

# **Social Class in Europe**

An introduction to the European  
Socio-economic Classification

Edited by  
**David Rose**  
and  
**Eric Harrison**

 **Routledge**  
Taylor & Francis Group  
LONDON AND NEW YORK

Mannheimer Zentrum für  
Europäische Sozialforschung  
-Bibliothek-

E. K. Kungbi/124

First published 2010

by Routledge

2 Park Square, Milton Park, Abingdon, Oxon, OX14 4RN

Simultaneously published in the USA and Canada

by Routledge

270 Madison Avenue, New York, NY 10016

*Routledge is an imprint of the Taylor & Francis Group, an informa business*

© 2010 David Rose & Eric Harrison for selection and editorial material

Typeset in Sabon by

Keystroke, Tettenhall, Wolverhampton

Printed and bound in Great Britain by  
the MPG Books Group in the UK

All rights reserved. No part of this book may be reprinted or reproduced  
or utilised in any form or by any electronic, mechanical, or other means,  
now known or hereafter invented, including photocopying and  
recording, or in any information storage or retrieval system, without  
permission in writing from the publishers.

*British Library Cataloguing in Publication Data*

A catalogue record for this book is available from the British Library

*Library of Congress Cataloguing-in-Publication Data*

Social class in Europe: an introduction to the European Socio-economic

Classification / [edited by] David Rose, Eric Harrison.

p. cm. - (Routledge/ESA studies in European societies)

Includes bibliographical references and index.

1. Social classes—Europe—Classification. 2. Social stratification—

Europe—Classification. 3. Europeans—Social conditions—Classification.

4. Europeans—Economic conditions—Classification. I. Rose, David, 1947

Feb. 17—II. Harrison, Eric, 1967—

HN380.Z9S676 2009

305.5072'04—dc22

2009014488

ISBN10: 0-415-45801-3 (hbk)

ISBN10: 0-203-93058-4 (ebk)

ISBN13: 978-0-415-45801-6 (hbk)

ISBN13: 978-0-203-93058-8 (ebk)

This book is dedicated with respect and affection to the  
three sociologists who made our endeavours possible:

Robert Erikson

John H. Goldthorpe

and

David Lockwood

## 5 Measuring social class

### The case of Germany

*Heike Wirth, Cornelia Gresch, Walter Müller,  
Reinhard Pollak and Felix Weiss*

#### Introduction

The construction of internationally comparable and harmonized measures is particularly challenging since they must guarantee an equivalent measurement of the same theoretical concept for different countries. This is especially true for areas in which the empirical manifestations of the concept vary between countries, for reasons such as specific historical traditions, institutional peculiarities or cultural differences. In these instances, nationally specific conditions may be blurred or will not be adequately captured when following the principles of procedural equivalence (Johnson 1998).

In the case of ESeC, various factors may contribute to a systematic error in the measurement of the intended concept. Company regulations and tax laws may shape the boundary between employers, self-employed and employees differently throughout Europe and in varying ways. Labour (contract) regulations (by legislation or industrial relations agreements) have an impact on employment relationships both in general and for specific groups of employees in particular. The share of the public sector and the proportion of civil servants in the work force vary greatly between countries. Different countries also develop a separate understanding and contractual underpinning of management positions, executive employees or supervisors. In addition to these differences in employment relations, variations in the language used and national traditions of measurement of various indicators may further lead to systematic biases of a cross-nationally valid measurement of ESeC.

Germany is a good test case for addressing these problems. Compared to the United Kingdom, which served as a prototype country for the first version of ESeC,<sup>1</sup> Germany diverges significantly with respect to both welfare state regulations and labour market policies. Germany is often portrayed as a typical example of a conservative welfare state which, while providing security against market vagaries and uncertainty, does much to secure the established standing and privileges of both classes and status groups. The UK, in contrast, is seen as a prime example of the liberal, residual welfare state, placing fewer constraints on the operation of markets

and intervening only as a last resort (Esping-Andersen 1990). More specifically, in relation to class formation and employment relationships, the two countries vary substantially in labour regulation and (de-)commodification of labour. Germany has its long tradition of sharply distinct categories of employees – blue-collar workers (*Arbeiter*), white-collar employees (*Angestellte*) and civil servants (*Beamte*) – that has been institutionally shaped and conserved through social and labour regulations since the late nineteenth century.

Civil servants, in particular, are distinct as a group with contractual relations that include many privileges in terms of tenure, tax benefits and promotions. They are of particular importance in Germany because this group embraces many occupations, such as teachers and (until recently) even postmen and train conductors who in other countries, and notably in the UK, are far from having civil servant status. The *Angestellte* group, which comprises most white-collar employees in the private sector and those employees in the public sector who are not civil servants, receive treatment similar to civil servants, although on a less advantageous level. In contrast, the *Arbeiter*, including most blue-collar and some lower level service workers, for long worked under regulations with conditions typical of labour contracts. However, in the post-World War II decades these conditions, especially for skilled workers, slowly and gradually improved, and in terms of work protection and social security came closer to the arrangements achieved for the *Angestellte*. Finally, in a 2005 Act of Parliament (*Gesetz zur Organisationsreform der gesetzlichen Rentenversicherung, RVOrgG*), the traditional distinction between *Arbeiter* and *Angestellte* within the old age pension scheme was abolished. While many *Arbeiter* are still paid hourly, in ever more branches of industry the mode of remuneration has developed in the direction of monthly salaries in a similar manner to the *Angestellte*. In sum, differences between Germany and the UK are manifold, with a generally higher level of job security in Germany, stronger protection against job losses, a more regulated labour market and institutionally distinct modes of employment relations between different categories of workers (Kocka 1981; Müller 1986).

In addition to these labour market characteristics, the role of education in labour market allocation also differs significantly between Germany and the UK. With its highly developed system of vocational education at the secondary level and its marked occupational orientation of higher education, Germany is among the countries in which educational qualifications most strongly shape access to jobs in different classes. Germany is also well known for its marked occupational segmentation of labour markets, as well as for its pronounced differences between skilled and unskilled labour, all of which are related to the strong vocational/occupational orientation of the education and training system. In the UK, in contrast, the link between education and class position is comparatively weak; in particular the distinction between skilled and unskilled labour is less pronounced than in Germany (Blossfeld

and Mayer 1988; Hillmert 2001; Müller and Shavit 1998; and cf. Chapter 2 on *Facharbeiter* and the ESeC, this volume).

These differences in the organization of employment relations and the educational system of Germany and the UK are likely to have implications for the position of various occupational groups in the class structure. Therefore, as a first step, we were concerned to construct a national variant of ESeC that is able to capture these special features of the German social structure adequately. We call this variant 'German ESeC'. We began from the UK-based first draft of ESeC (see Chapters 1 and 2), but then accounted for German national specificities in employment relationships by using various information on occupations, employment status and employment relations indicators (see below). By doing so, we attempted to optimize the validity of ESeC for Germany. Next, the German version was compared with the UK-based first draft of ESeC.<sup>2</sup> The findings from this process, as well as those of other validation studies (see e.g. Bihagen *et al.* 2005; Rose and Harrison 2005; and Chapter 11, this volume) provided the basis for the construction of the final version of ESeC.

