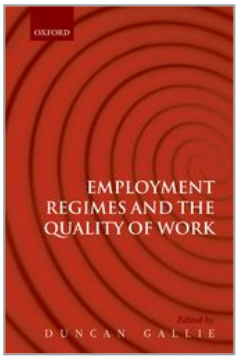

Employment Regimes and the Quality of Work
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Skills and Wages in European Labour Markets: Structure and Change

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[–] Abstract and Keywords

This chapter presents an empirical analysis of structure and change in skills and wages in five European countries: Germany, Spain, France, Great Britain, and Sweden. The discussion begins with an overview of previous research in three interrelated fields of relevance for the empirical analyses: (a) the structure and change of skill demand in Western Europe and the United States; (b) the connections between social class and skills; and (c) international variations in educational systems and school-to-work linkages. It then looks at a number of outstanding issues in need of further empirical analysis. Among the main findings are that firm-based skill formation seems to be more widespread and more important in Britain than in several other European countries considered here, including Germany and Sweden; also that in line with the production regime perspective, women are disadvantaged in firm-based skill formation; and finally that there is no strong indication of an interaction effect between class and gender, such that women's disadvantage relative to men is larger in the service class than in the working class.

Keywords: Germany, Spain, France, Great Britain, Sweden, skill demand, social class, educational systems, school-to-work linkages

Introduction

Skills and economic inequality are commonly supposed to be tightly linked. The increase in wage dispersion over recent decades that has been observed in several (but not all) OECD countries has often been attributed to a supposed excess demand for skills (Acemoglu 2002; cf. Green 2006). Aside from their links to market factors, skills may be assumed to play an important institutional role. In the production regimes perspective, for instance, the structure of skills is a key determinant of labour market institutions that in turn shape or modify the social

stratification of economic rewards. Despite extensive theoretical discussion, however, little is actually known about the empirical variation in the structure and change of skills across national labour markets. Nor do we have a firm grasp of how skills and wages are connected in different countries, and how this connection is tied to fundamental dimensions of social inequality such as class, gender, industry, and contract.

This chapter contains an empirical analysis of the structure and change in skills and wages in five European countries: Germany, Spain, France, Great Britain, and Sweden. I concentrate on the job—or demand—side of skills because my main interest is to assess variations in job quality, but individual skills need to be taken into account as well in order to understand the relation between skills and inequality. I start by looking at the structure of skills, including skill formation and the economic returns to skill, by using cross-sectional micro data from the 2004 wave **(p.36)** of the European Social Survey (ESS). In a second empirical section, I examine trends in the level and distribution of skills, again focusing on the demand side. For the change analysis—spanning three decades, 1975–2004—I rely on macro (aggregate micro) data on class location among men and women. Throughout, I consider inequality by class and gender, including a long-term change analysis of gender segregation. In addition to these two fundamental dimensions of stratification, and in line with the general outline of the book, differences in skills and wages by industry and contract are examined.

The chapter is organized as follows. I begin with an overview of previous research in three interrelated fields of relevance for the empirical analyses: (*a*) the structure and change of skill demand in Western Europe and the United States; (*b*) the connections between social class and skills; and (*c*) international variations in educational systems and school-to-work linkages. Based on the reviews in these three sections, I formulate a number of outstanding issues, in need of further empirical analysis. The two empirical sections outlined above are intended to provide some answers to important but previously unresolved questions. In the concluding section, I summarize the empirical findings and discuss some implications of them with a focus on theoretically central issues.

Assessing Skill Demand

Measures of Skill

The literature on skills and wages has to a large extent avoided explicit measurement of the demand side. Instead, skill demand is often inferred from data on skill supply (usually education) and wages. This implicit strategy has been especially common in labour economics, although exceptions have recently emerged (Autor, Levy, and Murnane 2003, Goos and Manning 2007). By contrast, in sociology and in the skill matching tradition in economics that studies overeducation, attempts are made to measure the skill requirements of jobs more directly. There are three main approaches: (*a*) job classification based on some kind of external judgement; (*b*) self-reported (by the job holder) requirements; and (*c*) the average or typical education among job incumbents. We focus on (*a*) and (*b*) below, since (*c*) conflates the supply and demand sides of skill (i.e. workers and jobs). Nonetheless, many empirical descriptions in the literature revert to (*c*) for lack of available alternatives.

(p.37) The most common version of (*a*) is occupational schemas, such as the American DOT or the Swedish SEI which is very close operationally (if not theoretically) to the Erikson-Goldthorpe

(or EGP) class model (see further below). Among employees, the most discriminating criterion across classes is the typical educational requirements of the occupation. Large representative data-sets containing occupational information are available for many countries and several time-points.

