machine operators and assemblers	2nd
9	Elementary occupations	1st
0	Armed forces	-

Eight of the ten ISCO-88 major groups are delineated with reference to four broad skill levels. These four ISCO skill levels have been defined in terms of the educational levels and categories of the International Standard Classification of Education (ISCED). Five of the eight major groups, i.e. 4, 5,6, 7 and 8 are considered

to be at the same skill level and are distinguished by reference to broad skill specialisation groups. Skill level references are not made in the definitions of two major groups *(Legislators, senior officials and managers* and *Armed force*s), because other aspects of the type of work were considered more important as similarity criteria, i.e. policy making and management functions, and military duties, respectively. As a result there are significant skill level differences within each of these two major groups. However, the sub-major and minor groups of major group 1 have been designed to include occupations at similar skill levels.

Classification issues

Administrative and managerial occupations

All occupations which consist of jobs in which the workers have mainly legislative, administrative or managerial tasks and duties should be classified to major group 1 *'Legislators, senior officials and managers'.* In ISCO-68 they were partly classified to major group 2 (Administrative and Managerial Workers) and partly to other major groups.

'Working proprietors' are to be classified according to whether their tasks and duties are mainly similar to those of managers and supervisors or to those of other workers in the same area of work. This is because.16 the status of 'working proprietor' is seen as related not to type of work performed but to 'status in employment' - corresponding to the 'self-employed' and 'employer' categories of the International Classification of Status in Employment (ICSE). One self-employed plumber may have mainly managerial tasks but another may do mainly the same work as a salaried plumber, depending for example on the size of the firm. In the former case the job should be classified with managers and in the latter case with plumbers.

'Craft' occupations and 'operative' occupations

To cope with the issue of different skill requirements for jobs with similar purposes due to difference in technologies used, a distinction is made at the major group level between occupations that are essentially craft-oriented, and occupations that are essentially oriented towards the operation of tools, machinery and industrial plants.

Occupations which are craft oriented consist of skilled jobs directly involved in the *production* of goods where the tasks and duties require an understanding of and experience with the natural resources and raw materials used and how to achieve the desired techniques and practices, but they may also use more technologically advanced tools and machines, provided that this does not change the basic skills and understanding required. Modern machines and tools may be used to reduce the amount of physical effort and/or time required for specific tasks, or to increase the quality of the products. The tasks and duties of jobs in *occupations which are oriented towards the operation of tools, machinery and industrial plants* require an understanding of what to do with the machines to make them work properly, of how to identify malfunctioning and of what to do when something goes wrong. The skills required are oriented towards the machines and what they are doing rather than to the transformation process or its results. Occupations where the tasks and duties consist of assembling products from component parts according to strict rules and procedures

are considered to belong to the same major group as the machine-oriented occupations. Jobs which only require low or elementary skills and little or no judgement are classified to occupations in major group 9.

Armed Forces

As in ISCO-68, jobs in the armed forces should be classified in a separate major group 0 *'Armed forces'*, even if the jobs involve tasks and duties similar to those of civilian counterparts.

Apprentices and trainees

Both 'apprentices' and 'trainees' should be classified according to their actual tasks and duties as, if needed, these two groups may be separately identified through the 'status in employment' classification. ISCO-68 recommended that apprentices should be classified to the occupation for which they are being trained, but that trainees be classified according to their actual tasks and duties.

Classifying 'multiple' jobs

The problem of classifying jobs which have a broad range of tasks and duties should be handled by the application of some *priority rules.* i.e. some tasks and duties are given priority in determining the occupational category to which a job should be classified, such as:

(a) in cases where the tasks and duties are associated with different stages of the process of process of producing and distributing goods and services, the tasks and duties related to the *production* stages should take priority over associated tasks and duties, such as those related to the sale and marketing of the same goods, their transportation or the management of the production process (unless either of these tasks and duties dominates). For example, the worker who bakes bread and pastries and then sells them should be classified as 'baker', not as 'sales assistant'; the worker who operates a particular type of machinery and also instructs new workers in how to operate the machine should be classified with the machine operators; the taxi driver who drives his/her own car and also keeps the accounts should be classified with motor-vehicle drivers; and

(b) in cases where the tasks and duties performed require skills usually obtained through different levels of training and experience, jobs should be classified in accordance with those tasks and duties which require the highest level of skill. For example: there are a number of jobs whose tasks and duties most of the time require a set of relatively easily obtained skills, and where the workers are also expected to have skills which require more training or experience which enables them to cope with unexpected and infrequent situations, for instance, to avoid accidents or injuries.

It is recognised that a certain amount of judgement and adjustment to national circumstances will be necessary in the choice and application of these priority rules.

Implementing ISCO-88 as a European Union Standard

Some of the countries within the European Union have recently developed a new or revised national occupational classification based on ISCO-88 (e.g. Denmark, Italy) or on the same basic structure (e.g. United Kingdom). Other countries, like France and Germany, have well established national occupational classifications which do not link directly with ISCO-88. Greece and Portugal have adopted ISCO-88 (COM) as their national classification, with minor local variations.

ISCO-88 (COM) represents the most detailed level of ISCO-88 which all community countries consider feasible to relate to their national classifications. Additionally, a number of practical problems arose in the development of a common statistical interpretation of ISCO-88. These problems are discussed below.

Managerial occupations

ISCO-88 makes a clear distinction between *Corporate managers* and *General manager*s, in terms of the total number of managers required to manage an enterprise, organisation or an internal department. Where this total exceeds two, the manager is classified as a *corporate manage*r, otherwise as a *General manage*r.

This raised operational problems, regarding the possibility of making this type of distinction on the basis of information normally available. It was decided to use the total number of employees within the administrative unit as proxy information, because this would be more commonly available (or more easy to collect) than information about the number of managers. Accordingly, managers working in organisations with fewer than 10 employees are classified as *General manager*s. To highlight this difference between ISCO-88 and ISCO-88 (COM) the title of the occupational category has been changed to *Managers of small enterprise*s.

Jobs in public administration

The most difficult area for the interpretation of ISCO-88 within a common cross-national application relates to the treatment of jobs in public administration. Difficulties stem from the use of bureaucratic titles/grading systems to denote rank, pay, seniority, qualification, and the need for a consistent relationship between such titles/grades and the structure of ISCO-88. These difficulties are compounded through factors such as the often non-homogeneous nature of public service occupational categories in national occupational classifications.

Additionally, National Statistical Institutes stated a clear preference for the inclusion within ISCO-88 (COM) of an administrative category for public service occupations within major group 2 *(Professional*s). Accordingly, the following schema, illustrated as Table 2, is proposed for the coding of jobs in public administration.

Table 2

The Classification of Jobs in Public Administration within ISCO-88 (COM)

	Major Group	Relevant unit group	
1.	Legislators, senior officials and managers	1110	Legislators and senior government officials
2.	Professionals	2470	Public service administrative professionals
3.	Technicians and associate professionals	3431	Administrative secretaries and related associate professionals
4.	Clerks	4190	Other office clerks

Notes: In classifying jobs in public administration, senior government officials who manage a government-controlled industrial, public utility, transport or other such business enterprise or organisation, should be classified within sub-major groups 12 *(Corporate Manager*s) or 13 *(Managers, small enterprise*s) as appropriate.

Category 2470 is a new minor group, designed explicitly for the classification of occupations in which the primary tasks consist of general administrative functions within the public service and for which national education and training requirements stipulate a university education or equivalent. Occupations classified to this category exclude the most senior general administrative grades within the public service (classified to minor group 111 *Legislators and senior government official*s).

Category 3431 consists of occupations which support professional and/or managerial staff in an administrative capacity. The range of tasks/responsibilities will be wider than those ascribed to jobs classified in unit group 4115 *(secretarie*s). Included in this unit group should be associate professional occupations within the public service which are not specialist public service occupations (e.g., customs, tax, social benefit, licensing officials - these would be allocated to minor group 344), but which consist primarily of administrative functions and for which the skills level is defined at the ISCO third level.

Agricultural occupations

The classification of agricultural occupations within ISCO-88 involves consideration of both the skill level of such occupations and the skill specialisation, usually defined in terms of the nature of the agricultural production. Skill levels determine the major group into which such occupations are classified. Within major group 1, two unit groups cover the corporate and general managers in the agricultural sector. Major group 2 has two unit groups for professional occupations which relate to the agricultural sector *(agronomists* and *veterinarian*s). Major group 3 has two agriculturally related unit groups for technical occupations. Major group 6 is designed exclusively for skilled market-oriented farmers and agricultural workers and subsistence agricultural occupations. Major group 8 contains a unit group for occupations which specify the operation of motorised equipment in farming and forestry. Major group 9 has a minor group specifically for agricultural, fishery and related labourers.

The problem stems not so much from the identification of skill level (though this is undoubtedly a problem with the low quality of occupational descriptions which typify this area of job classification) but with the identification of skill specialisations in Major group 6. For this reason, a simplification of the classification was agreed for this major group.

Most occupations in the agricultural sector will be classified to Major group 6, unless there is clear identification of managerial responsibilities as one of the main tasks within an agricultural occupation, in which case classification will be to Major group 1. Specific labouring occupations in this sector will be classified to Major group 9.

Notes

1 For a more detailed discussion, see ILO, 1990, pp2-3.

References

International Labour Office (1990). *ISCO-88: International Standard Classification of Occupation*s. Geneva: ILO

ISCO-88 (COM):
Major, sub-major, minor and unit groups

Nomenclature for coding

Following the conventions of ISCO-88, a single numerical digit represents a major group, two digits represent a sub-major group, three digits represent a minor group and four digits represents a unit group. Where no distinction is made below the level of major, sub-major or minor group, a corresponding two, three or four-digit category can be achieved by the addition of trailing zeros.

Occupational categories which include the phrase 'not elsewhere classified' are reserved for specific occupations which are not classified to other specific categories within the classification. Categories which include the phrase 'nothing otherwise specified' are reserved for occupations which are insufficiently defined for specific classification purposes.

Where possible, the numbering system follows ISCO-88. Definitional notes are included to indicate those parts of the classification which differ in some significant way from ISCO-88.