This chapter assesses the validity of the German ESeC and the final, 'international standard' ESeC and compares the two measures with each other. For a comparison of the two, it is important to recall from Chapters 1 to 3 that the first UK-based draft of ESeC, like the German ESeC discussed in this chapter, used information on ISCO-88 (COM) occupational unit groups (OUGs). The final international standard ESeC, however, applied information only at the three-digit ISCO Minor Group level. To provide a basis for the comparison of the international standard ESeC with the German version, first, we briefly summarize how the German ESeC was constructed (section 2). In sections 3 and 4 we describe the operationalization of the variables used to construct ESeC and the employment relations indicators used to test its validity. In sections 5 and 6 we examine the differences between the German and the international variant of ESeC and the extent to which the criterion validity of ESeC diverges between these variants.

### The construction of the German national ESeC

As we saw in Chapters 1 to 3, the data requirements for a careful validation study of ESeC are manifold. The data have to include detailed information on OUGs, on employment status and on supervisory status; they have to provide information on employment relationship indicators, as well as the many observations required for detailed analyses at the OUG level. The BIBB/IAB cross-sectional survey on the *Acquisition and Use of Occupational Qualifications 1998/99* is a very well-equipped dataset to serve all these requirements. It was conducted by the Federal Institute for Vocational Education and Training (BIBB) in collaboration with the Institute for Employment Research (IAB). It provides a random probability sample of the German labour force covering 34,343 individuals aged 15 years and above

and in regular, paid employment for at least 10 hours per week in the survey period.

Using this database, and following the general theoretical conception of ESeC described in Chapter 1, initially we developed a set of validation indicators intended to measure the assumed characteristics of the employment relationship appropriate to each ESeC class. These indicators are described below. Based on a prototype ESeC derivation matrix that was developed and validated earlier for the UK, the cases surveyed in the BIBB/IAB study were then allocated to the respective prototype ESeC classes. The validation indicators demonstrated that the different classes strongly and consistently differed from each other in the theoretically expected way. In fact, this UK-based prototype could already be seen as a good approximation for the desired ESeC. However, to improve on this and to come closer to a German ESeC, each OUG<sup>3</sup> was assessed in terms of the various validation indicators in order to see whether it fitted best into the assigned prototype ESeC class or a different one. The criterion for deciding on the allocation was the proximity of the value of the validation indicators calculated for each OUG with their value for the various prototype ESeC classes. When the validation indicator values for an OUG were closer to those of another class than to the class assigned according to the prototype matrix, it was moved to the better fitting class. Basically, the procedure adopted corresponds to a clustering algorithm. However, we did not use an automatic optimization procedure because we were also concerned to accommodate distinctions made in the prototype matrix between service occupations and technical occupations (such as between ESeC classes 7, 8 and 9). Through this process we attempted to obtain an ESeC derivation matrix that, in terms of the validation criteria, takes into account German peculiarities in the employment relationship of various OUGs. It was also expected to improve, again in terms of the validation indicators, the within-class homogeneity of the OUGs allocated to each class, as well as increasing the distinctiveness of the classes compared with one another.

Having defined a German ESeC derivation matrix, the validation indicators were re-examined at the class level for each of the resulting German ESeC classes. It transpired that the new German ESeC was indeed more adequate for the German data than the UK-based prototype ESeC. For each of the validation criteria the percentage of variance explained by the German ESeC was larger than or at least as large as that explained by the prototype ESeC. Of course, this outcome could be expected because we used the same data both to decide on OUG-ESeC allocations and to assess the improvement to ESeC's validity achieved by the reallocations. To circumvent this partial circularity, the comparison of the predictive power of both the prototype and the German ESeC was replicated using GSOEP data<sup>4</sup> and with slightly different validation indicators. Since this independent German dataset also proved the German ESeC to be superior to the prototype ESeC, it may be assumed that it does indeed capture class differences in

employment relationships better than the UK-based prototype. Thus, the German ESeC may be used as a sensible reference both to assess the relative appropriateness of the international version of ESeC and to compare the latter's ability to proxy a German national class schema.

In light of suggestions developed through several other national validation studies similar to the one just described for Germany, the prototype ESeC matrix was revised and finally the syntax for the international ESeC was developed (see Chapter 1 and *The ESeC User Guide* (Harrison and Rose 2006)). As we saw in Chapters 1 and 2, this international ESeC emerged in an iterative process attempting to accommodate requirements from various national validity concerns. Since the international ESeC is now proposed for comparative studies it is most instructive to compare the German ESeC not with the prototype ESeC (as in Hausen *et al.* 2005b), but to this new international ESeC. In the following sections we will do this both in terms of the validation indicators used and the resulting class distributions. First, however, we briefly describe the variables and procedures used to construct the validation indicators and the various versions of ESeC.

### The operationalization of the various versions of ESeC with the BIBB/IAB database

As described in the chapters in Part I, ESeC is built from two pieces of information: employment status categories and ISCO occupational groups. An ESeC class is then assigned based on the combination of both codes according to the mapping defined for the ISCO groups by the employment status columns of the derivation matrix. The same initial data were used for all versions of ESeC. The procedures differ only with respect to the level of aggregation of ISCO codes and according to whether the German or the international rules are applied for mapping to ESeC classes.

The measurement of employment status involves distinguishing between employer/self-employed, supervisors and other employees. The following procedures were used to mimic the ESeC employment status concept.

- *Employer/self-employment* was constructed as required in the ESeC protocol (see Chapters 1 and 3). Cases of missing data on number of employees were assigned to the modal category of all valid observations, in the case of the German data to the small employer category with one to nine employees.
- *Supervisors and employees*: In Germany (as in many other countries), the concept of a supervisor is neither well defined nor are there strictly comparable operational procedures to measure supervisory status<sup>5</sup> (see Chapters 6 and 7 for more detailed discussion on this issue). Given the information provided in the BIBB/IAB dataset, the following procedures proved to be the closest approximation to the ESeC protocol. Among respondents not previously coded as self-employed, all those were

considered supervisors (and not employees) who had co-workers for whom they were direct supervisors (*Vorgesetzte*), irrespective of the number supervised, since this information was not available. This definition is likely to classify a considerable number of workers as supervisors even though supervision is not their main task as ideally required by ESeC. It thus leads to a rather broad (probably too broad) definition of supervision (again, for a detailed discussion see Chapter 6).

- *Occupation*: In the BIBB/IAB data, occupation is initially coded to the four-digit national occupational classification (*Klassifikation der Berufe*). Using the crosswalk routine provided by the German Federal Statistical Office, these codes were transformed into the four-digit ISCO-88 (COM) OUGs. For the German ESeC (and for all further analyses) these four-digit ISCO codes (combined with the employment status categories) were used as basic mapping units for the ESeC classes. The international ESeC, in contrast, is based on the three-digit ISCO-88 (COM) Minor Groups by employment status derivation matrix. To assess the consequences of the aggregation of ISCO information, a three-digit and a two-digit German ESeC version were defined using the modal value rule discussed in *The ESeC User Guide* (Harrison and Rose 2006). That is, first, respondents are assigned an ESeC class code according to the four-digit occupational information. Second, the three-digit and two-digit occupation by employment status groups are then assigned the respective modal class codes on the basis of the four-digit information.