In contrast, self-reports of skill requirements have rarely been available in nationally representative data-sets, at least not to an extent sufficient to establish trends and/or allow cross-national comparisons. In Sweden, the Level of living surveys (LNU) contain self-reported educational requirements comparable across four time-points from 1974 to 2000. Similar measures are available for some other countries for some time-points. The Swedish survey question is phrased: 'How many years of education beyond compulsory school are required in your job?' A similar question is used in the second wave of the ESS, carried out in 2004. We make extensive use of these European data later in this chapter. The correlation between this survey item and occupational class (measured by a set of EGP dummies) is high (0.72 in LNU 1991).

Apart from measuring how much (formal) education is required to get a particular job, it is essential to measure how much training (or learning) on the job is required after the point of hiring. In the Swedish LNU, the question on this dimension of skill requirements reads: 'Apart from the competence needed to get a job such as yours, how long does it take to learn to do the job reasonably well?' Again, a similar item is used in ESS 2004. The correlation with class (EGP) is not as high as the educational requirements indicator, but still substantial (0.40 in LNU 1991).

Together, the self-reported measures of educational requirements and on-the-job training (OJT) predict wage rates roughly as well as class does. In a Mincer model (ln hourly wage regressed on education in years plus experience in years and its square) including a sex dummy, R^2 increases from 0.355 to 0.422 when adding educational requirements and to 0.446 when additionally including the OJT requirements measure. By comparison, adding class (EGP) to the Mincer model raises R^2 from 0.355 to 0.465, that is, by more but not much more than the skill requirements measures. Predictions of the residual from the Mincer model (i.e. wages net of differentials by human capital and sex) based on skill requirements (the two self-report measures) and on EGP, respectively, correlate 0.67.

Despite these powerful correlations, it should be noted that the measures of skill requirements are of course far from perfect. In particular, **(p.38)** self-reported levels of educational requirements are likely to be affected not only by real job demands but also by, *inter alia*, characteristics of the national schooling system and business cycles (general labour demand relative to supply). It is therefore essential that additional indicators of the skill level of the job are used for validation purposes.

Direct measures of skill demand are typically not however available over time. As discussed in more detail in the next section, under the assumption that structural change (shifts in the distribution of occupations or industries) is the dominant component of shifts in skill demand, an assessment of cross-national variations in the evolution of skill requirements is possible to do on the basis of data on trends in the size of occupational and industrial categories. There is evidence from at least two countries, the United States and Sweden, that structural change

clearly dominates within-category (occupations or industries) shifts in skill requirements. It would be of great interest to examine whether any change in skill requirements net of structural change has occurred in other countries in recent decades. Additional empirical evidence on the matter has recently emerged. Preliminary British evidence based on, *inter alia*, the Skills Surveys indicates significant within-category upgrading.[1] Similarly, Spitz-Oener (2006) reports within-occupation upgrading in West Germany. Still, less than fully comparable data and methods across countries so far prevent firm conclusions.

Aside from changes in the average demand for skill, it is important to assess trends in the *distribution* of skill demand. Recent studies of the United States and Britain indicate a combination of general growth in skill requirements with tendencies to polarization. Employment growth over recent decades has been strongest in the high-skill section of the skill demand distribution and slowest in the intermediate section, while low-skill jobs have shown an intermediate growth rate. Overall, the skill-growth pattern in both countries has thus been J-shaped. In Sweden, by contrast, the pattern has been more linear during the same period (1970s through 1990s) with negative employment change in the low-skill section. The decline in the number of low-skill jobs shows a markedly decreasing rate over time, however. The shape of the skill-growth pattern is essential to consider for many purposes, for instance when accounting for changes in earnings inequality, as has recently been shown for Britain (Goos and Manning 2007).

(p.39) Technological and institutional factors can be expected to underlie these temporal and international variations. As suggested by several studies (Wright and Dwyer 2002; Autor, Lavy and Murnane 2003; Goos and Manning 2007), recent technological change is not simply skill-biased. Many non-routine tasks that are complementary to technology (such as shelf-filling or house-cleaning) require less skill than many of the routine tasks in which technology substitutes for human labour (such as book-keeping). Hence the J-shaped skill-growth pattern, but with institutional variations: the wage structure in countries like Sweden depresses demand for low-skill service jobs, mainly due to relatively high and rigid minimum wages (making low-skill jobs costly to employers) but also due to relatively low high-skill wages (decreasing the high-skill wage earners' demand for personal services). Accordingly, the Swedish pattern of job growth is closer to a straight slash, that is, a more consistently positive association among jobs between skill content and employment growth rate (Åberg 2004).

Social Class and Skill Change

Despite the considerable advantages of direct measures of skill demand, these are—with few exeptions—not currently available over any significant period of time and it is therefore necessarily to look for adequate proxies for the analysis of longer-term change in skill patterns. In this section, I argue that class and skill, in the meaning of skill requirements of jobs, are tightly connected, not only empirically (as indicated above) but also theoretically. While there are several more or less distinct variants of class theory (see Wright (2005) for a recent overview), one particular model has achieved dominance in empirical research over the last two or three decades: the EGP schema (Erikson, Goldthorpe, and Portocarero 1979; Erikson and Goldthorpe 1992: ch. 2; Goldthorpe 2000), also called the Goldthorpe class model. The most recent development in the field is the construction of a new European socio-economic

classification—ESEC—which is based rather firmly on the EGP conception of class (see http://www.iser.essex.ac.uk/esec/).