MAJOR, SUB-MAJOR, MINOR AND UNIT GROUPS

MAJOR GROUP 1: LEGISLATORS, SENIOR OFFICIALS AND MANAGERS

11	Legislators and senior officials		
	111	Legislators and senior government officials	
		1110	Legislators and senior government officials
	114	Senior officials of special-interest organisations[1]	
		1141	Senior officials of political party organisations
		1142	Senior officials of employers', workers' and other economic-interest organisations
		1143	Senior officials of humanitarian and other special-interest organisations

Definitional notes:

Senior government officials within minor group 111 *(Legislators and senior government official*s) should be restricted to public service officials who occupy the somewhat limited number of senior managerial positions within the public service at central, regional and local levels. Those managing government owned or controlled industrial enterprises, public utilities etc. should be classified to minor groups 121 *(Directors and chief executive*s), 122 *(Production and operation manager*s) or 123 *(Other manager*s) as appropriate. Examples of occupational titles associated with minor group 111 are:

Permanent secretary
Assistant permanent secretary
Head of department
Director of ministry
Mayor
Senior administrator, intergovernmental agency
Diplomatic representative

1. When a distinction cannot be made between senior officials of special-interest organisations, in terms of the political, economic or humanitarian aims of the organisation concerned, classification should be made to a unit group 1140 *(Senior officials of special-interest organisations, nothing otherwise specifie*d).

12	Corporate managers [1]		
	121	Directors and chief executives [2]	
		1210	Directors and chief executives
	122		Production and operations managers [3]
		1221	Production and operations managers in agriculture, hunting, forestry and fishing
		1222	Production and operations managers in manufacturing
		1223	Production and operations managers in construction
		1224	Production and operations managers in wholesale and retail trade
		1225	Production and operations managers in restaurants and hotels
		1226	Production and operations managers in transport, storage and communications
		1227	Production and operations managers in business services enterprises
		1228	Production and operations managers in personal care, cleaning and related services
		1229	Production and operations managers not elsewhere classified
	123	Other specialist managers [4]	
		1231	Finance and administration managers
		1232	Personnel and industrial relations managers
		1233	Sales and marketing managers
		1234	Advertising and public relations managers
		1235	Supply and distribution managers
		1236	Computing services managers
		1237	Research and development managers
		1239	Other specialist managers not elsewhere classified

Definitional notes:

1. It should be noted that, in cases where information is limited to 'manager - enterprise or organisation with 10 or more employees', classification should be made to a unit group 1200 *(Corporate managers, nothing otherwise specifie*d).

2. This group is intended to include persons who - as directors or chief executives - manage enterprises or organisations with 10 or more employees.

3. This group is intended to include persons who indicate a production and/or operational managerial specialism in enterprises or organisations with 10 or more employees. Additional information about industry branch may be used to allocate the occupation to unit groups 1221-1229. In the absence of additional information on industry branch, classification should be made to a unit group 1220 *(Production and operations managers, nothing otherwise specifie*d).

4. This group should be restricted to persons who indicate a non-production/non-operational managerial specialism in enterprises or organisations with 10 or more employees. Unit group 1239 *(Other specialist managers not elsewhere classifie*d) is reserved for managerial occupations in enterprises or organisations with 10 or more employees for which a non-production/non-operational specialism is indicated but is not covered in unit groups 1231-1237.

13	Managers of small enterprises [1]		
	131	Managers of small enterprises	
		1311	Managers of small enterprises in agriculture, hunting, forestry and fishing [2]
		1312	Managers of small enterprises in manufacturing
		1313	Managers of small enterprises in construction
		1314	Managers of small enterprises in wholesale and retail trade
		1315	Managers of small enterprises of restaurants and hotels
		1316	Managers of small enterprises in transport, storage and communications
		1317	Managers of small enterprises of business services enterprises
		1318	Managers of small enterprises in personal care, cleaning and related services
		1319	Managers of small enterprises not elsewhere classified

Definitional notes:

This group is intended to include persons who manage small enterprises, or organisations with 0-9 employees, on their own behalf, or on behalf of the proprietor, and may have some non-managerial help. Non-managerial staff should be classified according to their specific tasks.

1. It should be noted that, in cases where information is limited to 'manager - enterprise or organisation with 0-9 employees', classification should be made to a unit group 1300 *(Managers of small enterprises, nothing otherwise specifie*d).

2. Unit group 1311 *(Managers of small enterprises in agriculture, hunting, forestry and fishin*g) should be reserved for persons who indicate a managerial specialisation in agriculture, hunting, forestry and fishing activities, in organisations with 0-9 employees. Persons describing themselves only as 'farmer', 'hunter', 'forester' or 'fisherman' would be classified to Major Group 6 *(Skilled Agricultural and Fishery Worker*s).

MAJOR GROUP 2: PROFESSIONALS

21	Physical, mathematical and engineering science professionals		
	211	Physicists, chemists and related professionals	
		2111	Physicists and astronomers
		2112	Meteorologists
		2113	Chemists
		2114	Geologists and geophysicists
	212	Mathematicians, statisticians and related professionals	
		2121	Mathematicians and related professionals
		2122	Statisticians [1]
	213	Computing professionals [2]	
		2131	Computer systems designers, analysts and programmers
		2139	Computing professionals not elsewhere classified
	214	Architects, engineers and related professionals	
		2141	Architects, town and traffic planners
		2142	Civil engineers
		2143	Electrical engineers
		2144	Electronics and telecommunications engineers
		2145	Mechanical engineers
		2146	Chemical engineers
		2147	Mining engineers, metallurgists and related professionals
		2148	Cartographers and surveyors
		2149	Architects, engineers and related professionals not elsewhere classified

Definitional notes:

This sub-major group includes occupations whose main tasks require a high level of professional knowledge and experience in the physical, mathematical and engineering sciences (ILO, 1990; p.47).

1. This category should include public service officials who state that their main professional activity is associated with statistical information processing and analysis or the direct supervision of others involved in such tasks.

2. If the job title does not permit a clear distinction, additional information on level of relevant qualifications, or description of tasks may be used to allocate occupations to either minor group 213 or minor group 312 *(Computer associate professional*s).

22	Life science and health professionals		
	221	Life science professionals	
		2211	Biologists, botanists, zoologists and related professionals,
		2212	Pharmacologists, pathologists and related professionals
		2213	Agronomists and related professionals
	222	Health professionals (except nursing)	
		2221	Medical doctors
		2222	Dentists
		2223	Veterinarians
		2224	Pharmacists
		2229	Health professionals (except nursing) not elsewhere classified
	223	Nursing and midwifery professionals	
		2230	Nursing and midwifery professionals

Definitional notes:

Life science and health professionals conduct research, improve or develop concepts, theories and operational methods, or apply scientific knowledge relating to fields such as biology, zoology, botany, ecology, physiology, biochemistry, microbiology, pharmacology, agronomy and medicine (ILO, 1990; p.59).

No explicit changes are proposed for this sub-major group. However, it should be noted that strict application of the principle that this sub-major group be restricted to ISCO skill level 4 (education commensurate with a university degree or equivalent) may require reference to information on qualification. This is particularly the case with minor group 223 *(Nursing and Midwifery professionals*), where particular nursing specialisms may require such high level qualifications.

23	Teaching professionals		
	231	College, university and higher education teaching professionals	
		2310	College, university and higher education teaching professionals
	232	Secondary education teaching professionals	
		2320	Secondary education teaching professionals
	233	Primary and pre-primary education teaching professionals	
		2331	Primary education teaching professionals
		2332	Pre-primary education teaching professionals
	234	Special education teaching professionals	
		2340	Special education teaching professionals
	235	Other teaching professionals	
		2351	Education methods specialists
		2352	School inspectors
		2359	Other teaching professionals not elsewhere classified

Definitional notes:

Teaching professionals teach the theory and practice of one or more disciplines at different educational levels, conduct research and improve or develop concepts, theories and operational methods pertaining to their particular discipline, and prepare scholarly papers and books (ILO 1990; p.65).

Allocation of occupations to minor groups 233 *(Primary and pre-primary education teaching professionals*) and 234 *(Special education teaching professionals*) as opposed to minor groups 331 *(Primary education teaching associate professionals*), 332 *(Pre-primary education teaching associate professionals*) and 333 *(Special education teaching associate professionals*) is usually performed for the entire group rather than for any part of it (i.e. primary teachers are allocated either to 233 or 331, depending upon national education and training requirements). Harmonisation of national education and training requirements will eventually remove such differences. Meanwhile, it is proposed that countries indicate clearly the basis for their allocation of primary, pre-primary or special education teaching occupations to minor groups 233/234 or 331/332/333.

Headteachers are classified to unit group 1229.

24	Other professionals		
	241	Business professionals	
		2411	Accountants
		2412	Personnel and careers professionals
		2419	Business professionals not elsewhere classified
	242	Legal professionals	
		2421	Lawyers
		2422	Judges
		2429	Legal professionals not elsewhere classified
	243	Archivists, librarians and related information professionals	
		2431	Archivists and curators
		2432	Librarians and related information professionals
	244	Social science and related professionals	
		2441	Economists [1]
		2442	Sociologists, anthropologists and related professionals
		2443	Philosophers, historians and political scientists
		2444	Philologists, translators and interpreters
		2445	Psychologists
		2446	Social work professionals
	245	Writers and creative or performing artists [2]	
		2451	Authors, journalists and other writers
		2452	Sculptors, painters and related artists
		2453	Composers, musicians and singers
		2454	Choreographers and dancers
		2455	Film, stage and related actors and directors
	246	Religious professionals	
		2460	Religious professionals
	247	Public service administrative professionals [3]	
		2470	Public service administrative professionals

Definitional notes:

Other professionals conduct research, improve or develop concepts, theories and operational methods, or apply knowledge relating to information dissemination and organisation of business, as well as to philosophy, law, psychology, politics, economics, history, religion, languages, sociology, other social sciences, arts and entertainment (ILO, 1990; p.72).

Depending upon the specific tasks and degree of responsibility, as well as on the national educational and training requirements, it may be appropriate to classify some of the occupations identified here into sub-major group 34 *(Other associate professional*s) (ILO, 1990; p.72).

1. This category should include public service officials who state that their main professional activity is associated with economic analysis or the supervision of others involved in such tasks.

2. This category is intended to include persons who require skills at the fourth ISCO skill level (university education or equivalent). Countries should indicate clearly the basis of their allocation of occupations to this minor group as opposed to minor group 347 *(Artistic, entertainment and sports associate professional*s).

3. This is a new minor group, designed explicitly for the classification of occupations in which the primary tasks consist of general administrative functions within the public service and for which national education and training requirements stipulate a university education or equivalent. Occupations classified to this category exclude the most senior general administrative grades within the public service (classified to minor group 111 *Legislators and senior government official*s).