### The employment relations (ER) indicators

As discussed in Chapter 1, employment status and employment regulation are the theoretical backbone of the class concept underlying ESeC. While employment status alone assigns the small minority of employers/self-employed to a certain ESeC class position, it is mainly employment relations in the sense of employment regulation that distinguishes classes among the much larger group of dependent employees. Thus, the validity of ESeC must be judged mainly in terms of its ability to group dependent employees according to the differences in employment relations that their work situation entails. As we saw in previous chapters, for employees different forms of employment relations (ER) or regulation are conceived by Goldthorpe (2007a) as viable responses to the weaker or stronger presence of the two basic problems of work monitoring and human asset specificity that may occur to a greater or lesser extent in employment contracts, depending on the work tasks to which employees are contracted. To summarize, monitoring problems arise when the amount and quality of work cannot be monitored directly or as easily as in the case of, say, assembly line work with its standardized work tasks and fixed production pace. Problems of asset specificity arise in situations which involve high amounts of job-specific human capital or otherwise high investments by the employer in an

employee's work competences. Work situations with low monitoring problems and low asset specificity can be handled efficiently by a labour contract (classes 7–9), in which a quantity of labour is purchased on a piece- or time-rate basis, the most typical example being the case of unskilled work. In contrast, for work situations with high monitoring problems and high asset specificity (classes 1 and 2) the service relationship is a more adequate and better fitting response:

i.e. a contractual exchange of a relatively long-term and diffuse kind in which compensation for service to the employing organization comprises a salary . . . important prospective elements – salary increments, expectations of continuity of employment (or at least of employability) and promotion and career opportunities.

(Goldthorpe and McKnight 2006: 112)

Modified or mixed versions of these basic forms of the labour contract and the service relationship are likely to occur with routine non-manual workers on the one hand (class 3), and with the lower level technician grades and supervisors of routine non-manual and manual workers on the other (class 6). Following these theoretical premises, two kinds of ER indicators are used with the existing data for the validation of ESeC in the German case: indicators which capture the weaker or stronger presence of the basic problems of difficulty of monitoring and asset specificity indicators which tap the assumed response to these problems, i.e. indicators for the assumed contractual relationship.

Work monitoring is measured by using factor scores derived from three items measuring the extent of standardization of the work situation and the autonomy workers have in performing their tasks.<sup>6</sup> Respondents were asked to indicate how often (almost always/frequently/occasionally/rarely/hardly ever) the following specific aspects occur in their present job: (1) work tasks are prescribed in all details; (2) an identical work operation recurs in all details; and (3) a precise number of product units, a minimum work performance or the time to carry out a specific work task is prescribed. The combined factor of these three items ( $\alpha = .66$ ) is referred to as the 'autonomy factor' with high scores pointing to high autonomy and low scores pointing to low autonomy.

To operationalize asset specificity, we use information on the qualification the job holders perceive as required for their job. We do not assess qualifications which job holders possess in reality, but rather, as a characteristic of the job, the qualifications considered to be necessary for the job. This was measured by two dummy variable indicators: (1) The proportion of job holders who indicate that at least a tertiary education or vocational college degree is required ('college degree'); and (2) the proportion of job holders who say that the job cannot be done without any qualification ('any qualification').<sup>7</sup>

To assess the presence of characteristics of a service relationship the database permitted measurement of aspects of (1) future career prospects and (2) the varying length of the employment contract in a given job. Career prospects are measured by the extent of further education or training received in the previous five years (with the present employer). Further education is asset generation, but may also be seen as an indirect indication of investment for career prospects. To assess prospects for long-term employment a measure was constructed to indicate the average length of tenure individuals in a given job tend to have compared to the average length of tenure of all individuals of the same gender and with the same labour force experience.<sup>8</sup> Positive values on this indicator mean that length of tenure in this class or OUG is higher than the expected average for a given gender and number of years in the labour force. Negative values, in contrast, indicate shorter length of tenure. Table 5.1 shows the ER indicators of employees for

Table 5.1 Employment relationship indicators by ESeC classes for employees, German ESeC based on ISCO four digit

ESeC classes	Work autonomy (factor score)	Required highest qualification (%)		Obtaining further education (%)	Relative length of tenure
		Any qualification	College degree		
1 Higher salariat occupations	0.50	91.7	66.5	56.4	1.49
2 Lower salariat occupations	0.26	82.1	33.3	54.1	2.30
3 Intermediate occupations	0.10	66.6	10.4	36.6	0.24
6 Lower supervisory, technician occs.	-0.22	67.8	13.3	32.2	0.18
7 Lower services, sales, clerical occupations	-0.02	34.2	2.3	12.3	-2.64
8 Lower technical occupations	-0.47	66.8	3.8	17.7	-0.63
9 Routine occupations	-0.67	21.1	1.4	8.5	-3.28
Relating concept	Monitoring problems	Asset specificity	Asset specificity	Career prospects	Long-term employment

Data source: BIBB/IAB, 1998/1999.

the German ESeC classes. The values of these indicators reflect the ESeC class means of the five employment relationship indicators. As may be seen, the values found for the different classes are consistent with theoretical expectations. The scores on the work autonomy factor decline when moving from the higher salariat (ESeC 1) to the routine occupations class (ESeC 9). The decline, however, is not completely linear. Holders of lower service jobs (ESeC 7) barely differ from ESeC class 3, while the lower supervisors and technicians (ESeC 6) in comparison have lower autonomy scores. This is consistent with Goldthorpe's (2007a) argument that even highly qualified technical work (as in ESeC 6) likely involves fewer monitoring problems than routine service work (ESeC 7).

For asset specificity, the first indicator, 'any qualification', extends over a very wide range: from 21 per cent for the routine working class (class 9) to 91 per cent for class 1, with expected distinctions among the classes between these extremes. This indicator, however, barely differentiates between the two intermediate classes (ESeC 3 and 6) and ESeC 8. The second indicator for asset specificity, college education required, shows a strong contrast between the higher and lower salariat and between these classes and all others. 'College degree' is also useful in differentiating between classes 3, 6 and 8, as it separates them in the expected order. In terms of career prospects and length of employment, class differences correspond to theoretical expectations. 'Obtaining further education' strongly varies between classes; and employees in salariat jobs have considerably more years with their current employer than employees in other classes. Tenure is especially low for lower services (ESeC 7) and routine occupations (ESeC 9). Thus, across all indicators, the German ESeC classes clearly differ from one another and form consistent clusters in the theoretically expected way. Having described the construction of the German ESeC and assessed its validity in terms of the employment relation indicators, we can now compare the German version with the international ESeC.

### Differences in OUG composition and class distribution between the German and the international variants of the ESeC classification

In this section we describe the differences between the German variant and the international ESeC in terms of both OUG composition and the resulting distribution in the size of the various classes. We should recall that while the German ESeC is based on four-digit ISCO codes, the international ESeC uses only three digits. Therefore, there are two major sources of discrepancy between the German and international ESeCs: (1) *allocation discrepancies* resulting from national specificities in employment relationships which lead to a different OUG by employment status-to-ESeC allocation; and (2) *aggregation discrepancies* deriving from using less detailed occupational information. We explore how each leads to coding divergences when moving from the German to the international ESeC.