In current theoretical accounts, social class in its EGP version is based on the notion of employment relations—specifically, among employees, on the distinction between the service relationship and the labour contract (Goldthorpe 2000). However, this theoretical rationale for the class schema has not been empirically validated. While many indirect attempts at validation have been published (see the ESEC website referred **(p.40)** to above), only one explicit test has so far been carried out (Tåhlin 2006), with decisively negative results for the theory. By contrast, an important original base of the schema, developed by Robert Erikson in the 1970s—class as occupational skill requirements (OSR)—works very well. The grounds for this claim are the following: (*a*) OSR—in contrast to employment relations—are highly correlated with class as conventionally operationalized; (*b*) OSR is strictly a demand-side dimension of stratification, that is, it is a characteristic of the position held by an individual rather than a trait of the individual her/himself, which is crucial since class is supposedly a positional concept; (*c*) OSR is—in contrast to status or prestige—not tied by construction to any of the determinants or outcomes of stratification that class is supposedly connected to in the empirical world, such as schooling or income; (*d*) OSR can be expected, however, to be empirically tied to these determinants and outcomes through theoretically sound mechanisms.

These mechanisms revolve around a theoretically central notion that is conspicuously absent from close to all sociological writings on stratification and inequality: productivity. Indeed, 'productivity' (at the individual or firm level) is not even listed in the index of the main current reader on stratification (Grusky 2001). Service class employees would appear to reap benefits from productivity in two ways. First, the productive value of the job is high (at least in the eyes of the employer), who is therefore prepared to pay relatively well for its execution. This mechanism is directly equivalent to 'marginal productivity' in neoclassical economics and related to the more elusive and contested notion of 'functional importance' in the stratification theory of Davis and Moore (1945). It is also supported empirically by many studies (see, e.g., overviews in Gottfredson 1985; Hunter 1986; Farkas et al. 1997; Kerckhoff, Raudenbush, and Glennie 2001). But it is no less compatible with a Marxist perspective on inequality in job rewards among employees (see, e.g. the discussion in Sørensen 1991, 2000). Second, by carrying out complex tasks the employee may become more productive, and can to a large extent take the increased capacity with her/him to make use of in subsequent jobs (with the same or a different employer). From the employer's viewpoint, the provision of general (transferable) training to employees pays off as long as: (*a*) the output value of the employee is sufficiently large (i.e. exceeding the salary) even during (informal) training; and/or (*b*) sufficiently many of the employees receiving training (formal and/or informal) stay with the firm long enough for their cumulative output value to exceed the total training costs (including salaries). This mechanism is related to the notion of 'jobs **(p.41)** as training slots' (Thurow 1975) and to the impressive array of findings on the mental impact of job complexity by Kohn and Schooler (1983) and their colleagues (see Schooler, Malatu, and Oates 2004 for a recent overview). The provision by employers of general training, out of line with standard human capital theory, is now widely recognized by labour economists as an empirically pervasive

phenomenon and the subject of very active theoretical efforts to account for (see the creative discussion in Acemoglu and Pischke 1999*a* and the review in Leuven 2005).

It is important to point out that the concept of productivity, even if neglected in most stratification research, is clearly connected to the more standard sociological concept of 'life chances', meaning resources that individuals can use to achieve well-being or other desired life-goals. Economists often refer to these resources as 'human capital'. Regardless of terminology, the thought that inequality in rewards is tied to inequality in resources is highly straightforward and hardly disputed by anyone. While the overlap between the distributions of resources and rewards is obviously not complete, it is no doubt considerable, albeit with significant variations across time and social space. From this point of view, research on class inequality should address three distinct distributional issues: (*a*) how differences in productivity (or resources) emerge (i.e. inequality of opportunity); (*b*) how productivity in turn affects rewards; and (*c*) how differences in rewards, given differences in productivity, emerge. All three issues are central to stratification, and all require taking productivity into account. Without explicit consideration of the productivity–skills dimension, theoretical and empirical analyses of inequality will remain unclear.

A conclusion of the discussion above is that data on changes in the class structure are well suited as a basis for assessing the evolution of skill demand. In the second part of the empirical results below, we make use of this conclusion in a comparative analysis of skill demand shifts over three decades among women and men in Germany, France, Britain, and Sweden.

Educational Systems and School-to-Work Linkages

As outlined in the introductory chapter, there has been a growing interest in the implications of differences between educational systems for skill patterns—a development that has found influential expression in the production regimes literature. But this is not the only body of theory and research on these issues. An equally rich research literature has derived **(p.42)** from work on the consequences of educational systems for the transition from school to work, which is a crucial phase for young people's entry into adulthood.