MAJOR GROUP 3: TECHNICIANS AND ASSOCIATE PROFESSIONALS

31	Physical and engineering science associate professionals		
	311	Physical and engineering science technicians	
		3111	Chemical and physical science technicians
		3112	Civil engineering technicians
		3113	Electrical engineering technicians
		3114	Electronics and telecommunications engineering technicians
		3115	Mechanical engineering technicians
		3116	Chemical engineering technicians
		3117	Mining and metallurgical technicians
		3118	Draughtspersons
		3119	Physical and engineering science technicians not elsewhere classified
	312	Computer associate professionals [1,2]	
		3121	Computer assistants
		3122	Computer equipment operators
		3123	Industrial robot controllers
	313	Optical and electronic equipment operators	
		3131	Photographers and image and sound recording equipment operators
		3132	Broadcasting and telecommunications equipment operators
		3133	Medical equipment operators
		3139	Optical and electronic equipment operators not elsewhere classified
	314	Ship and aircraft controllers and technicians	
		3141	Ships' engineers
		3142	Ships' deck officers and pilots
		3143	Aircraft pilots and related associate professionals
		3144	Air traffic controllers
		3145	Air traffic safety technicians
	315	Safety and quality inspectors	
		3151	Building and fire inspectors
		3152	Safety, health and quality inspectors

Definitional notes:

Technicians and associate professionals perform mostly technical and related tasks connected with research and the application of scientific and artistic concepts and operational methods, and government or business regulations, and teach at certain educational levels. Most occupations in this group require skills at the third ISCO level (education which begins at the age of 17 or 18 years and leads to an award not equivalent to a first university degree) (ILO, 1990; p.3 & 85).

1. If the job title and associated information on activities does not permit a clear distinction, additional information on a level of relevant qualifications or description of tasks may be used to allocate occupations to either minor group 312 *(Computer associate professionals*) or minor group 213 *(computing professionals*).

2. Unit groups 3121, 3122 and 3123 may be merged and described as unit group 3120 *(Computer associate professionals, nothing otherwise specifie*d).

32	Life science and health associate professionals		
	321	Life science technicians and related associate professional	
		3211	Life science technicians
		3212	Agronomy and forestry technicians
		3213	Farming and forestry advisers
	322	Health associate professionals (except nursing)	
		3221	Medical assistants
		3222	Hygienists, health and environmental officers 1
		3223	Dieticians and nutritionists
		3224	Optometrists and opticians
		3225	Dental assistants
		3226	Physiotherapists and related associate professionals
		3227	Veterinary assistants
		3228	Pharmaceutical assistants
		3229	Health associate professionals (except nursing) not elsewhere classified
	323	Nursing and midwifery associate professionals 2	
		3231	Nursing associate professionals
		3232	Midwifery associate professionals

Definitional notes:

1. Change of name only.

2. See notes to minor group 223 *(Nursing and midwifery professionals*).

Note that ISCO-88 minor group 324 *(Traditional medicine practitioners and faith healer*s) is not used. Such occupations (where separately identified in a national occupational classification) are classified to unit group 3229 *(Health associate professionals not elsewhere classifie*d).

33	Teaching associate professionals		
	331	Primary education teaching associate professionals	
		3310	Primary education teaching associate professionals
	332	Pre-primary education teaching associate professionals	
		3320	Pre-primary education teaching associate professionals
	333	Special education teaching associate professionals	
		3330	Special education teaching associate professionals
	334	Other teaching associate professionals	
		3340	Other teaching associate professionals

Definitional notes:

See notes for sub-major group 23 *(Teaching professionals*).

34	Other associate professionals		
	341	Finance and sales associate professionals	
		3411	Securities and finance dealers and brokers
		3412	Insurance representatives
		3413	Estate agents
		3414	Travel consultants and organisers
		3415	Technical and commercial sales representatives
		3416	Buyers
		3417	Appraisers, valuers and auctioneers
		3419	Finance and sales associate professionals not elsewhere classified
	342	Business services agents and trade brokers	
		3421	Trade brokers
		3422	Clearing and forwarding agents
		3423	Employment agents and labour contractors
		3429	Business services agents and trade brokers not elsewhere classified
	343	Administrative associate professionals	
		3431	Administrative secretaries and related associate professionals 1
		3432	Legal and related business associate professionals
		3433	Bookkeepers
		3434	Statistical, mathematical and related associate professionals

Definitional notes:

Other associate professionals perform technical tasks connected with the practical application of knowledge relating to finance and sales, business enterprise administration, bookkeeping, legal, statistical and other services, government activities relating to customs, travel, tax, welfare, job placement, licensing, the police force, as well as with social work, entertainment, sport and religion (ILO, 1990; p.113).

1. This unit group consists of occupations which support professional and/or managerial staff in an administrative capacity. The range of tasks/responsibilities will be wider than those ascribed to jobs classified in unit group 4115 *(secretarie*s). Included in this unit group should be associate professional occupations within the public service which are not specialist public service occupations (e.g., customs, tax, social benefit, licensing officials - these would be allocated to minor group 344), but which consist primarily of administrative functions and for which the skills level is defined at the ISCO third level.

344	Customs, tax and related government associate professionals	
	3441	Customs and border inspectors
	3442	Government tax and excise officials
	3443	Government social benefits officials
	3444	Government licensing officials
	3449	Customs, tax and related government associate professionals not elsewhere classified [1]
345	Police inspectors and detectives	
	3450	Police inspectors and detectives
346		Social work associate professionals
	3460	Social work associate professionals
347	Artistic, entertainment and sports associate professionals	
	3471	Decorators and commercial designers
	3472	Radio, television and other announcers
	3473	Street, night-club and related musicians, singers and dancers
	3474	Clowns, magicians, acrobats and related associate professionals
	3475	Athletes, sports persons and related associate professionals
348	Religious associate professionals	
	3480	Religious associate professionals

Definitional notes:

It should be noted that, depending on the specific tasks and degree of responsibility in executing them, as well as on the national educational and training requirements, it may be appropriate to classify some of the occupations that are identified here into sub-major group 24 *(Other professionals*). This is particularly relevant to the occupations classified into minor group 346, *(Social work associate professionals*) (ILO, 1990; p.113).

1. Unit group 3449 should be restricted to those occupations which are specific to the public service sector, and which have no direct parallel outside the public service. Examples of occupations classified to this category include:

   Wage inspector
   Weights and measures inspector

MAJOR GROUP 4: CLERKS

41	Office clerks [1]		
	411	Secretaries and keyboard-operating clerks	
		4111	Stenographers and typists
		4112	Word-processor and related operators
		4113	Data entry operators
		4114	Calculating-machine operators
		4115	Secretaries
	412	Numerical clerks	
		4121	Accounting and book-keeping clerks
		4122	Statistical and finance clerks
	413	Material-recording and transport clerks	
		4131	Stock clerks
		4132	Production clerks
		4133	Transport clerks
	414	Library, mail and related clerks	
		4141	Library and filing clerks
		4142	Mail carriers and sorting clerks
		4143	Coding, proof-reading and related clerks
		4144	Scribes and related workers
	419	Other office clerks [2]	
		4190	Other office clerks

Definitional notes:

Clerks record, store, compute and retrieve information, perform a number of clerical duties especially in connection with money-handling operations, travel arrangements, request for information and appointments. Most occupations in this group require skills at the second ISCO level (an education level which begins at the age of 14 or 15 and lasts about three years) (ILO, 1990; p.131).

1. Occupations describing clerical tasks but failing to distinguish between office clerks and customer services clerks should be allocated to a unit group 4000 *(clerks, nothing otherwise specifie*d).

2. Where it is clear that the clerical duties involve office work, not customer service activities, yet classification to minor groups 411-414 is not possible, either because these involve a wide range of office activities or because specific information on the nature of these activities is not available, classification is to minor group 419 *(Other office clerk*s).

42	Customer services clerks		
	421	Cashiers, tellers and related clerks	
		4211	Cashiers and ticket clerks
		4212	Tellers and other counter clerks
		4213	Bookmakers and croupiers
		4214	Pawnbrokers and money-lenders
		4215	Debt-collectors and related workers
	422	Client information clerks	
		4221	Travel agency and related clerks
		4222	Receptionists and information clerks
		4223	Telephone switchboard operators

Definitional notes:

Customer services clerks deal directly with clients in connections with money-handling operations, travel arrangements, requests for information, appointments and by operating telephone switchboards (ILO, 1990; p.139).

Allocation of clerks between sub-major groups 41 *(Office clerk*s) and 42 *(Customer services clerk*s) will be performed with reference to job titles and/or job descriptions. Specific job titles/descriptions which indicate direct customer service interaction (e.g. counter clerk, receptionist, telephonist) will result in classification within sub-major group 42 *(Customer services clerk*s). In cases where information is less specific (e.g. bank clerk), classification should be to sub-major group 41 *(Office clerk*s).

MAJOR GROUP 5: SERVICE WORKERS AND SHOP AND MARKET SALES WORKERS

51	Personal and protective services workers		
	511		Travel attendants and related workers
		5111	Travel attendants and travel stewards
		5112	Transport conductors
		5113	Travel guides
	512	Housekeeping and restaurant services workers	
		5121	Housekeepers and related workers
		5122	Cooks
		5123	Waiters, waitresses and bartenders
	513	Personal care and related workers [1]	
		5131	Child-care workers
		5132	Institution-based personal care workers
		5133	Home-based personal care workers
		5139	Personal care and related workers not elsewhere classified
	514	Other personal services workers	
		5141	Hairdressers, barbers, beauticians and related workers
		5142	Companions and valets
		5143	Undertakers and embalmers
		5149	Other personal services workers not elsewhere classified
	516	Protective services workers	
		5161	Fire-fighters
		5162	Police officers
		5163	Prison guards
		5169	Protective services workers not elsewhere classified

Definitional notes:

Service workers and shop and market sales workers provide personal and protective services related to travel, housekeeping, personal care, or protection against fire, unlawful acts, or they pose as models for artistic creation and display, or demonstrate and sell goods in wholesale or retail shops and similar establishments, as at well as stalls and on markets. Most occupations in this major group require skills at the second ISCO level (ILO, 1990; p.143).

Minor group 515 *(Astrologers, fortunetellers and related worker*s) in ISCO-88 is not separately identified; such occupations should be classified to unit group 5149 *(Other personal services workers not elsewhere classifie*d).

1. *Personal care and related workers* perform simple tasks to assist medical, nursing, midwifery and dental professionals or associate professionals in their duties. They may also attend to the personal needs and provide care for persons in need of such care. Where no distinction can be made between 'institution-based' care (unit group 5132) and 'home-based' care (unit group 5133), all such personal care workers should be allocated to unit group 5130 *(Personal care and related workers, nothing otherwise specifie*d).