Table 5.2 displays the distribution of the German classes compared with the international ESeC classes. The figures in the cells are percentages, based on the total number of cases. First, one should notice the high correspondence between the two versions: about 86 per cent of all OUGs are assigned to identical classes (diagonal cells) while only 14 per cent are allocated to different classes (off diagonal cells). Moreover, the divergences are concentrated among few classes and vary between 0.1 and 3 percentage points. The vast majority of the divergences observed between the two ESeC variants are due to *allocation discrepancies*. Less than one-third of the exchange is caused by *aggregation discrepancy*, that is, by using ISCO three digit instead of ISCO four digit. In the following we examine some of the most important deviations (cells in Table 5.2 which represent more than 1 per cent of all respondents) and indicate the reasons why some OUGs were coded differently in the German and international versions of ESeC.

We begin with the cell indicating a move from German ESeC class 1 to international ESeC class 2 (2.7 per cent of all cases). About two-thirds of these moves are due to different allocations, mostly concerning just two OUGs: secondary education teachers (ISCO 2320) and public service administrative professionals (ISCO 2470). Both groups have a considerable share of Germany's large public sector. In the international ESeC, all teachers in primary and secondary education are assigned to class 2. However, at least in Germany, there are important differences among teachers in terms of educational requirements (higher versus lower tertiary education) and work autonomy, as well as with respect to their position in the Civil Service hierarchy and wage scale. Besides these differences, basically all teacher groups report consistently higher employment relations indicators than the average for class 1; thus all of them could go to class 1. However, as this is particularly so for secondary education teachers at the gymnasium,<sup>9</sup> they were assigned to class 1 in the German ESeC and make up a considerable part of the 'class 1 to class 2 movers'.

Regarding OUG 2470, 'public service administrative professionals', both ESeC variants agree in the allocation of rank-and-file employees to class 2. Yet in the international ESeC administrative professionals who take up a supervisory position are also allocated to class 2. However, for the German ESeC the optimal allocation of this latter group turned out to be class 1 because a supervisory position in this OUG comes along with high scores on career prospects and exceedingly high ones on length of tenure. It should be added that this particular OUG appears to be interpreted in different ways by NSIs.

Only one-third of the moves between German ESeC class 1 and international ESeC class 2 are due to aggregation discrepancy. Focusing on these cases we can illustrate the loss of information and increased heterogeneity brought about when using ISCO three-digit instead of four-digit occupational information. In this particular example the moves are largely caused by occupations in the ISCO minor group 'social science and related

Table 5.2 Distribution of ESeC classes: German version compared to the international version

German ESeC <sup>a</sup>	International ESeC <sup>b</sup>										
	1	2	3	4	5	6	7	8	9		
	Total percentages										
1	9.1	2.7	0.0	0.2	0.3	0.0	0.0	0.0	0.0	12.4	4217
2	0.8	19.4	0.2	0.1	0.0	1.4	0.0	0.0	0.0	21.9	7474
3	0.0	0.5	12.3	0.0	0.0	0.0	3.0	0.0	0.1	15.9	5415
4	0.0	0.3	0.0	6.7	0.0	0.0	0.0	0.0	0.0	7.0	2392
5	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	78
6	0.0	1.4	0.0	0.0	0.0	9.3	0.0	0.3	0.0	11.0	3747
7	0.0	0.0	0.1	0.0	0.0	0.0	6.3	0.0	1.0	7.3	2497
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.2	0.4	11.6	3958
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	11.8	12.7	4327
Total	9.9	24.3	12.6	7.0	0.6	10.8	9.3	12.3	13.3	100.0	
N	3363	8298	4281	2398	197	3671	3162	4191	4544		34,105

## Notes

<sup>a</sup> based on ISCO 4-digit (OUGs); <sup>b</sup> based on ISCO 3-digit (Minor Groups)

Stayers (diagonal cells) = 86.2%; Movers (off diagonal cells) = 13.8%.

Data source: BIBBIAB 1998/1999.

professionals' (ISCO 244), which in turn comprises six OUGs (2441 to 2446<sup>10</sup>). All of these OUGs are in class 1 except for social work professionals who are in class 2. However, when ESeC is based on ISCO three digit (i.e. minor groups), the class assignment is determined by the modal ESeC class frequency of the OUG distribution in the corresponding minor group. In our example this is ESeC 2 represented only by social work professionals with a share of 54 per cent. In consequence, all other OUGs included in the minor group also go to class 2. For this kind of reason ESeC classes based on three-digit minor groups are likely to be more heterogeneous in terms of employment relations than when based on four-digit OUGs.

Further examining Table 5.2, we find that a considerable number of divergences concern moves from German ESeC class 2 to the international ESeC class 6; and even more from German ESeC class 3 to international ESeC class 7. In both cases essentially the same OUGs are involved, but the class 3 to class 7 moves relate to employees, while the class 2 to class 6 moves concern supervisors in the respective OUGs. Here again, the coding divergences derive from allocation discrepancies (in about three-quarters of the cases) as well as from aggregation discrepancies. In the case of allocation discrepancies, the OUG mainly involved is institution-based personal care workers (ISCO 5132), another group whose interpretation seems to vary across countries. In Germany, personal care workers constitute a large group and mainly comprise medical or dental doctor aides in surgeries. These occupations are among the most favoured vocational training occupations for women in Germany. While personal care workers in the international ESeC are either allocated to class 6 (supervisors) or class 7 (employees), the findings for Germany indicate that not only is the qualification required for these jobs higher than the averages for classes 6 and 7 respectively, but they also imply better career and long-term employment prospects. Therefore the optimal allocation of personal care employees in the German ESeC is class 3 and for supervisors class 2. Concerning aggregation discrepancies it is mainly police officers (ISCO 5162) who, when using minor groups for the construction of ESeC, change class position from class 2 to class 6 (when supervisors) or from class 3 to class 7 (when employees). This 'degrading' of police officers in the international ESeC occurs because in the three-digit ISCO they form part of the minor group 'protective services workers' (ISCO 516) and for this aggregate group the modal classes are 6 and 7, since it is dominated by the so-called 'protective services workers not elsewhere classified' (ISCO 5169). This is a further typical example that ESeC based on minor groups can lead to an undesirable blurring of class composition.

Finally, we draw attention to the 1.4 per cent of cases moving from German ESeC class 6 to international ESeC class 2. This is almost exclusively a consequence of allocation discrepancies. Involved here are mainly technician OUGs, such as chemical and physical science technicians; electronics and telecommunications engineering technicians; draughts persons; life science technicians; agronomy and forestry technicians; and optometrists

and opticians (ISCO 3111, 3114, 3118, 3211, 3212, 3224). In Germany this technicians group, when employees, has distinctly lower scores on the ER indicators than the average of class 2. Especially with regard to autonomy and career prospects, their scores point to class 6 rather than to class 2. Therefore, in the German version, employees in these OUGs are assigned to class 6, while supervisors are mostly allocated to class 2, as in the international version.