In recent decades, the period between school and work has tended to become longer and more problematic in many countries (OECD 1999*a*; Blanchflower and Freeman 2000; Müller and Gangl 2003). Finding a good job has become more difficult, and spells of unemployment have increased in frequency (see, e.g. Blossfeld et al. 2005). Relative youth wages have also tended to decline, at least in the US and the UK (see, e.g. Ryan 2001).

There is a substantial variation across nations, however, in how young individuals fare as they switch from full-time education to the search for stable employment (OECD 1999*a*; Schröder 2000; Ryan 2001). One important source of this variation is international differences in educational institutions (Shavit and Müller 1998; Stern and Wagner 1999; Müller and Gangl 2003). An influential way of capturing these differences is Allmendinger's typology (1989) based on two fundamental characteristics: (*a*) the standardization of educational provisions, and (*b*) the stratification of educational opportunity. The first dimension concerns the extent to which there is a nationwide uniformity in schooling quality standards, such that educational degrees at various levels provide reliable signals to employers of the degree holders' productive capacity.

The second dimension refers to the form of tracking at secondary schooling levels. A high degree of tracking implies that students are separated into vocational and academic tracks upon entering secondary school, and that there is little mobility between tracks. The association between educational qualifications and occupational attainment is expected to be strong in nations with highly standardized and stratified educational systems. In addition to these two dimensions, it is also important to take the degree of vocational specificity into account (Marsden 1986; Maurice, Sellier, and Silvestre 1986): the higher specificity, the stronger the expected association between education and occupation.

In this three-dimensional space, Müller and Shavit (1998) have attempted to locate thirteen OECD nations in a comparative study of school-to-work transitions. At one extreme, with highly standardized, stratified, and vocationally specific educational systems, we find Germany, the Netherlands, and Switzerland. Indeed, Germany and Switzerland are countries with long established apprenticeship systems, in which there are also strong connections between vocational schools **(p.43)** and specific employers who provide in-house training and subsequent employment opportunities. (Austria and Denmark would also belong to this category, had they been included in the study.) At the other extreme, with low values on all three dimensions, we find several English-speaking countries: Australia, Britain, Ireland, and, in particular, the United States. Japan is also included here. In the middle ground between these two poles is a heterogeneous group of countries including France, Israel, Italy, Sweden, and Taiwan.

The main hypothesis in the Müller–Shavit study is that the character of the school-to-work transition process is systematically related to this country grouping. This expectation is largely borne out empirically. For instance, the impact of highest educational level attained on occupational status of first job (after leaving full-time education) is strongest in Switzerland, Germany, and the Netherlands and weakest in Britain, Japan, and the United States. Moreover, later empirical studies within the CATEWE project (comparative analysis of transitions from education to work in Europe) show that workers in national labour markets with apprenticeship systems have significantly smoother phases of switching from schooling to employment than workers in other countries, in the sense of facing much lower unemployment risks (see, e.g. Gangl 2001; Raffe and Müller 2002; Müller and Gangl 2003).

Against this background, it is interesting to consider the Swedish case, since it shows that it may be misleading not to expand the simple dichotomy in the production regimes literature between liberal (LME) and coordinated (CME) market economies. As stated above, the educational system in Sweden is of an intermediate character along the dimensions of standardization, stratification, and occupational specificity. In line with this, the empirical association between individual workers' education and occupation is of medium strength in an international context (Müller and Shavit 1998). There are four features of the Swedish school system that are especially important for the link between education and labour market position (Erikson and Jonsson 1998: 372–3). First, the occupational skills taught in vocational education are of a general rather than specific character. Apprenticeships are rare. Second, comprehensive and secondary schooling are highly standardized, with a nationally centralized curriculum. Third, the degree of stratification (tracking) is low. Fourth, there is an absence of educational dead ends, with good opportunities for further education beyond both vocational

and academic secondary school, as well as a large **(p.44)** system of adult education providing second chances for early school leavers.

Over time, the emphasis on general rather than specific educational content has grown stronger. In fact, five to six decades back Sweden's education system resembled the German apprenticeship model. Since then, the reforms of compulsory and secondary schooling have shifted education towards a system of the US kind (see Nilsson and Svärd 1991; Schröder 2000). The main tendency in secondary schooling is to make vocational and academic tracks increasingly similar in both kind and volume. The most recent reform with this intent was carried out in the 1990s, with an expansion of secondary vocational school from two to three years, bringing it to the level of academic tracks and paving the way for immediate transitions from vocational school to college. This kind of change is in line with international trends, based on conceptions of the ‘knowledge society’ and an increasingly fluid and mobile working life with growing but less fixed and specific skill demands. The reforms are not without problems, however. Although a large majority (around 98%) of young cohorts in Sweden now continue in school beyond the compulsory level, a significant fraction (about 15%) of students in secondary school leave after one year or less, after having failed to meet the changing requirements. Calls for increasing rather than further reducing the degree of tracking between vocational and academic fields are –becoming more frequent, often together with suggestions to introduce apprenticeship opportunities.