52	Models, salespersons and demonstrators		
	521	Fashion and other models	
		5210	Fashion and other models
	522	Shop, stall and market salespersons and demonstrators [1]	
		5220	Shop, stall and market salespersons and demonstrators

Definitional notes:

See definitional notes to major group 5 *(Service Workers and Shop and Market Sales Worker*s)

1. No distinction is made between shop, stall and market salespersons.

MAJOR GROUP 6: SKILLED AGRICULTURAL AND FISHERY WORKERS

61	Skilled agricultural and fishery workers [1]		
	611	Market gardeners and crop growers	
		6111	Field crop and vegetable growers [2]
		6112	Gardeners, horticultural and nursery growers
	612	Animal producers and related workers	
		6121	Dairy and livestock producers
		6122	Poultry producers
		6129	Animal producers and related workers not elsewhere classified
	613	Crop and animal producers	
		6130	Crop and animal producers
	614	Forestry and related workers	
		6141	Forestry workers and loggers
		6142	Charcoal burners and related workers
	615	Fishery workers, hunters and trappers	
		6151	Aquatic life cultivation workers
		6152	Inland and coastal waters fishery workers
		6153	Deep-sea fishery workers
		6154	Hunters and trappers

Definitional notes:

Sub-major group 61 *(Skilled agricultural and fishery worker*s) consists of those occupations which require skills at the second ISCO skill level (education which begins at the age of 14 or 15 and lasts about three years - a period of on-the-job training may be necessary, which may supplement or replace the formal education) (ILO, 1990; p.157 & 3).

Unit groups 6111 and 6112 within minor group 611 *(Market gardeners and crop grower*s) and unit groups 6121 and 6122 within minor group 612 *(Animal producers and related worker*s) are identified in terms of the main agricultural product. Unit group 6129 (Animal producers and related workers not elsewhere classified) is reserved for mixed animal producers, apiarists and sericulturists.

No skilled agricultural occupations within the European Community are classified to sub-major group 62 *(Subsistence agricultural and fishery worker*s).

1. Where a main agricultural product associated with the skilled agricultural occupational cannot be identified, classification is to a minor group 610 *(Skilled agricultural and fishery workers, nothing otherwise specifie*d).

2. Includes tree and shrub crop growers.

MAJOR GROUP 7: CRAFT AND RELATED TRADES WORKERS [1]

71	Extraction and building trades workers		
	711	Miners, shotfirers, stone cutters and carvers	
		7111	Miners and quarry workers
		7112	Shotfirers and blasters
		7113	Stone splitters, cutters and carvers
	712	Building frame and related trades workers	
		7121	Builders
		7122	Bricklayers and stonemasons
		7123	Concrete placers, concrete finishers and related workers
		7124	Carpenters and joiners
		7129	Building frame and related trades workers not elsewhere classified
	713	Building finishers and related trades workers	
		7131	Roofers
		7132	Floor layers and tile setters
		7133	Plasterers
		7134	Insulation workers
		7135	Glaziers
		7136	Plumbers and pipe fitters
		7137	Building and related electricians
		7139	Building finishers and related trade workers not elsewhere classified
	714	Painters, building structure cleaners and related trades workers	
		7141	Painters and related workers [2]
		7143	Building structure cleaners

Definitional notes:

Craft and related trades workers apply their specific knowledge and skills to produce or process goods. The tasks call for an understanding of all stages of the production process, the materials and tools used and the nature and purpose of the final product. Most occupations in this group require skills at the second ISCO level (ILO, 1990; p.173).

1. In the absence of sufficient information to ascertain the relevant trade, classification should be made to a unit group 7000 *(Craft and related trades workers, nothing otherwise specifie*d) or to a unit group 7100, 7200, 7300 or 7400 if a broad trade specialisation is given.

2. Unit group 7142 *(Varnishers and related painter*s) is not separately identified from unit group 7141 *(Painters and related worker*s).

72	Metal, machinery and related trades workers		
	721	Metal moulders, welders, sheet-metal workers, structural-metal preparers, and related trades workers	
		7211	Metal moulders and coremakers
		7212	Welders and flame cutters
		7213	Sheet-metal workers
		7214	Structural-metal preparers and erectors
		7215	Riggers and cable splicers
		7216	Underwater workers
	722	Blacksmiths, tool-makers and related trades workers	
		7221	Blacksmiths, hammer-smiths and forging-press workers
		7222	Tool-makers and related workers
		7223	Machine-tool setters and setter-operators
		7224	Metal wheel-grinders, polishers and tool sharpeners
	723	Machinery mechanics and fitters	
		7231	Motor vehicle mechanics and fitters
		7232	Aircraft engine mechanics and fitters
		7233	Agricultural- or industrial-machinery mechanics and fitters
	724	Electrical and electronic equipment mechanics and fitters	
		7241	Electrical mechanics fitters and services
		7242	Electronics mechanics, fitters and servicers [1]
		7244	Telegraph and telephone installers and servicers
		7245	Electrical line installers, repairers and cable jointers

Definitional notes:

See definitional notes for major group 7.

1. Note that unit group 7242 *(electronics mechanics fitters and servicer*s) does not identify electronics fitters separately from electronics mechanics, fitters and servicers.

73	Precision, handicraft, craft printing and related trades workers		
	731	Precision workers in metal and related materials	
		7311	Precision-instrument makers and repairers
		7312	Musical-instrument makers and tuners
		7313	Jewellery and precious-metal workers
	732	Potters, glass-makers and related trades workers	
		7321	Abrasive wheel formers, potters and related workers
		7322	Glass-makers, cutters, grinders and finishers
		7323	Glass engravers and etchers
		7324	Glass, ceramics and related decorative painters
	733	Handicraft workers in wood, textile, leather and related materials	
		7331	Handicraft workers in wood and related materials
		7332	Handicraft workers in textile, leather and related materials
	734	Craft printing and related trades workers	
		7341	Compositors, typesetters and related workers
		7342	Stereotypers and electrotypers
		7343	Printing engravers and etchers
		7344	Photographic and related workers
		7345	Bookbinders and related workers
		7346	Silk-screen, block and craft textile printers

Definitional notes:

See definitional notes for major group 7.

74	Other craft and related trades workers		
	741	Food processing and related trades workers	
		7411	Butchers, fishmongers and related food preparers [1]
		7412	Bakers, pastry-cooks and confectionery makers [1]
		7413	Dairy-products workers
		7414	Fruit, vegetable and related preservers
		7415	Food and beverage tasters and graders
		7416	Tobacco preparers and tobacco products makers
	742	Wood treaters, cabinet-makers and related trades workers	
		7421	Wood treaters
		7422	Cabinetmakers and related workers
		7423	Woodworking machine setters and setter-operators
		7424	Basketry weavers, brush makers and related workers
	743	Textile, garment and related trades workers	
		7431	Fibre preparers
		7432	Weavers, knitters and related workers
		7433	Tailors, dressmakers and hatters
		7434	Furriers and related workers
		7435	Textile, leather and related pattern-makers and cutters
		7436	Sewers, embroiderers and related workers
		7437	Upholsterers and related workers
	744	Pelt, leather and shoemaking trades workers	
		7441	Pelt dressers, tanners and fellmongers
		7442	Shoe-makers and related workers

Definitional notes:

See definitional notes for major group 7.

1. Occupations classified to these unit groups may involve some managerial responsibilities, especially where a person works on their own account, with or without employees or family assistance. If, however, the main activity is described in terms of the relevant skilled trade, classification is to these categories.

No changes are proposed for the above unit groups.

MAJOR GROUP 8: PLANT AND MACHINE OPERATORS AND ASSEMBLERS

81	Stationary plant and related operators [1]		
	811	Mining and mineral-processing-plant operators	
		8111	Mining plant operators
		8112	Mineral-ore and stone-processing-plant operators
		8113	Well drillers and borers and related workers
	812	Metal-processing plant operators	
		8121	Ore and metal furnace operators
		8122	Metal melters, casters and rolling-mill operators
		8123	Metal heat-treating-plant operators
		8124	Metal drawers and extruders
	813	Glass, ceramics and related plant operators	
		8131	Glass and ceramics kiln and related machine operators
		8139	Glass, ceramics and related plant operators not elsewhere classified
	814	Wood-processing- and papermaking-plant operators	
		8141	Wood-processing-plant operators
		8142	Paper-pulp plant operators
		8143	Papermaking-plant operators
	815	Chemical-processing-plant operators	
		8151	Crushing-, grinding- and chemical-mixing-machinery operators
		8152	Chemical-heat-treating-plant operators
		8153	Chemical-filtering- and separating-equipment operators
		8154	Chemical-still and reactor operators (except petroleum and natural gas)
		8155	Petroleum- and natural-gas-refining-plant operators
		8159	Chemical-processing-plant operators not elsewhere classified
	816	Power-production and related plant operators	
		8161	Power-production plant operators
		8162	Steam-engine and boiler operators
		8163	Incinerator, water-treatment and related plant operators
	817	Industrial robot operators	
		8170	Industrial robot operators

Definitional notes:

Plant and machine operators and assemblers operate and monitor industrial and agricultural machinery and equipment on the spot or by remote control, drive and operate trains, motor vehicles and mobile machinery and equipment, or assemble products from component parts according to strict specifications and procedures.

The work mainly calls for experience with, and an understanding of, industrial and agricultural machinery and equipment as well as an ability to cope with machine-paced operations and to adapt to technological innovations. Most occupations in the major group require skills at the second ISCO level (ILO, 1990; p.211).

1. 'Stationary plant' should be interpreted primarily as 'process plant'. Operative occupations classified to sub-major group 81 *(Stationary plant and related operator*s) involve process control operations, usually to a strictly defined set of procedures.

Automated assembly line operators are not separately distinguished from assembling occupations in minor group 828 *(Assembler*s).

82	Machine operators and assemblers		
	821	Metal- and mineral-products machine operators	
		8211	Machine-tool operators
		8212	Cement and other mineral products machine operators
	822	Chemical-products machine operators	
		8221	Pharmaceutical-and toiletry-products machine operators
		8222	Ammunition- and explosive-products machine operators
		8223	Metal finishing-, plating- and coating-machine operators
		8224	Photographic-products machine operators
		8229	Chemical-products machine operators not elsewhere classified
	823	Rubber- and plastic-products machine operators	
		8231	Rubber-products machine operators
		8232	Plastic-products machine operators
	824	Wood-products machine operators	
		8240	Wood-products machine operators
	825	Printing-, binding- and paper-products machine operators	
		8251	Printing-machine operators
		8252	Book-binding-machine operators
		8253	Paper-products machine operators
	826	Textile-, fur- and leather-products machine operators	
		8261	Fibre-preparing-, spinning- and winding-machine operators
		8262	Weaving- and knitting-machine operators
		8263	Sewing-machine operators
		8264	Bleaching-, dyeing- and cleaning-machine operators
		8265	Fur- and leather-preparing-machine operators
		8266	Shoemaking- and related machine operators
		8269	Textile-, fur- and leather-products machine operators not elsewhere classified
	827	Food and related products machine operators	
		8271	Meat- and fish-processing-machine operators
		8272	Dairy-products machine operators
		8273	Grain- and spice-milling-machine operators
		8274	Baked-goods, cereal- and chocolate-products machine operators
		8275	Fruit-, vegetable- and nut-processing-machine operators
		8276	Sugar production machine operators
		8277	Tea-, coffee- and cocoa-processing-machine operators
		8278	Brewers, wine and other beverage machine operators
		8279	Tobacco production machine operators

Definitional notes:

See notes to major group 8.