Having described the most important coding discrepancies between the German and the international ESeC, we now turn to the effects of different coding procedures on the resulting class distributions. Table 5.3 shows the class distributions for both versions, for different aggregation levels and differentiated by gender. Regarding the German ESeC, the distributions resulting from using different levels of ISCO occupational coding demonstrates the effects of aggregation discrepancies, while the comparison of the German three-digit ESeC with the international ESeC mainly reflects the effects of allocation discrepancies. We can see that different levels of aggregation of occupational coding produce noticeable variations in the class distributions. They are most marked in the salariat classes and the lower supervisory class. The total share of the salariat classes is slightly higher (36 per cent against 34 per cent) when using ISCO three digit instead of four digit; and the higher-lower salariat ratio increases sizeably in favour of the lower salariat. This growth of the lower salariat is nurtured in more or less equal shares by downward switches from the higher salariat and upward switches from the lower supervisory/technician occupations.<sup>11</sup> At the same time the share of the lower supervisory/technician occupations decreases from 11 to 9 per cent, which is matched by an increase in the size of the lower technical occupations. Surprisingly, as we saw in Chapters 2 and 3, two-digit occupational coding results in salariat classes of size similar to those found with four-digit coding. However, the share of class 6 remains low, being compensated this time through a larger share by class 7, again for reasons given in Chapter 2. If the focus is on the international ESeC, the share of the salariat classes closely corresponds to the German three-digit version, but is lower than in the German four-digit version. The proportion of the intermediate class is considerably lower in the international ESeC than in all German versions. The small size of the intermediate occupation class in the international version is mainly due, as indicated above, to the downward coding of occupations such as personal care workers and police officers to the lower services class when applying the international ESeC classification rules.

The different coding procedures also affect gender differences in class distributions (see columns 5–10 in Table 5.3). Nevertheless, the typical pattern of gender segregation in class positions becomes evident with all coding procedures: the share of women in the higher salariat, lower supervisory and lower technical and routine occupations is considerably lower than for men; in contrast, more women than men are in the lower salariat, as well

Table 5.3 Distribution of ESeC German version (GV) and international version (IV) by ISCO four-, three-, two-digit and gender (column %)

ESeC	GV <sup>a</sup>			IV <sup>b</sup>		GV <sup>a</sup>		IV <sup>b</sup>	
	4d	3d	3d	2d	3d	4d	3d	Men	Women
	All					Men	Women	Men	Women
1 Higher salariat occupations	12.4	10.8	12.2	12.2	9.9	16.2	7.4	14.6	5.9
2 Lower salariat occupations	21.9	24.9	21.2	21.2	24.3	19.6	24.9	22.4	28.1
3 Intermediate occupations	15.9	16.2	16.6	16.6	12.6	7.4	26.9	7.9	26.9
4 Self-employed (non prof.)	7.0	7.2	7.2	7.2	7.0	7.5	6.4	7.8	6.5
5 Self-employed (agric.)	0.2	0.2	0.2	0.2	0.6	0.2	0.3	0.2	0.3
6 Low. supervisory/technician	11.0	9.0	8.8	8.8	10.8	14.0	7.1	11.9	5.3
7 Low. services/sales/clerical	7.3	7.7	9.9	9.9	9.3	2.7	13.3	2.6	14.3
8 Low. technical occupations	11.6	12.3	12.4	12.4	12.3	18.0	3.3	19.1	3.6
9 Routine occupations	12.7	11.6	11.4	11.4	13.3	14.3	10.6	13.4	9.3
Total	34,105	34,105	34,105	34,105	34,105	19,242	14,863	19,242	14,863
								19,242	14,863
								Men	Women
								13.3	5.4
								21.3	28.3
								5.5	21.6
								7.6	6.3
								0.7	0.4
								14.4	6.0
								4.1	16.0
								18.9	3.7
								14.2	12.2

Notes

<sup>a</sup> based on ISCO 4 digit (OUGs); <sup>b</sup> based on ISCO 3 digit (minor groups)  
Data source: BIBB/IAB 1998/1999.

as in intermediate and lower service occupations. However, it also becomes evident that the OUGs which have been moved from German ESeC 3 to international ESeC 7 are mainly female-dominated ones, such as the already mentioned personal care workers. At the same time another OUG, mainly held by women in Germany (waiters, waitresses and bartenders) moves from German ESeC 7 to international ESeC 9. As a result the German ESeC shows a slightly less disadvantaged class distribution for women than the international ESeC. According to the German four-digit ESeC, more women than men (by 6.9 per cent) belong to one of the least advantageous classes, 7 or 9 (17 per cent of men; 23.9 per cent of women); but in the international ESeC a difference of 9.9 per cent prevails (18.3 per cent of men; 28.2 per cent of women). Depending on the procedure used, one may diagnose somewhat more or less gender disadvantage.

Further insights on the implications of different coding procedures may be gained from Table 5.4 in which we summarize the divergences arising from the different procedures and distinguish between coding moves among and between the three groups of classes which are most distinct from each other in terms of the theoretical basis of the schema, the salariat classes, the intermediate classes and the working classes. Moves between these class groups more seriously question the acceptability of a procedure than moves among classes within a group. Fortunately we find that, for the large majority, each of the procedures assigns cases to the same basic class. Not surprisingly the correspondence is largest when the aggregation level varies from only four

Table 5.4 Coding mobility between different ESeC versions

	<i>GV<sup>a</sup></i> <i>4 digit</i> <i>to GV</i> <i>3 digit</i>	<i>GV</i> <i>4 digit</i> <i>to GV</i> <i>2 digit</i>	<i>GV</i> <i>4 digit</i> <i>to IV<sup>b</sup></i> <i>3 digit</i>	<i>GV</i> <i>3 digit</i> <i>to IV</i> <i>3 digit</i>
Unchanged	91.2	84.0	86.2	88.7
Moves among salariat classes	2.1	4.1	3.5	2.5
Moves among intermediate classes	0.0	0.0	0.0	0.0
Moves among working classes	1.9	2.3	2.3	2.0
Moves between salariat and intermediate classes	2.7	5.7	4.5	3.3
Moves between intermediate and working classes	2.0	3.9	3.5	3.4
Moves between salariat and working classes	0.0	0.0	0.0	0.0

*Notes*

<sup>a</sup> GV: German ESeC version; based on ISCO 4 digit (OUGs); <sup>b</sup>IV: International ESeC version; based on ISCO 3 digit (minor groups)

Data source: BIBB/IAB 1998/1999.

to three digits with otherwise constant German coding conventions. In all comparisons shown in Table 5.4, moves between different groups of classes are slightly more frequent than moves among classes of the same group. Nevertheless, practically all these moves occur between neighbouring class groups and there are practically no cases in which one procedure assigns a respondent into the salariat and the other into one of the working classes or vice versa. As to the comparison which is most crucial for our analysis, compared to the four-digit German ESeC, the international ESeC codes 8 per cent of cases into a different group of classes. Given that these class groups are, so to speak, theoretical neighbours to each other, the conclusion may be drawn that the different procedures by and large lead to broadly similar class assignments.

Returning to Table 5.4 and summarizing the class distributions resulting from the German four-digit and the international ESeC construction procedures, one general observation is that the international ESeC produces a class distribution with a tendency to assign somewhat larger proportions of employees to classes with less advantageous characteristics than does the German ESeC. It assigns more employees to the lower rather than the higher salariat; and it assigns more employees to classes 7 to 9 rather than to class 3. Given the general features of German labour market regulations and the German qualification system, these differences are expected and point to the specific characteristics of the German social structure. The tendency of the international ESeC to downgrade several occupations is somewhat more pronounced for those typically held by women and, as a consequence, produces a slightly larger gender gap than the German ESeC in the assignment of men and women into the least advantageous classes.