Hence, Sweden occupies a middle ground between the German-speaking and English-speaking countries with respect to educational and labour market institutions. In the United States, the loose school-to-work linkages are coupled with an unregulated market with weak insider power and hence low employment barriers, while in Germany the strongly regulated labour market is coupled with an apprenticeship system that significantly eases school-to-work transitions. Sweden combines loose school-to-work linkages of the Anglo-Saxon variety with labour market regulation in the form of high minimum wages (bargained but not legislated) and seniority-based employment protection. This is an unusual combination (possibly shared only with France).

In short, while there are indeed good grounds for thinking that variations in educational institutions may have important implications for skill development, empirical work on this issue suggests that a more refined typology may be needed than that offered by production regime theory.

(p.45) Outstanding Issues in Need of Empirical Analysis

The discussion above identifies a number of issues in need of further empirical analysis in an internationally comparative context. First, skill demand must be measured directly rather than only implicitly. A consensus is now emerging on how to do this. Below, we will utilize the comparative data from the ESS 2004 that have been designed with explicit skill demand measurement in mind. As will become evident, these data include indicators of the broader process of skill formation, not just schooling but also learning and training outside the education system.

This leads to a second issue for empirical examination: the international variation in how skills are formed and rewarded. As discussed in a previous section, there are several aspects of national education systems that are potentially important for processes of reward attainment in

the labour market. The intersection of education and the economy (see Brinton 2005 for a recent overview) is a vast area, however, that is still far from sufficiently well mapped, either theoretically or empirically.

Third, in order to advance the analysis of skill change over time, the connection between social class and skills needs further empirical assessment, given the unavailability of direct skill measures. In particular, cross-national commonalities and variations in this regard have so far not been systematically examined. If a strong connection can be established for several countries, the possibilities to use data on class distributions as a basis for determining the evolution of skill demand would be greatly enhanced.

A fourth important issue, to be dealt with in some empirical detail below, concerns the relation between class and gender as dimensions of stratification. This issue is emerging as a central topic in the discussion of variations across countries in the structure of inequality, with the production regimes literature as a prime example. As spelled out in the introductory chapter of the current volume, a basic distinction in the production regimes model goes between liberal and coordinated market economies (LMEs vs. CMEs). This contrast is similar in many ways to the common economic distinction between unregulated and regulated markets. But rather than supposing that regulation is forced upon employers in CMEs, the production regime argument is that employers support regulation because it fits with the structure of production; in particular, it fits with the character of skills used in the firms. In LMEs, skills are mainly general—usable with many employers and in different jobs—while in CMEs, skills are more specific: to the firm, industry, or occupation. The **(p.46)** difference in skill character is supposed to be crucial for the structure of labour market inequality.

The emphasis in the production regime perspective is on class inequality, with the prediction that inequality (in wages and other job conditions) is greater in LMEs, that is, unregulated markets. This prediction is straightforward, and is consistent with the general view of the relation between regulation and distribution. Vocational education and coordinated wage bargaining both reduce class inequality, in skill quantities (the distribution of skills by class) as well as skill prices (the pay-off to skills). So comparing class inequality across different countries is a very weak test of the production regime perspective. What is needed is: (*a*) to look more closely at the character of skill formation in a set of countries (cf. the discussion above); and (*b*) to look at other inequality dimensions than class.

Interestingly, the production regime perspective has recently (Estevez-Abe 2005) been applied to gender inequality. Based on the skill argument, the prediction is that there is a kind of trade-off between class inequality and gender inequality. An emphasis on specific skills reduces class differences but increases gender inequality. The mechanism on the demand side (employers) is statistical discrimination against women. In countries where firm-specific skills are important, women will be more disadvantaged than in general-skill systems, because employers are reluctant to invest in the training of women due to women's higher propensities to leave work for family reasons.

The more important employers' investments in training their employees, the larger the female disadvantage will be. It therefore follows from the production regime model that gender inequality will be larger in CMEs than in LMEs. Another implication is that there will be an

interaction effect between class and gender (an ‘intersection’). In classes where required skills are higher, the female disadvantage will be larger. So women in the service class will be more disadvantaged, relative to men in the same class, than women in the working class will be. So: firm-specific skill formation reduces class inequality, but at the same time increases gender inequality. Hence, a trade-off.

In what follows, these issues will be dealt with empirically. The first set of analyses are based on micro data from the ESS 2004 (http://www.europeansocialsurvey.org/), while the second set contains analyses of changes in class and gender inequality across recent decades (1975–2005). The cross-sectional micro analyses concern the five countries of Germany, Spain, France, Britain, and Sweden, while the change data on class structures are not available for Spain.