No changes are proposed for these minor groups.

828	Assemblers [1]	
	8281	Mechanical-machinery assemblers
	8282	Electrical-equipment assemblers
	8283	Electronic-equipment assemblers
	8284	Metal-, rubber- and plastic-products assemblers
	8285	Wood and related products assemblers
	8286	Paperboard, textile and related products assemblers
	8287	Composite products assemblers [2]
829	Other machine operators not elsewhere classified	
	8290	Other machine operators not elsewhere classified

Definitional notes:

See notes to major group 8.

1. Assemblers working on automated or semi-automated assembly lines are included in minor group 828. If there is sufficient information to classify assembling occupations in terms of the assembled products, classification is to unit group 8280 *(Assemblers, nothing otherwise specifie*d).

2. A new category covering the assembly of composite products, involving a variety of assembled parts.

83	Drivers and mobile plant operators		
	831	Locomotive engine drivers and related workers	
		8311	Locomotive engine drivers
		8312	Railway brakers, signallers and shunters
	832	Motor vehicle drivers	
		8321	Motorcycle drivers
		8322	Car, taxi and van drivers
		8323	Bus and tram drivers
		8324	Heavy truck and lorry drivers
	833	Agricultural and other mobile plant operators	
		8331	Motorised farm and forestry plant operators
		8332	Earth-moving and related plant operators
		8333	Crane, hoist and related plant operators
		8334	Lifting-truck operators
	834	Ships' deck crews and related workers	
		8340	Ships' deck crews and related workers

Definitional notes:

See notes to major group 8.

No changes are proposed for these minor groups.

MAJOR GROUP 9: ELEMENTARY OCCUPATIONS 1

91	Sales and services elementary occupations		
	911	Street vendors and related workers	
		9111	Street vendors 2
		9113	Door-to-door and telephone salespersons
	912	Shoe cleaning and other street services elementary occupations	
		9120	Shoe cleaning and other street services elementary occupations
	913	Domestic and related helpers, cleaners and launderers	
		9131	Domestic helpers and cleaners
		9132	Helpers and cleaners in offices, hotels and other establishments
		9133	Hand-launderers and pressers
	914	Building caretakers, window and related cleaners	
		9141	Building caretakers
		9142	Vehicle, window and related cleaners
	915	Messengers, porters, doorkeepers and related workers	
		9151	Messengers, package and luggage porters and deliverers
		9152	Doorkeepers, watchpersons and related workers
		9153	Vending-machine money collectors, meter readers and related workers
	916	Garbage collectors and related labourers	
		9161	Garbage collectors
		9162	Sweepers and related labourers

Definitional notes:

Elementary occupations consist mainly of simple and routine tasks which mainly require the use of hand-held tools and often some physical effort. Most occupations in this major group require skills at the first ISCO skill level (a primary education which generally begins at the age of 5, 6 or 7 and lasts about 5 years) (ILO, 1990; p.249 & 2).

Strict application of the ISCO skill level to occupations in this major group is inappropriate, given that basic education provision always exceeds this level. A more appropriate test may be the length of any associated vocational training. Typically, such training will consist primarily of induction training, lasting only a matter of weeks.

1. Where there is insufficient information to classify labouring occupations to sub-major group 91 *(Sales and services elementary occupation*s), sub-major group 92 *(Agricultural, fishery and related worker*s) or sub-major group 93 *(Labourers in mining, construction, manufacturing or transpor*t), classification is to a unit group 9000 *(Elementary occupations, nothing otherwise specifie*d).

2. Unit group 9112 *(Street vendors, non-food product*s) is not separately identified from unit group 9111 *(Street vendor*s).

92	Agricultural, fishery and related labourers		
	921	Agricultural, fishery and related labourers	
		9211	Farm-hands and labourers
		9212	Forestry labourers
		9213	Fishery, hunting and trapping labourers
93	Labourers in mining, construction, manufacturing and transport		
	931	Mining and construction labourers	
		9311	Mining and quarrying labourers
		9312	Construction and maintenance labourers: roads, dams and similar constructions
		9313	Building construction labourers
	932	Manufacturing labourers [1]	
		9320	Manufacturing labourers
	933	Transport labourers and freight handlers	
		9330	Transport labourers and freight handlers [2]

Definitional notes:

See notes to major group 9.

1. *Manufacturing labourers* include hand-packing operations and other basic labouring tasks associated with manufacturing operations. *Assemblers* are classified to minor group 828 (*Assembler*s).

2. *Transport labourers and freight handlers* include loaders and unloaders of motor and rail vehicles and ships.

MAJOR GROUP 0: ARMED FORCES

01	Armed forces		
	010	Armed forces	
		0100	Armed forces

Appendix 3

LFS Structure

Column	Code	Description	Filter/Remarks
		DEMOGRAPHIC BACKGROUND	
1/2		*Sequence number in the household (it should remain the same for all waves)*	private households
	01-98	Two-digit sequence number allocated to each member of the household	
	99	Not applicable (not private household)	
3		*Relationship to reference person in the household*	private households
	1	Reference person	
	2	Spouse (or cohabiting partner) of reference person	
	3	Child of reference person (or of his/her spouse or cohabiting partner)	
	4	Ascendant relative of reference person (or of his/her spouse or cohabiting partner)	
	5	Other relative	
	6	Other	
	9	Not applicable (not private household)	
4/5		*Sequence number of spouse or cohabiting partner*	private households
	01-98	Sequence number of spouse or cohabiting partner in the household	
	99	Not applicable (person does not belong to a private household, or has no partner, or the partner does not belong to this private household)	
6/7		*Sequence number of father*	private households
	01-98	Sequence number of father in the household	
	99	Not applicable (person does not belong to a private household, or the father does not belong to this private household)	
8/9		*Sequence number of mother*	private households
	01-98	Sequence number of mother in the household	
	99	Not applicable (person does not belong to a private household, or the mother does not belong to this private household)	
10		Sex	everybody
	1	Male	
	2	Female	
11/14		*Year of birth*	everybody
		The 4 digits of year of birth are entered	
15		*Date of birth in relation to the end of reference period*	everybody

	1	Person's birthday falls between 1 January and the end of the reference week	
23		*Nature of participation in the survey*	everybody aged 15 years or more
	1	Direct participation	
	2	Participation via another member of the household	
	9	Not applicable (child less than 15 years old)	
	blank	No answer	
		LABOUR STATUS	
24		*Labour status during the reference week*	everybody aged 15 years or more
	1	Did any work for pay or profit during the reference week - one hour or more (including family workers but excluding conscripts on compulsory military or community service)	
	2	Was not working but had a job or business from which he/she was absent during the reference week (including family workers but excluding conscripts on compulsory military or community service)	
	3	Was not working because on lay-off	
	4	Was a conscript on compulsory military or community service	
	5	Other (15 years or more) who neither worked nor had a job or business during the reference week	
	9	Not applicable (child less than 15 years old)	
25		*Reason for not having worked at all though having a job*	col.24=2
	0	Bad weather	
	1	Slack work for technical or economic reasons	
	2	Labour dispute	
	3	School education or training	
	4	Own illness, injury or temporary disability	
	5	Maternity or parental leave	
	6	Holidays	
	8	Other reasons (e.g. personal or family responsibilities)	
	9	Not applicable (col.24=1,3-5,9)	
		EMPLOYMENT CHARACTERISTICS OF THE MAIN JOB	
26		*Professional status*	col.24=1,2
	1	Self-employed with employees	
	2	Self-employed without employees	
	3	Employee	
	4	Family worker	
	9	Not applicable (col.24=3-5,9)	
	blank	No answer	
27/28		*Economic activity of the local unit*	col.24=1,2
		NACE Rev. 1	

	00	Not applicable (col.24=3-5,9)	
	blank	No answer	
29/31		*Occupation*	col.24=1,2
		ISCO-88 (COM)	
	999	Not applicable (col.24=3-5,9)	
	blank	No answer	
32/33		*Number of persons working at the local unit*	col.26=1,3,4, blank
	01-10	Exact number of persons, if between 1 and 10	
	11	11 to 19 persons	
	12	20 to 49 persons	
	13	50 persons or more	
	14	Do not know but less than 11 persons	
	15	Do not know but more than 10 persons	
	99	Not applicable (col.26=2,9)	
	blank	No answer	
44		*Full-time / Part-time distinction*	col.24=1,2
	1	Full-time job	
		Part-time job which was taken because	
	2	- person is undergoing school education or training	
	3	- of own illness or disability	
	4	- person could not find a full-time job	
	5	- person did not want a full-time job	
	6	- of other reasons	
	7	Person with a part-time job but giving no reason	
	9	Not applicable (col.24=3-5,9)	
	blank	No answer	
		HOURS WORKED	
47/48		*Number of hours per week usually worked*	col.24=1,2
	00	Usual hours cannot be given because hours worked vary considerably from week to week or from month to month	
	01-98	Number of hours usually worked in the first job	
	99	Not applicable (col.24=3-5,9)	
	blank	No answer	
49/50		*Number of hours actually worked during the reference week*	col.24=1,2
	00	Person having a job or business and not having worked at all in the main activity during the reference week (col.24=2)	
	01-98	Number of hours actually worked in the first job during the reference week	
	99	Not applicable (col.24=3-5,9)	
	blank	No answer	
		Main reason for hours actually worked during the reference week being different from the person's usual hours	col.47/48=00-98 & col.49/50=01-98
64		Person has worked more than usual due to	
	01	- variable hours (e.g. flexible working hours)	
	16	- overtime	
	02	- other reasons	
		Person has worked less than usual due to:	