### Criterion validity of the different ESeC versions

As we have shown, small but noticeable proportions of individuals are mapped differently into ESeC depending on the procedure used. This is due both to discrepancies arising from using different levels of aggregation of the occupational information and from differences in the allocation of occupations to ESeC classes, as a result of partial differences in the patterns of employment relations of various occupations in different national labour markets. However, what are the precise implications of the different coding procedures for the validity of ESeC in terms of the employment relations criteria? Does the German variant of ESeC, with its differences from the international ESeC in terms of class assignment and class distribution, outperform (for Germany) the international ESeC in validity terms? To answer these questions we draw on two sets of results:

- 1 Measures of  $R^2$  or Pseudo  $R^2$  (in the case of logistic regression) for models which regress the various validation criteria on the dummy-coded ESeC classes. Variance of the different validation indicators

explained by class is a sensible, even though rudimentary indicator to assess validity, because an increasing  $R^2$  indicates that there is either more variance in the criterion variables between classes and/or there is less variance within classes, i.e. either between class differences increase, or within-class homogeneity decreases, or both effects occur at the same time.

- We show how the class-specific means of the different validation indicators vary by using different versions of ESeC.

As may be seen in Table 5.5 for the BIBB/IAB data,  $R^2$  declines for all validation criteria when we move from the German four-digit ESeC to a German ESeC based on less detailed occupational information. The decline of  $R^2$  indicates losses in class-internal homogeneity and/or in the discrimination of the between-class profile. The higher the level of aggregation in occupational coding, the stronger the reduction in the explained variance, i.e. the criterion validity of ESeC declines. The international ESeC also loses predictive power in all criteria, even when compared to the three-digit German ESeC. Compared to the four-digit German ESeC, we find a marked loss in predictive power for several validation criteria. If we contrast the loss of validity due to aggregation with the loss due to the move from the German to the international ESeC using the same aggregation level, the consequences of aggregation appear to be slightly more severe. This is somewhat surprising given our earlier finding that differences in class assignment depend on allocation rather than on aggregation discrepancies. However, aggregation may have a smaller effect on the number of cases assigned differently to classes, but the class switches of the cases involved may have a stronger bearing on the validity of ESeC.

The fact that the explained variance declines for every single indicator, and not just for some, indicates that detailed occupational coding and the concern for national specificities are important to do justice to the broad and multidimensional nature of class characteristics (see Chapter 13; cf. Lambert

Table 5.5 Variance explained in validation criteria with international matrix and country-specific ESeC generation matrix ( $R^2$  or Pseudo- $R^2$ )

	GV <sup>a</sup> 4 digit	GV <sup>a</sup> 3 digit	GV <sup>a</sup> 2 digit	IV <sup>b</sup> 3 digit
Working autonomy ( $R^2$ )	14.1	13.6	12.7	13.2
Relative length of tenure ( $R^2$ )	5.4	4.9	4.2	4.9
Required highest qualification (Pseudo- $R^2$ )				
Any qualification	17.1	16.2	14.9	15.7
College degree	25.3	23.2	23.4	22.9
Further education obtained (Pseudo- $R^2$ )	11.8	11.3	10.2	10.5

Notes

<sup>a</sup> GV: German ESeC version; <sup>b</sup>IV: International ESeC version.

Data source: BIBB/IAB 1998/1999.

et al. 2005, 2008). Similar consequences resulting from detailed occupational coding and national specificities are found when using a different database and operationally different employment relationship indicators (see Hausen et al. 2005a: 38, table 11).

A second way to assess the validity implications of the international harmonization is to compare the class means of the employment relations indicators generated by different procedures. Results may be seen in Figures 5.1 to 5.5, which also show the Bonferoni-corrected 95 per cent confidence intervals. These allow an assessment of the stability of the findings against sampling variability.

The diverse ESeC construction procedures produce some differences for most of the indicators, but as a rule the variation in results is small. The following two differences appear most clearly. First, for several indicators, the two salariat classes are less distinct from each other in the international version than in the German ESeC. This is true in terms of asset specificity (college degree) and in terms of career prospects (receiving training and further education). Concerning long-term employment, jobs in the higher

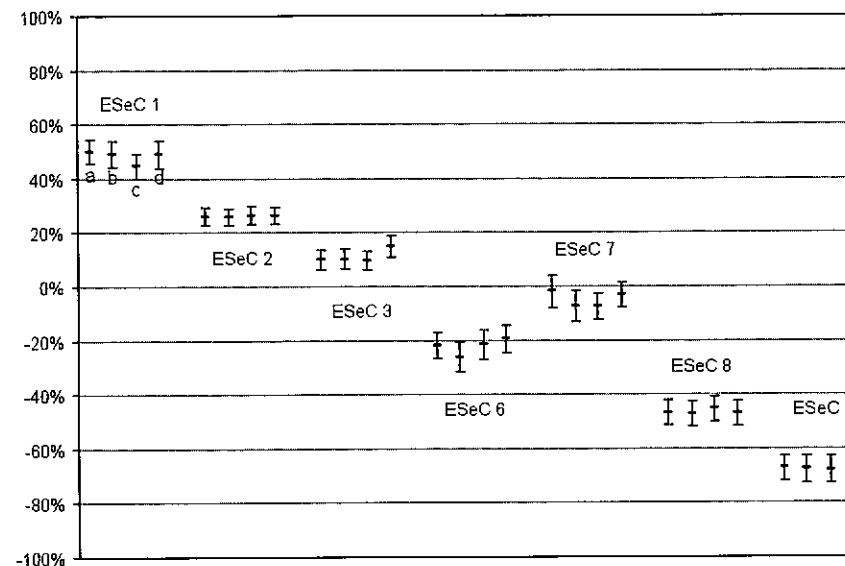


Figure 5.1 ER indicator: work autonomy (factor scores)

Notes

<sup>a</sup> ESeC German version, based on 4-digit ISCO-COM

<sup>b</sup> ESeC German version, based on 3-digit ISCO-COM

<sup>c</sup> ESeC German version, based on 2-digit ISCO-COM

<sup>d</sup> ESeC international version, based on 3-digit ISCO-COM.

Self-employed are excluded.

Confidence intervals are at the 95% level and corrected using the Bonferoni Procedure to make comparison between each ESeC class possible.

Source: BIBB/IAB (1998/1999).

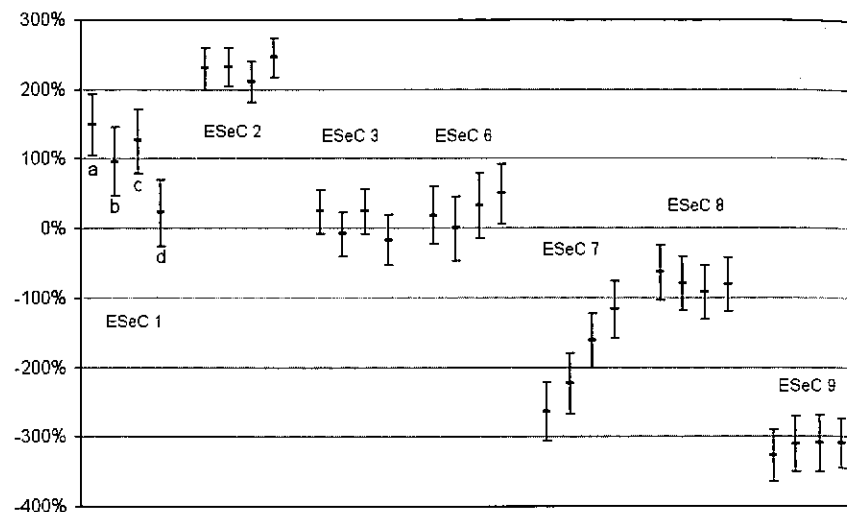


Figure 5.2 ER indicator: relative length of tenure

#### Notes

<sup>a</sup> ESeC German version, based on 4-digit ISCO-COM

<sup>b</sup> ESeC German version, based on 3-digit ISCO-COM

<sup>c</sup> ESeC German version, based on 2-digit ISCO-COM

<sup>d</sup> ESeC international version, based on 3-digit ISCO-COM.