(p.47) Skills and Wages: Empirical Results

Descriptive Overview

Before we turn to a detailed examination of the specific issues spelled out in the chapter's introduction, it is useful to briefly consider the general pattern of cross-national variation in labour market structures. Table 2.1 shows descriptive statistics for all variables used in the micro analyses based on data from the ESS 2004. In large measure, this pattern confirms established conceptions of the differences in labour market structure across the five countries. We leave skill formation for the next section,

Table 2.1 Descriptive statistics of all variables used

	Germany		Spain		France		UK		Sweden	
	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.
Age	41.9	10.8	37.4	10.7	40.5	10.4	40.1	11.3	42.4	11.8
Female	0.49		0.43		0.50		0.51		0.48	
Service class I	0.20		0.16		0.20		0.22		0.19	
Service class II	0.27		0.24		0.29		0.26		0.28	
Service class total	0.47		0.40		0.49		0.48		0.47	
Routine non-manual	0.25		0.25		0.25		0.27		0.25	
Skilled worker	0.17		0.15		0.11		0.08		0.13	
Unskilled worker	0.12		0.21		0.15		0.17		0.16	
Rest-hotel-trade	0.13		0.13		0.08		0.13		0.07	
Manufacturing	0.24		0.21		0.24		0.16		0.21	
Fixed-term contract	0.10		0.23		0.08		0.10		0.10	
Part-time	0.21		0.10		0.18		0.29		0.15	
Education	13.9	3.1	13.3	4.9	12.9	3.7	12.9	3.1	13.2	3.0
Education, post-compulsory	4.3	3.0	4.5	3.9	3.5	3.2	2.3	2.8	4.8	2.9
Experience	21.1	11.4	15.7	11.4	19.1	11.3	20.2	11.6	21.0	12.1
Seniority (/exp.)	0.63	0.30	0.69	0.30	0.69	0.31	0.48	0.31	0.60	0.32
Educational requirements	2.8	2.6	2.5	3.2	3.6	3.1	1.8	2.5	3.5	2.8
On-the-job initial learning	8.6	13.2	8.0	14.5	13.0	17.7	11.2	15.6	8.8	12.6
On-the-job continuing learning	1.7	0.9	1.5	1.1	1.8	1.1	2.0	1.0	2.1	0.9

	Germany		Spain		France		UK		Sweden	
Wage/hour (ln)	2.64	0.53	1.99	0.49	2.41	0.50	2.55	0.60	2.69	0.33
N (unweighted)	942		458		704		651		913	
N (contract)	928		445		694		578		909	
N (wage)	595		278		554		522		877	
Response rate, total sample	0.526		0.548		0.436		0.506		0.658	

Note: Employees, aged 19–64 (agricultural sector excluded).

Source: ESS (2004).

(p.48) and start by looking at the cross-national variation in the distribution of class, industry, contract, seniority, and wages.
On class, it is notable that Britain has the most polarized structure with the largest total proportion of service class I and class VII (unskilled manual workers), that is, the most and the least resourceful (on average) occupational categories. Spain has the least advanced class structure, with the smallest share among the five nations of service class employees (both I and II) and the largest share of unskilled workers. The main reason is surely that Spain is a relatively late economic developer, even if the gap is closing rapidly. In line with this, we see that Spanish employees are several years younger (on average) than employees in the other four countries. (The agricultural sector—which still is large in Spain, with a high mean age of its workforce—is excluded in the sub-sample used here.) Germany is the only country with a majority of its manual workers being in the skilled category (class VI). Britain is the other extreme in this regard, with class VII more than double the size of class VI. We return to the cross-national variation in class structures in the last empirical section below, where changes over the last three decades will be analysed. In that section, we also give a detailed picture of gender segregation by occupational class, including its evolution over time.

Manufacturing industry still employs a much larger share of the workforce than do consumer services (resturants, hotels, and trade), with the exception of Britain where the difference is only three percentage points. France and Germany have the largest manufacturing sectors, and Britain the smallest. According to these data, the consumer services industry is comparatively small in Sweden and France. Fixed-term employment contracts, as measured here, are equally common—about one in ten—in all the countries except Spain where close to a quarter of all workers are employed on a limited-time basis. Part-time employment, on the other hand, is relatively rare in Spain but widespread in Britain. As we will see later, the meaning of these different contract types differs considerably between countries, depending on the institutional configuration of each national labour market.

Two further important stylized facts are reproduced in the descriptive overview in Table 2.1: marked differences across countries in tenure rates and wage dispersion. Britain is an outlier in both respects, with comparatively short employment spells (time spent with each employer) and large wage differentials. To some extent, these two traits are correlated—frequent shifts between firms tend to raise wage differences since the pay-off to such shifts differs more across workers than firm-internal wage **(p.49)** trajectories do. But the correlation is limited, as indicated by the pattern across countries. The opposite extremes to Britain in the tenure case are France and Spain, with more than two-thirds (0.69) of an average working life being spent with the current employer compared to less than half (0.48) in Britain. But the opposite to Britain in wage dispersion is Sweden, with only about half the British rate (a log wage standard deviation of 0.33 compared to 0.60). The Swedish tenure rate, however, is only moderately high (0.60); in fact, it is lower than in all the other countries except Britain. The markedly low wage dispersion in Sweden—and the high rate of wage inequality in Britain—obviously has a number of different causes. While some of these causal factors will be explicitly considered in the analyses below, others will only figure implicitly. For example, we look at variations in skill prices (the wage effects of skills) but merely suggest rather than test different explanations of them.