	03	- bad weather	
65/68	04	- slack work for technical or economic reasons	
	05	- labour dispute	
	06	- education or training	
	07	- variable hours (e.g. flexible working hours)	
	08	- own illness, injury or temporary disability	
	09	- maternity or parental leave	
69/70	10	- special leave for personal or family reasons	
	11	- annual Holidays	
	12	- bank Holidays	
	13	- start of/change in job during reference week	
	14	- end of job without taking up a new one during reference week	
71	15	- other reasons	
	97	Person having worked usual hours during the reference week (col.47/48=col.49/50=01-98)	
	98	Person whose hours vary considerably from week to week or month to month and who did not state a reason for a divergence between the actual and usual hours (col.47/48=00 & col.51/52[1]01-16)	
	99	Not applicable (col.24=2-5,9 or col.47/48=blank or col.49/50=blank)	
	blank	No answer	
		Wish to work usually more than the current number of hours	col.24=1 or col.24=2 & (00<col.47/48<40 or col. 44=2-7)
	0	- no	
	1	- yes, through an additional job	
	2	- yes, through a job working more hours than the present job	
	3	- yes, but only within the present job	
	4	- yes, in any of the above ways	
	9	Not applicable (col.24=3-5,9 or (40<= col.47/48<=98 and col.44=1))	
	blank	No answer	
72			
		Number of hours that the person would like to work in total	col.24=1 or col.24=2
	01-98	Number of hours wished to work in total	
	99	Not applicable (col.24=3-5,9)	
	blank	No answer	
		Working at home	col.24=1 or col.24=2
73/74	1	Person usually works at home	
	2	Person sometimes works at home	
	3	Person never works at home	
	9	Not applicable (col.24=3-5,9)	
	blank	No answer	
75/77		*Looking for another job and reasons for doing so*	col.24=1 or col.24=2
	0	Person is not looking for another job	
		Person is looking for another job because	
	1	- of risk or certainty of loss or termination of present job	
	2	- actual job is considered as a transitional job	
	3	- seeking an additional job to add more hours to those worked in present job	
	7	- seeking a job with more hours worked than in present job	

78/79			
	8	- seeking a job with less hours worked than in present job (col. 53=0)	
	4	- of wish to have better working conditions (e.g. pay, working or travel time, quality of work)	
	5	- of other reasons	
	6	Person looking for another job but giving no reason	
	9	Not applicable (col.24=3-5,9)	
	blank	No answer	
		SECOND JOB	
		Existence of more than one job or business	col.24=1 or col.24=2
	1	Person had only one job or business during the reference week	
	2	Person had more than one job or business during the reference week (not due to change of job or business)	
	9	Not applicable (col.24=3-5,9)	
	blank	No answer	
80			
		Professional status (in the second job)	col.58=2
	1	Self-employed with employees	
	2	Self-employed without employees	
	3	Employee	
	4	Family worker	
	9	Not applicable (col.58=1,9 blank)	
	blank	No answer	
		Economic activity of the local unit (in the second job)	col.58=2
		NACE Rev. 1	
81	00	Not applicable (col.58=1,9,blank)	
	blank	No answer	
		Number of hours actually worked during the reference week in the second job	col.58=2
	00	Person not having worked in the second job during the reference week	
	01-98	Number of hours actually worked in the second job during the reference week	
	99	Not applicable (col.58=1,9, blank)	
	blank	No answer	
		PREVIOUS WORK EXPERIENCE OF PERSON NOT IN EMPLOYMENT	
		Existence of previous employment experience	col.24=3-5
	0	Person has never been in employment (purely occasional work, such as vacation work, compulsory military or community service are not to be considered as employment)	
	1	Person has already been in employment (purely occasional work, such as vacation work, compulsory military or community service are not to be considered as employment)	

82	9	Not applicable (col.24=1,2 or 9)	
	blank	No answer	
		Professional status in last job	col.64=1 and col.162/165 - col.65/68<8
	1	Self-employed with employees	
	2	Self-employed without employees	
	3	Employee	
87	4	Family worker	
	9	Not applicable (col.64=0,9,blank, or col.64=1 and did not work in last 8 years)	
	blank	No answer	
		Economic activity of the local unit in which person last worked	col.64=1 and col.162/165 - col.65/68<8
88		NACE Rev. 1	
	00	Not applicable (col.64=0,9,blank, or col.64=1 and did not work in last 8 years)	
	blank	No answer	
		Occupation of last job	col.64=1 and col.162/165 - col.65/68<8
89		ISCO-88 (COM)	
	999	Not applicable (col.64=0,9,blank, or col.64=1 and did not work in last 8 years)	
	blank	No answer	
		SEARCH FOR EMPLOYMENT	
		Seeking employment during previous four weeks	col.24=3-5
	01	Person is seeking employment	
90	02	Person has already found a job which will start later	
	03	Person is not seeking employment because: - awaiting recall to work (persons on lay-off)	
	04	- of own illness or disability	
	05	- of personal or family responsibilities	
	06	- of education or training	
91	07	- of retirement	
	08	- of belief that no work is available	
	09	- of other reasons	
	10	- no reason given	
	99	Not applicable (col.24=1,2 or 9)	
		Duration of search for employment	col.78/79=01-02 or col.57=1-8
	0	Search not yet started	
	1	Less than 1 month	
	2	1-2 months	
95	3	3-5 months	
	4	6-11 months	
	5	12-17 months	

1 For Spain the reference period will be adapted to the delay legally established by the National Institute of Employment

	6	18-23 months	
	7	24-47 months	
	8	4 years or longer	
	9	Not applicable (col.24=9 or col.78/79=03-10 or col.57=0,blank)	
	blank	No answer	
96			
		Willingness to work for person not seeking employment	col.78/79=03-10
		Person is not seeking employment:	
	1	- but would nevertheless like to have work	
	2	- and does not want to have work	
	9	Not applicable (col.78/79=01-02,99)	
104	blank	No answer	
		Availability to start working within two weeks	col.78/79=01 or col.95=1,blank or col.57=1-8
		If work were found now:	
	1	Person could start to work immediately (within 2 weeks)	
	2	Person could not start to work immediately (within 2 weeks) because: - he/she must complete education or training	
	3	- he/she must complete compulsory military or community service	
	4	- he/she cannot leave present employment within two weeks due to period of notice	
	5	- of personal or family responsibilities (including maternity)	
	6	- of own illness or incapacity	
	7	- of other reasons	
	8	- no reason given	
105/106	9	Not applicable (col.24=9 or col.57=0,blank or col.78/79=02 or col.95=2)	
		Situation immediately before person started to seek employment (or was waiting for new job to start)	col.78/79=01-02
	1	Person was working (including apprentices, trainees)	
	2	Person was in full-time education (excluding apprentices, trainees)	
	3	Person was conscript on compulsory military or community service	
	4	Person had domestic/family responsibilities	
107/108	5	Other (e.g. retired)	
	9	Not applicable (col.78/79=03-10,99)	
	blank	No answer	
		MAIN LABOUR STATUS	
109		*Main status*	everybody aged 15 years or more
	1	Carries out a job or profession, including unpaid work for a family business or holding, including an apprenticeship or paid traineeship, etc,	
	2	Unemployed	
	3	Pupil, student, further training, unpaid work experience	
	4	In retirement or early retirement or has given up business	

	5	Permanently disabled	
	6	In compulsory military service	
	7	Fulfilling domestic tasks	
	8	Other inactive person	
	9	Not applicable (child less than 15 years)	
110/113	blank	No answer	
		Type of household	everybody
	1	Person living in private household (or permanently in a hotel) and surveyed in this household	
	2	Person living in an institution and surveyed in this institution	
	3	Person living in an institution but surveyed in this private household	
	4	Person living in another private household on the territory of the Member State but surveyed in this household of origin	
		Type of institution	col.181=2,3
	1	Educational institution	
	2	Hospital	
	3	Other welfare institution	
	4	Religious institution (not already included in 1-3)	
	5	Workers' hostel, working quarters at building sites, student hostel, university accommodation, etc.	
	6	Military establishment	
	7	Other (e.g. prison)	
	9	Not applicable (col.181=1,4)	
	blank	No answer	

Appendix 4

The Concept of Validity in Relation to the UK NS-SEC

Karen O'Reilly and David Rose

Introduction

1. The ESRC Review of Government Social Classifications decided to adopt the Goldthorpe or EGP class schema as the basis for the NS-SEC. However, the Goldthorpe schema is a concept and not an operationalisation (Goldthorpe 1997). Goldthorpe's schema is clearly defined in order that it may be operationalised using a variety of different data sets, and for different countries. The effectiveness with which this can be achieved depends on the information available relevant to its construction, and on the suitability of the occupational classification on which it is based for this kind of conceptualisation. Hence, each separate operationalisation of the schema should be validated as a measure of the concept.

2. The Review committee's decision to adopt but adapt the Goldthorpe schema, while retaining maximum continuity with SC and SEG, therefore involved validating the new SEC as an *instrument du travail* (*cf*. Nunnally and Bernstein 1994; Rose and O'Reilly 1997). In the main body of the Report, we have discussed the various forms of validation that we have employed in the Review. Since the issue of validation will arise for any subsequent revision of the SEC, this appendix provides an overview of various types of validity: face validity, content validity, criterion validity and construct validity.

Validation of a measure

3. The problem of validation can be approached in two main ways: the validation of a study, and the validation of a measure. The validation aspect of the Review was concerned with the latter. Here validity testing involves ensuring that in the construction of the NS-SEC we have measured what we intended to measure. This in turn involves inquiring into the nature and meaning of the new classification as a variable for use in various data sets (*cf*. Kerlinger 1986:416). However, validation of a measure can itself be approached in a variety of ways. A great deal of confusion surrounds the concept of validity. Much of the discussion and examples come from within psychology, where the construction of 'tests', 'scales' or 'instruments' is much more common than within sociology and where such scales are often deemed to measure the *quantity* of some clearly-defined attribute held by one person as opposed to another. Furthermore, different terms are used by different authors in various different ways (Bailey 1988). Common examples of measurements validated are Intelligence Quotient (IQ) tests, mathematics tests, measurements of psychological phenomena such as self-esteem (psychometric tests) and so on. It is difficult to use the same notions when thinking about a sociological

concept such as alienation (an example used by Zeller and Carmines 1980) or class, as in our case.

4. In order to validate a measure of a concept, as was required for the NS-SEC, it is possible to perform four main types of validation: face, content, criterion and construct. These four types of validation are difficult to understand conceptually because, as discussed above, they have been designed for the validation of psychology tests, which are often much less abstract than sociological ones, or at least have some more clearly-defined use or purpose (e.g. assessment or prediction). The four types are more or less useful for our purposes as the following discussion explains.