Self-employed are excluded.

Confidence intervals are at the 95% level and corrected using the Bonferoni Procedure to make comparison between each ESeC class possible.

Source: BIBB/IAB (1998/1999).

salariat appear to be slightly less advantaged than those in the lower salariat. This is especially pronounced in the international version. Second, again according to several indicators, the lower services, sales and clerical occupations (ESeC 7) appear to be defined in the international version in ways that move them closer to the intermediate classes. In the German version they are clearly closer to the routine occupations, where in fact they should be placed according to the theoretical conception. Another minor variation between procedures concerns the results for autonomy in work. Here the international ESeC moves class 3 somewhat closer to class 2 and class 9 closer to class 8 than does the German ESeC. All in all, the German ESeC produces a slightly sharper class profile with differences corresponding better to theoretical expectations. However, these differences are small. Inspection of the within-class standard deviation for the various indicators (not shown) indicates a tendency towards growing heterogeneity within classes when using occupational information at a higher level of aggregation or when moving from the German to the international ESeC, but differences are quite minor and not completely consistent.

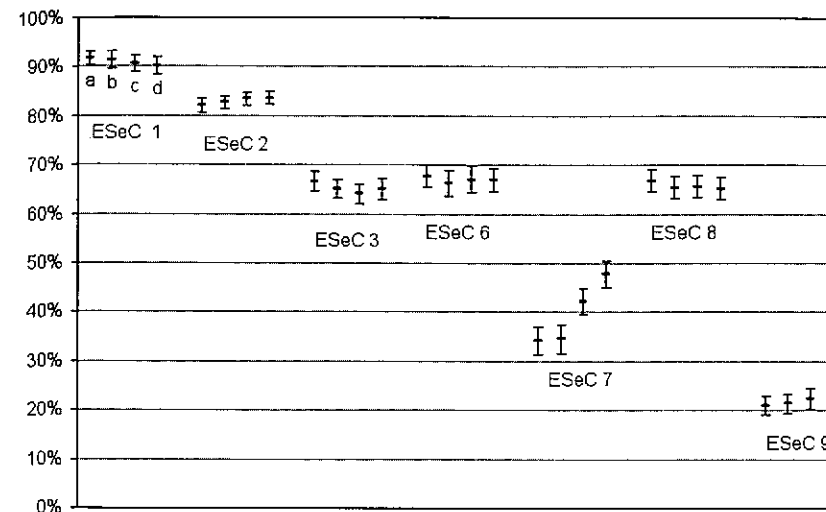


Figure 5.3 ER indicator: required highest qualification: any qualification (%)

#### Notes

<sup>a</sup> ESeC German version, based on 4-digit ISCO-COM

<sup>b</sup> ESeC German version, based on 3-digit ISCO-COM

<sup>c</sup> ESeC German version, based on 2-digit ISCO-COM

<sup>d</sup> ESeC international version, based on 3-digit ISCO-COM.

Self-employed are excluded.

Confidence intervals are at the 95% level and corrected using the Bonferoni Procedure to make comparison between each ESeC class possible.

Source: BIBB/IAB (1998/1999).

## Discussion

In this chapter we have examined two elements that may restrict the ability of ESeC to classify the socio-economic position of individuals in an equally valid way cross-nationally. First, due to conditions varying by national contexts, the best fitting allocation of occupational unit groups to ESeC classes (in terms of employment relationships) may vary across countries. Thus, an international standard allocation procedure may capture more or less adequately the class position of individuals in different countries. Second, the validity may be limited by using highly aggregated occupational information instead of detailed OUGs. From comparisons of the German ESeC (produced for different aggregation levels of occupational coding) with the international ESeC, we see that indeed both elements lead to reduced validity.

The differences due to allocation discrepancies are in line with the expectations stated at the beginning of this chapter. Due to both particular labour market regulations for different groups of employees and an occupationally oriented educational system, employment relationships in Germany have developed differently from other countries. The divergences

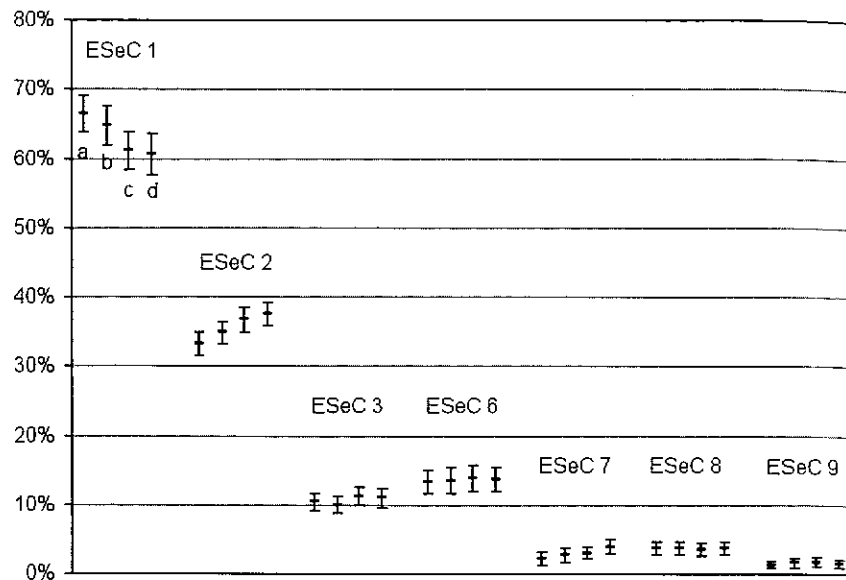


Figure 5.4 ER indicator: required highest qualification: college degree (%)

Notes

<sup>a</sup> ESeC German version, based on 4-digit ISCO-COM

<sup>b</sup> ESeC German version, based on 3-digit ISCO-COM

<sup>c</sup> ESeC German version, based on 2-digit ISCO-COM

<sup>d</sup> ESeC international version, based on 3-digit ISCO-COM.

Self-employed are excluded.

Confidence intervals are at the 95% level and corrected using the Bonferroni Procedure to make comparison between each ESeC class possible.

Source: BIBB/IAB (1998/1999).

in allocations between classes 1 and 2 are probably related to the existence of a distinct status for civil servants, offering a privileged service-type contract to more occupations than in countries such as the UK. The somewhat larger share of the intermediate classes (reducing the proportion of the lower service and routine occupations classes) is likely to result at least partly from the specific conditions of the German vocational training system. For a very large proportion of occupations similar training investments are required, which also lead to the provision of similar (intermediate) work conditions and employment relationships for a larger share of occupations than in other countries.