The general pattern described above is by and large well-known from previous findings. Hence, the face validity of the data from the ESS appears to be reasonably high. Against this background, let us now examine in more detail the structure of skills and wages in the five countries, beginning with the process of skill formation.

The Process of Skill Formation

Skill formation is a process, starting in the family (which we abstract from here) well before first school entry and continuing in working life after completed formal education. We look at this process from the viewpoint of the jobs currently held by employees in different countries. The basic idea is to follow a time line: First, to get a certain job, some kind of education is often required. We measure this here by asking how much—if any—schooling beyond the compulsory level is normally required of someone applying for the kind of job that the respondent holds. Second, after entering the job, some amount of training or learning may be necessary before the tasks can be carried out reasonably well. We measure this by asking how long time the initial training or learning typically takes, from the point of job entry. Third, after the initial on-the-job training or learning period is completed, some amount of continuous learning is often required in order to perform at an acceptable level.

These three components—pre-entry education, post-entry initial learning, and continuous learning on the job—together indicate the skill requirements of a job. Importantly, the three parts of the process can be **(p.50)** divided between two main arenas where skill formation takes place: the school and the firm. A crucial issue is the relative weight of these arenas in different countries. According to the production regimes perspective, employers play a minor skill formation role in LMEs such as Britain, but a major role in CMEs such as Germany and Sweden. The reason for this difference is that worker skills in CMEs are mainly specific, with employers taking an active interest in their content and formation. By contrast, skills in LMEs tend to be general, and thus mainly formed in schools. In turn, the different emphasis on schools versus firms is believed to be highly consequential for the structure of inequality. While class inequality in skills and wages will be smaller in specific skills systems, gender inequality will tend to be larger in such systems due to statistical discrimination by employers against women.

It should be noted that the distinction between school-based and firm-based learning is not always sharp. In Germany, where apprenticeships play a prominent role in skill formation, around two-thirds of each cohort spend two to three years of human capital accumulation jointly in school and with an employer (Dustmann and Pereira 2005: 24). While apprenticeship periods may be seen as a borderline case between skill formation in schools and in firms, it makes most sense to view them as spells of education rather than jobs: diplomas are not awarded until after apprenticeship completion, much or even most time is spent off the job (in schools or training shops) rather than on the job, and the wages paid by the employer per hour worked are far below the job remuneration rate (see, e.g. Soskice 1994). Although the ESS data do not allow an exact test of this view, we assume that the survey respondents include time spent as apprentices in the category of learning before rather than after job entry. A similar assumption is made by Dustmann and Pereira (2005: 16), who exclude apprenticeship periods from labour market experience.

We begin our empirical examination by asking a simple question: how does the emphasis on school-based versus firm-based skill formation differ across countries? Table 2.2 shows the cross-national variation in the levels of the three components of job skill requirements indicated above. The numbers are relative rates where the average for all countries is set to 100, so numbers above 100 indicate high rates by international comparison and vice versa. (The raw numbers for each country are included in Table 2.1.)

The emphasis in each country on schools versus firms in the skill formation process is revealed by the change in numbers as one moves from the first skill component—requirements of education prior to job **(p.51)**

Table 2.2. Skill requirements of jobs in five European countries, ESS 2004

	All	Germany		Spain		France		UK		Sweden	
Pre-entry education	2.8	98	3	87	4	128	1	63	5	124	2
Post-entry learning	9.9	87	4	81	5	131	1	113	2	88	3
Continuing learning	1.8	91	4	84	5	97	3	109	2	119	1

Note: Relative numbers (all countries = 100) and country ranks (1–5). Pre-entry education is measured in years of post-compulsory schooling, post-entry learning in months after job entry until tasks can be carried out reasonably well, continuing learning in index values (0–3) from less to more learning. The second number in each cell is the country's rank (1–5) from highest to lowest on each indicator.

Source: ESS (2004).

entry—to the second and third skill components—initial and continuing learning after job entry. If numbers rise along this route, firms tend to be more important than schools as arenas for skill formation, while schools are more important than firms if the numbers fall. (Note that this is relatively speaking rather than absolutely. Even if one component is more important than the other relative to the situation in other countries, within the country the other component might still have a greater weight; for wages for instance.) Hence, the production regime expectation is that numbers are rising in CME countries and falling in LME countries.
The empirical outcome is close to the opposite of this prediction. The clearest deviant case from the production regime viewpoint is Britain: it ranks lowest of all five countries in school-based skill requirements but close to the top (second in rank) in firm-based skill requirements. And the difference in requirements between these two forms of skill is large—the relative rate almost doubles, from far below to significantly above the international mean, as one moves from school-based to firm-based skills. Although the differences are smaller in magnitude, all other countries have the opposite kind of skill formation process, that is, a higher relative rate of school-based required skills than firm-based required skills. A partial exception is France, where on-the-job initial learning is slightly more important relatively than educational requirements, but the average for initial and continuing on-the-job learning is still below school-based skills in relative rates. Germany is perhaps the theoretically most interesting case besides Britain, as it is usually seen as the exemplar case of a CME. As seen in the table, the difference in relative rates across the three components is not large, but still in the wrong direction from the production regime viewpoint. Firm-based learning thus appears to be relatively unimportant in Germany compared to Britain.