Face Validity

5. Face validity involves a simple assessment of whether, on the face of it, a measure appears to measure what it is supposed to (Nunnally 1959). For the NS-SEC this has involved ensuring that the categories constructed make some meaningful sense in terms of the underlying concept of class. At a very basic level, we would expect the new SEC to distinguish employers, the self-employed and employees, so that no single SEC category combined these basic groups. This practice is continuous with SEG, which has categories of employers in large and small establishments, SEG 1.1 and 2.1, a category of self-employed, SEG 12, and several categories of employees.

6. We would also expect to find that the new SEC further distinguishes employees in terms of the service relationship and labour contract. This is not so easy since the language of contracts is not common parlance and since the common-sense view of what constitutes occupational groupings is not likely to be expressed in these terms. How would we know, on the face of it, whether an employee category is different from another category in terms of the employment conditions associated with different forms of regulation? One way is to look for categories that Goldthorpe has said typify these different forms. The new SEC could only be said to have face validity if there were categories containing senior managerial, professional and administrative positions and distinct categories for employees, with no supervisory role, working in routine occupations.

7. Thus, if the new SEC has categories of employers, self-employed and employees; and if the employees are further sub-divided into those regulated by a service relationship, a labour contract and intermediate forms of regulation; and if the two basic forms of regulation are shown through the categories to exist in varying degrees of actualisation, then the new SEC can be said to exhibit face validity. However, face validity is difficult either to contest or prove. It is a first basic step in the validation procedure, providing weak evidence of validity, and little more than that. One means of ensuring that face validation is rather more than merely subjective judgement would be to send the measure to a panel of experts (on employment contracts, for example) and to ask them for their informed opinions on its validity. In fact, we did do this for the NS-SEC. While this may make the judgement more convincing to others, it is still a somewhat unsatisfactory procedure.

Content Validity

8. Content validity is tied to the nominal definition of the concept being measured. The concept must be clearly defined and validation involves testing that the different aspects of the concept are all measured. Content validity is thus an assessment of the *representativeness* or *sampling adequacy* of the content (Kerlinger 1986). To give an example, if some students have attended a mathematics course and at the end of it the tutor wants to know that the students have understood all that has been taught, a test or assessment could be devised. The test would necessarily need to cover the *content* of the course, so the tutor might ask questions which tested the students' ability in multiplication and division, in algebra, in fractions and decimals and so on. The tutor would need to think carefully about the *content* of the course and ensure that all of it was covered in the test. Obviously, this does not mean that everything that was taught must be tested; this would take far too long. It is therefore a *sample* of the content which is tested or measured (Nunnally 1959). Content validation requires that *all* the separate and relevant elements that make up the content is covered by the measure (Moser and Kalton 1971).

9. Content validation, therefore, first demands that we decide what our concept contains, i.e. its constituent parts. This might be quite straightforward for assessment or achievement measures, where content validity is typically used (*cf*. Nunnally 1959; Anastasi 1990) but for other constructs such as self-esteem or, as in our case, class, it will not be so easy to determine the criteria that constitute the domain or universe of content. Could it be argued, for example, that class *contains* employment relationships and associated conditions of employment? Certainly, class as operationalised using occupation and employment status information does not overtly contain these elements, though it is hoped that it serves to indicate them. Perhaps one could argue that the concept of class being applied in the NS-SEC consists of employment relationships but, if this were the case, then content validity tests would look much the same as face validity tests, discussed above.

10. Content validity is widely used in psychology and education but less in political science and sociology (Zeller and Carmines 1980). It is difficult or impossible to gain consensus as to the universe of content (Cronbach and Meehl 1955) and depends on subjective judgements with regard to how adequately the content has been defined and sampled (Nunnally 1959). However, we will return to the issue of content validity when we discuss criterion-related validity, below.

Criterion Validity

11. Criterion-related validity involves determining criterions (*sic*) which relate to the concept being measured, but which have not been measured directly, and testing whether these correlate with the new measure. The distinction between construct and criterion-related validity is not immediately apparent, and in fact William Trochim's work (1998) uses 'construct validity' as a general term covering criterion, content and face validity, as well as what this appendix refers to separately as construct validity. The difficulty is partly exacerbated

by the fact that Trochim and others use the term *construct* for the idea or theoretical landscape of the measure, test, assessment or variable being subjected to validation. Therefore all validation of a measure can be seen as construct validation - i.e. validation of how well the construct has been measured (*cf.* Trochim, 1998; Henerson et al, 1987). However, we hope to make it clear that criterion-related and construct (for want of a better word) validation are conceptually very different.

12. According to Zeller and Carmines (1980:79), criterion-related validity 'concerns the correlation between a measure and some criterion variable of interest'. As such, it is usually associated with practical problems and outcomes. Common examples are: a written driving test - one would expect pass rates to correlate with ability to drive (*op.cit.*); a mechanical aptitude test and subsequent performance in a related job (Anastasi 1990); a measure of conservatism and its ability to 'predict' membership of the Conservative party (de Vaus 1996). The idea is that the measure can be used to 'predict' behaviour or outcome in a related variable or variables which may either not be so readily available for measure, or may be less comprehensive. As used in psychological testing, criterion-related validity is less concerned with what the measure (or even the construct) is actually measuring than with its ability to 'predict' outcomes. It is important to note that the prediction may not actually be of something expected to happen in the future but may be concurrent (Kerlinger 1986). To clarify this, some authors distinguish between concurrent and predictive validity tests, which test the measure's ability to predict or correlate with other, independent and external, variables.

13. It may not be immediately apparent how criterion-related validity could be relevant to the NS-SEC, but Evans (1992 and 1996), Evans and Mills (1996, 1997, 1998a and b) and Birkelund *et al* (1996) have done much to clarify this in their work on the validation of the current instantiation of the Goldthorpe schema. Like the NS-SEC, the Goldthorpe schema is operationalised using information on occupation and employment status. It therefore acts as a *proxy* for the underlying concept of social class, without directly indexing the characteristics identified as part of the concept. That is to say, while the distinction between employers, employees and the self-employed can be directly measured using information on employment status, the distinctions between employees based on the service relationship and labour contract cannot be because occupations are not overtly classified in this way. Occupation and employment status are therefore used to indicate differences based on forms of remuneration, opportunities for promotion, and so on, as discussed by us elsewhere (Rose and O'Reilly 1998). Criterion-related validity, in this case, involves measuring directly those characteristics we are trying to index through indirect means and then testing how satisfactory the construct (the NS-SEC or the Goldthorpe schema) is as a measure of these characteristics. In other words, the NS-SEC is a proxy for the concept of social class and as such it should 'predict' a certain set of employment conditions, those associated with forms of remuneration, promotion prospects and autonomy in particular, which should vary according to whether a labour contract or a service relationship prevails (*cf.* Evans 1992, Goldthorpe 1997;

Evans and Mills 1998a). In criterion-related validity, it is this set of conditions with which we should be ultimately concerned.

14. In order to validate the NS-SEC we therefore examined the relationship between the measure and sets of criterion-related variables, using a variety of different data sets and various statistical techniques. The number of potential criterion-related variables is almost endless and the specific set used at any given time should be examined for content validity (see discussion above), that is for their adequacy in sampling the characteristics associated with Goldthorpe's concept of class. We also ensured that the effectiveness of the operationalisation did not vary systematically when controlling for sex and for part-time work. If there had been serious variation, then the new measure could not have been considered valid for these groups.

15. There are criteria other than those associated with the service relationship/labour contract distinction with which the schema could be validated, but Goldthorpe does not spell these out. When discussing where to locate large proprietors, for example, Erikson and Goldthorpe (1992) suggest that they 'share an affinity' with salaried managers since they are involved as much in managerial as entrepreneurial activities. An implicit distinction, then, is between these types of activity, and those shared by small employers in Goldthorpe Class IVa (see the discussion in Section 3 of Rose and O'Reilly 1998). What does this say about employment relations? In addition, on what basis does Goldthorpe, in the current instantiation of his schema, allow professional status to override self-employed status? If the basic distinction is between employers, the self-employed and employees, but then Class I includes managers, professionals and employers, what are the criteria being used to say these share an affinity, or the same structural *position*? These questions had to be addressed before full validation of the NS-SEC and its operationalisation was possible.

16. Zeller and Carmines argue strongly that 'criterion-related validity has very limited usefulness in the social sciences, for the simple reason that with respect to many variables, there are no criteria against which the measure can be reasonably evaluated. Moreover, it is clear that the more abstract the concept, the less likely one is to be able to discover appropriate criteria for assessing a measure of it' (1980:81). We could note that, not withstanding Evans' and Mills' essential work, it might seem strange to think of the NS-SEC as a 'predictor' of employment conditions. However, as Bailey argues (1988), the many types of validity discussed by authors in different ways are not essentially distinct; they are all in fact a part of the same concept. Nevertheless, while statistical techniques have been developed and have advanced in rigorous and sophisticated ways, the concept of validity has not been awarded the same treatment. What we need to think about, says Bailey, is whether what we are trying to measure (class) is (1) a theoretical concept rather than an empirical reality or (2) an unmeasured empirical entity. It is probable that it is both at different times. It is likely that we think of class as (1) a sociological concept; as (2) an actually occurring phenomenon which is difficult to measure directly; and (3) as a measure or scale which yields a value for members of the population. A given concept, its empirical

occurrence, and the corresponding measurement are therefore separate and distinct elements (Bailey 1988:24). When it comes to validating a measure, we will be confused unless we separate out these three levels. Validity, then, involves validating the relationship between the concept and its empirical occurrence, between the concept and the measure, and between the empirical occurrence and the measure. If the different employment relations and conditions experienced by holders of different positions within the service relationship/intermediate/labour contract distinction constitute the empirically occurring entity, then the relationship between this entity and the measure of social class must be validated. This is what Evans and Mills have been doing when validating the Goldthorpe class schema. It is perhaps an easier way of understanding what is being done than using the term ‘criterion validity' but, whatever term is used, this type of validation work has certainly been important, necessary and relevant to the assessment of the NS-SEC.

Construct Validity

17. Conceptually, construct validity is less problematic than criterion-related validity. It can be used when it is unclear whether a measurement is an assessment or a predictor, that is, whether it directly measures the sum of a set of acquisitions, skills, or attributes, or whether it serves as a proxy measure for something else concurrent or predicted (*cf*. Nunnally 1959). Construct validity involves assessing how a measure relates to other variables in ways predicted by theory (but do not be confused, this is not what is termed predictive validity!). As we saw, Zeller and Carmines (1980), both criterion and content validity have limited usefulness for the social sciences, where it is often difficult to determine adequate criterion-related variables, and impossible to define a universe of content for the quality to be measured. Construct validity is far more appropriate (*ibid*: 81). A common example is validation of IQ measures. It is expected, for example, that IQ will increase with age during childhood, and so the relationship of the devised measure to age can be used as a construct validity test (Anastasi 1990).