None the less, one should also note that the differences between the German ESeC and the international ESeC are not as pronounced as one would have expected. Even though it was the explicit aim of this exercise to demonstrate a higher validity when applying a national classification compared with an international one, such a result only emerged to a moderate extent. However, we must also consider the alternative, i.e. whether the

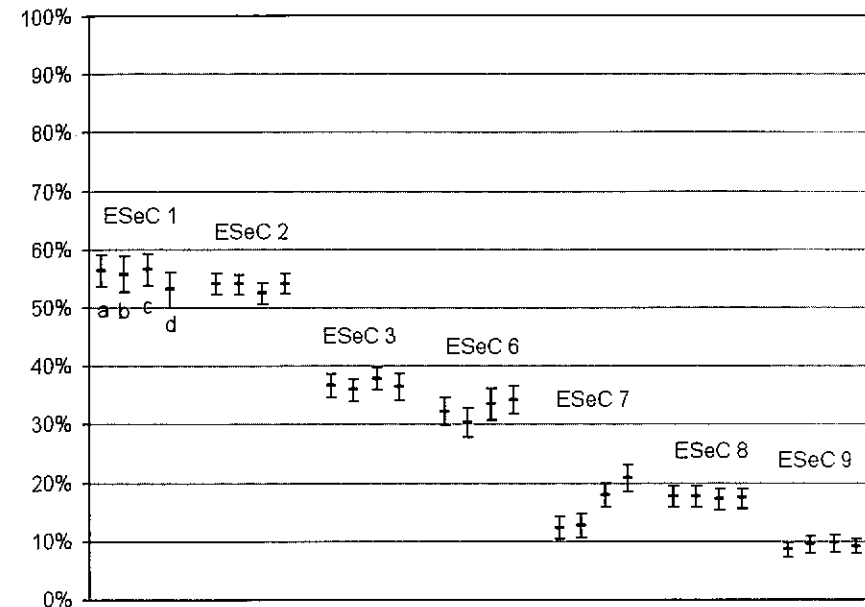


Figure 5.5 ER indicator: obtaining training and further education (%)

Notes

<sup>a</sup> ESeC German version, based on 4-digit ISCO-COM

<sup>b</sup> ESeC German version, based on 3-digit ISCO-COM

<sup>c</sup> ESeC German version, based on 2-digit ISCO-COM

<sup>d</sup> ESeC international version, based on 3-digit ISCO-COM.

Self-employed are excluded.

Confidence intervals are at the 95% level and corrected using the Bonferroni Procedure to make comparison between each ESeC class possible.

Source: BIBB/IAB (1998/1999).

differences between the German ESeC and the international ESeC might be somewhat underemphasized. When constructing the German ESeC, we followed rather closely the defaults given by the UK-based first version of ESeC. We allocated OUGs differently to classes only for those occupations which were represented by a sufficient number of cases in our data and whose employment relationship indicators clearly suggested a reassignment to a different class. Even so, taking both aspects into account, we may conclude that the international ESeC comes rather close to an 'optimal' German ESeC and that the validity losses by using the international standard procedure to construct ESeC are quite small. As Germany with its marked institutional specificities may be seen as a crucial test case, ESeC appears to be a rather robust instrument well suited for international comparative research.<sup>12</sup> Needless to say, similar research examining this conclusion for other countries would be highly useful and desirable in order to test the validity of ESeC throughout Europe.

Constructing ESeC with different levels of aggregation of the ISCO-88 (COM) classification, we found a clear loss of validity when moving from the four-digit to the three-digit level, and even more so when moving from the three-digit to the two-digit level. Therefore, ESeC should be constructed whenever possible on the most detailed occupational coding available. Finally, the simple comparison of the distribution of the classes by gender illustrates that different ways of constructing ESeC also has implications, again even if small, on substantial research findings. Further analyses focusing on the construct validity of ESeC in several substantive areas and for different countries would thus also be highly valuable.

We now turn our attention more comprehensively to a measurement issue previously discussed in Chapter 2 as well as in this chapter: the measurement of supervision.

## Notes

- 1 UK data were also used to construct the EGP/CASMIN class schema on which ESeC is based.
- 2 The construction of the German ESeC is described in full detail in Hausen *et al.* 2005a.
- 3 To be more precise, the examination was essentially undertaken using ISCO occupational unit groups for employees only. Once the class allocation for employees in a given OUG was decided, those in other employment status categories (employers, self-employed, supervisors) were treated according to the standard class allocation rules. In order to limit national deviations from the prototype matrix and in order not to be the victim of unreliable sample contingencies, reallocations were not implemented for every small OUG. On average the OUGs concerned included 96 employees.
- 4 The German Socio-economic Panel (GSOEP) is conducted by the German Institute for Economic Research (DIW), Berlin.
- 5 Instead of a supervisor/employee distinction many datasets for Germany include a more detailed classification of 'position with employer' emphasizing the distinction between the three main groups of employees – workers (*Arbeiter*), white-collar employees (*Angestellte*) and civil servants (*Beamte*) – as well as finer distinctions within each of these groups according to skill level of the job and level of task difficulty and responsibility.
- 6 The BIBB/IAB dataset does not include direct measures on monitoring problems.
- 7 The two dummy variables were constructed by using information on the qualification which job holders actually have and by combining this information with their assessment of whether the job could be done by an employee with a lower qualification. For the actual qualification, we distinguish between three levels: (1) no vocational qualification; (2) vocational school, vocational training and so on; and (3) tertiary or vocational college education. We then generated a variable according to the qualification and reduced this score by one level whenever a respondent indicated that the job could be performed with a lower qualification than the one possessed. The dummy variable 'any qualification' was coded when the resulting score was 2 or 3; the dummy variable 'college degree' was coded when the resulting score was 3.
- 8 To construct the measure we first estimate by a regression equation, for all cases, the average number of years with the current employer controlling for both number of years elapsed since first employment and for gender (as women

interrupt their working life more often than men). We then estimate the corresponding figure for all holders of a particular OUG job. The difference between both measures indicates whether the average tenure of individuals in a given OUG job exceeds or is short of the average tenure of individuals in all jobs, given gender and time elapsed since first employment. This measure is used as an indicator of the relative length of employment that may be expected in a given job.

- 9 The teachers in gymnasium secondary education are not distinguished from other teachers in the four-digit ISCO classification, but they can be identified unambiguously by using the German national occupational classification in addition to ISCO. Using this information for the construction of the German ESeC, ISCO OUG 2320 was split into a newly defined OUG 2321 for upper secondary teachers at the gymnasium (class 1) and an OUG 2322 for all other secondary education teachers (class 2).
- 10 Economists; sociologists, anthropologists and related professionals; philosophers, historians and political scientists; philologists, translators and interpreters; psychologists and social work professionals.
- 11 This conclusion is based on inspection of coding mobility tables analogous to the one shown in Table 5.2, but not shown here.
- 12 The main focus of our study was to assess the validity of an internationally harmonized measure of socio-economic positions (i.e. ESeC) for Germany. As there used to be finer distinctions in employment relations in Germany which were not considered for the construction of ESeC, some national classifications (e.g. *Berufliche Stellung, Stellung im Betrieb*) may map the social structure more accurately than even the German variant of ESeC (see Hausen *et al.* 2005b).