18. Goldthorpe has stated unequivocally that concepts such as his class schema should be judged by their consequences, not by their antecedents (Erikson and Goldthorpe 1992:35), and has confirmed more recently that ‘class analysis does not entail a commitment to any particular theory of class but, rather, to a research programme’ (Goldthorpe and Marshall 1996). Since construct validity involves defining a measure in terms of what it does, it was appropriate to test the construct validity of his concept of social class and its operationalisation into the NS-SEC.

19. There are three steps to construct validity (Zeller and Carmines 1980): we should first specify the theoretical relationship between the measure and other variables; then measure the empirical relationship between them; and finally and essentially interpret the findings. To take the first step, specifying the theoretical relationship: years of research will hopefully have taught us what to expect in terms of the relationships between variables. We can draw on this experience in a construct validation exercise. For a variable measuring social class there is a mass of literature to draw on, much of it concerned with the

relationship between class and social inequalities. As Egidi and Schizzerotto (1996:252) eloquently express it, a valid measure of social class based on occupation should reveal relevant variance in the population:

> '[It] should be able to reveal real similarities of life-conditions among the incumbents of occupations belonging to the same stratum, or class, and likewise real differences in life-chances among individuals with occupations belonging to distinct strata or classes. In other words, within each context of social inequality, the variance in the degree to which a given attribute is possessed within a stratum or class must always be less than the variance among diverse strata or classes'.

20. To address the second step, measuring the empirical relationship, then in order to test the validity of a class-based measure it is advisable to examine the relationship between the measure and various other measures associated with inequality, while also controlling for factors such as gender, generation, ethnicity, and residential area, i.e. for other aspects of social difference or division. Areas of social life in which one may hypothesise the existence of inequality tied to occupational position, include the distribution of wealth, income and consumption; educational achievements; and mortality and morbidity (*cf*. Egidi and Schizzerotto 1996).

21. Finally, the results need to be interpreted. There are at least three possible interpretations when weak links are revealed to exist between hypothetically closely related variables in the construct validation exercise. However, there are ways of dealing with each in order to continue with the exercise (Zeller and Carmines 1980). It is possible that the measure is not valid, that it does not measure (in our example) social class, as we conceive it and thus does not relate in expected ways to other variables. However, before we would draw that harsh conclusion, we would need to consider other possibilities, for example that (1) the theory which predicts that two variables will be related in certain ways is wrong, e.g. class may not actually relate to voting behaviour in ways we expected; (2) inappropriate statistical techniques may have been used in testing the hypothesis; (3) the other variables used in the analyses may themselves lack construct validity and may need to be measured in different ways. Construct validity exercises should, therefore, always be theoretically driven, should use appropriate methodological procedures, and should ensure that the other variables used have been properly validated. Only under such conditions can we conclude that negative evidence is due to the absence of construct validity of the measure (*ibid*: 83).

Conclusion

22. The Review committee decided that to construct a single new SEC based conceptually on the Goldthorpe schema. This new SEC was to be operationalised using information on occupation and employment status, combining these units into clusters which attain maximum between-class and minimum within-class heterogeneity with respect to employment relations and conditions. However, the new SEC was also required to be as continuous with

SC and SEG as possible. This new SEC then had to be validated as an operationalisation of Goldthorpe's concept of class. Although there are four main types of validity relevant to the assessment of the validity of a measure (face, content, criterion, and construct), for a sociological measure such as the new SEC, the most appropriate are face, criterion and construct validity.

23. Face validity involved ensuring that the new SEC distinguished employers, the self-employed and employees and that no single SEC category combined these basic groups. We would also expect to find that the new SEC further distinguished employees in terms of the service relationship and labour contract. The new SEC could only be said to have face validity if there were categories containing senior managerial, professional and administrative positions and distinct categories for employees, with no supervisory role, working in routine occupations. Face validity may appear somewhat superficial and unconvincing, but it is an essential first step. Any measure or indicator of a sociological construct should have face validity at the very least.

24. Content validity would involve much the same as face validity, tied as it is to the nominal definition of the concept being measured. However, it is difficult, if not impossible, to gain consensus as to the universe of content of sociological variables and content validation depends on subjective judgements with regard to how adequately the content has been defined and sampled.

25. Criterion-related validity involves determining criterion-related variables which relate to the concept being measured, but which have not been measured directly, and testing whether these correlate with the new measure. As discussed above, the new SEC operationalises Goldthorpe's concept of class using information on occupation and employment status. It therefore acts as a *proxy* for the underlying concept of social class, without directly indexing the characteristics identified as part of the concept. In order to validate the new SEC, we examined the relationship between the measure and sets of criterion-related variables that more directly measure the elements of the concept, especially variables measuring differences in forms of remuneration, prospects and autonomy.

26. Construct validity involves assessing how a measure relates to other variables in ways predicted by theory. For example, it is expected that a valid measure of social class will correlate with educational attainment in certain specifiable ways. If it does not then there is a chance that it is not a valid measure. Construct validity should take place in three clear phases: hypotheses should be constructed specifying the theoretical relationship between the construct or measure and other variables; the empirical relationship between them should be measured; and the findings interpreted. When the measured empirical relationship does not coincide with the expected theoretical relationship, this can be interpreted in several ways: the theoretical relationship being specified could be wrong; the other variables used could be poorly measured; the statistical procedures may be inappropriate to the task; or, of course, the measure being validated could be invalid. Construct validation of the new SEC

employed a variety of different data sets to examine various sets of theoretical relationships.

27. The NS-SEC should look, on the face of it, as if it is a measure of Goldthorpe's concept of social class - and it does. More importantly, it should (and does) have both criterion and construct validity. This involved ensuring that it is measuring what it is intended and purported to measure; and that, as a measure of social class, it behaves in ways predicted by theory. In short, before we could claim validity for the new SEC, we had to ensure that observed patterns - how things operate in reality - corresponded with theoretical patterns - how we think the world works (Trochim 1998).

References

Anastasi, A. (1990) *Psychological Testing.* New York: Maxwell.

Bailey, K.D. (1988) 'The Conceptualization of Validity: Current Perspectives', *Social Science Research*, 17: 117-136.

Birkelund, G., Goodman, L. and Rose, D. (1996) 'The Latent Structure of Job Characteristics for Men and Women', *American Journal of Sociology*, 102, 1:80-113.

Carmines, E.G. and Zeller, R. A. (1979) *Reliability and Validity Assessment*. Beverley Hills: Sage

Cronbach, L. and Meehl, P. (1955) 'Construct Validity in Psychological Tests', *Psychological Bulletin*, 52, 4: 281-30.

Egidi, V. and Schizzerotto, A. (1996) 'Social Stratification and Mobility. Concepts, Indicators and Examples of Application', *Proceedings of the Siena Group Meeting June 1996*. Paris: INSEE.

Erikson, R. and Goldthorpe, J.H. (1992) *The Constant Flux: A Study of Class Mobility in Modern Britain*. Oxford: Clarendon Press.

Evans, G. (1992) 'Testing the Validity of the Goldthorpe Class Schema', *European Sociological Review*, 8:211-32.

Evans, G. (1996) 'Putting men and women into classes: an assessment of the cross-sex validity of the Goldthorpe class schema', *Sociology*, 30, 209-35.

Evans, G. and Mills, C. (1996) 'Assessing the criterion-related validity of the Goldthorpe class schema among men and women: A latent log-linear model approach'. *Mimeo*. Oxford: Nuffield College.

Evans, G. and Mills, C (1997) 'In Search of the Wage Labour/Service Contract. Paper prepared for the Spring meeting of the ISA RC28 (Social Stratification) Tel Aviv, 19-20 May

Evans, G. and Mills, C (1998a) 'A Validation of the New SEC'. *Mimeo*. Oxford: Nuffield College.

Evans, G. and Mills, C (1998b) 'Identifying Class Structure: A Latent Class Analysis of the Criterion-Related and Construct Validity of the Goldthorpe Class Schema', *The European Sociological Review*, 14, 1:86-107.

Goldthorpe, J.H. (with C Llewellyn) (1980) *Social Mobility and Class Structure in Modern Britain*. Oxford: Clarendon Press.

Goldthorpe, J.H. (1997) 'The 'Goldthorpe' Class Schema: some observations on conceptual and operational issues in relation to the ESRC review of government social classifications' in D. Rose and K. O'Reilly (Eds.)

Constructing Classes: Towards a New Social Classification for the UK. Swindon: ESRC/ONS.

Goldthorpe, J.H. and Marshall, G (1996) "The promising future of class analysis" in D. Lee and B. Turner *Conflicts About Class. Debating Inequality in Late Industrialism*. London: Longman.

Henerson, M., Morris, L. L., Fitz-Gibbon, C.T. (1987) *How to Measure Attitudes*. Newbury Park: Sage.

Kerlinger, F.N. (1986) *Foundations of Behavioral Research*. CBS Publishing Japan Ltd.

Marshall, G., Rose, D., Newby, H., and Vogler, C. (1988) *Social Class in Modern Britain.* London: Hutchinson.

Moser, C.A. and Kalton, G. (1971) *Survey Methods in Social Investigation*. London: Heinemann.

Nunnally, J. Jr. (1959) *Tests and Measurements. Assessment and Prediction*. New York: McGraw Hill.

Nunnally, J.C. and Bernstein, I.H. (1994) *Psychometric Theory*. New York: McGraw-Hill.

Rose, D (1995) *A Report on Phase 1 of the ESRC Review of OPCS Social Classifications.* Reproduced as Appendix 1 in D. Rose and K. O'Reilly (Eds.) *Constructing Classes: Towards a New Social Classification for the UK*. Swindon: ESRC/ONS.

Rose, D. and O'Reilly, K. (1998) *The ESRC Review of Government Social Classifications*. London and Swindon: ONS and ESRC.

Rose, D. and O'Reilly, K. (1997) *The ESRC Review of Government Social Classifications. Report on Phase 2 to the Office for National Statistics*. Colchester: ESRC Research Centre on Micro-Social Change, University of Essex.

Trochim, W. (1998) *The Knowledge Base. An Online Research Methods Textbook*. URL http://trochim.human.cornell.edu/kb/kbhome.htm.

de Vaus, D.A. (1996) *Surveys in Social Research*. London: UCL Press.

Zeller R. A. and Carmines, E.G. (1980) *Measurement in the Social Sciences*. Cambridge: Cambridge University Press.