(p.52) While a crucial part of the story, these incidence rates are not sufficient to decide the issue. In addition, we need an indication of the actual effects of the different skill components. The obvious choice in this regard is wages. It is a reasonable assumption that employers' valuation of different kinds of skills is revealed by the wages attached to them. Table 2.3 shows results from regression analyses of log wages (per hour) on the three components of skill requirements. Both educational requirements and on-the-job initial learning are measured in years, to get comparable scales. (The third component, continuing learning on the job, is measured by ordinal index numbers rather than time, and so the point estimates are less comparable to the other two components.)

In all countries except Britain, the wage increase of one additional year of schooling is larger than the corresponding effect of one year of on-the-job initial learning. Britain has the highest economic pay-off to both kinds of skill (see the strongly significant interaction effects in the pooled regression appearing in the first column), but the difference in wage effects relative to other countries is twice as large in the case of firm-based skills as in the schooling case. This result would seem to clearly support the conclusion from the cross-national variation in incidence rates (Table 2.2). Firm-based skill formation appears to be more rather than less important in the LME case of Britain than in the CME cases of Germany and elsewhere. There is no difference between countries in the wage impact of continuing learning on the job, however. In general, the economic effects of this skill component seem relatively small, perhaps in part due to difficulties of measurement.

The main conclusion of the analysis so far is that the country with the strongest emphasis on general school-based skills—Britain—seems to give a larger role to employers in the overall skill formation process than do countries—such as Germany—where more specific skills are taught in schools. This finding runs directly counter to the production regime claim. But it is not difficult to explain the seemingly anomalous finding. If school-based skills are highly general in kind, specific skills (when needed) have to be learnt elsewhere. The obvious place where such needs are defined is the firm; and so it is only natural that employers are active in bringing the needed skills about. This does not mean that the skills are specific to the firm; the low tenure rates in Britain are one indication that they often are not. Rather, they may be specific to the industry or an occupation. Much recent research indicates that employers in practice are less reluctant to take part in such skill formation than orthodox human capital theory claims (see, e.g. Acemoglu and Pischke 1998). Given the **(p.53)**

Table 2.3. Regression of (ln) hourly wages on job skill requirements in five European countries, ESS 2004

	All	Germany	Spain	France	UK	Sweden
Constant	2.184 (39.9)	2.260 (33.2)	1.592 (31.5)	2.138 (42.3)	2.184 (33.9)	2.394 (63.3)
Educational requirements	0.062 (17.6)	0.071 (7.6)	0.065 (9.3)	0.065 (9.7)	0.092 (10.5)	0.052 (12.1)
On-the-job initial learning	0.046 (5.6)	0.054 (2.6)	0.028 (1.4)	0.053 (3.9)	0.112 (6.1)	0.044 (4.2)
On-the-job continuing learning	0.038 (3.8)	0.051 (1.9)	0.102 (5.0)	-0.007 (0.4)	0.033 (1.5)	0.027 (2.1)
Educational requirements* UK	0.031 (3.7)					
On-the-job initial learning* UK	0.067 (3.8)					
On-the-job continuing learning* UK	-0.005 (0.3)					
R^2	0.389	0.183	0.265	0.210	0.302	0.276
N	2,826	595	278	554	522	877

Note: Unstandardized regression coefficients (*t*-values in parentheses). Pooled regression (column 1) includes country dummies (coefficients not shown). For variable definitions, see note to Table 2.2. *denotes interaction effect.

Source: ESS (2004).

(p.54) shortage of specific skills among British graduates, their employers would seem to have especially large incentives to bring about their formation.

Inequality in Skill Formation and Wages by Class and Gender

We now turn to the variation of skill requirements of jobs by class and gender, and to the role of skills in wage determination. Table 2.4 shows the distribution of educational requirements, that is, the first component along the time axis of skill formation. Immediately apparent is the very strong association between class (in its EGP version) and required education. All class coefficients in the upper panel are highly significant, in all countries. Britain consistently stands out in having lower educational requirements, in all classes except the skilled manual workers. But in all countries, the basic class order in skill requirements is clear. This supports the argument in the introductory overview above that class and skill are tightly connected; or, indeed, that the class dimension of stratification in a fundamental way actually consists of skill differences across jobs. That this pattern comes out so clearly in all five countries, despite their institutional differences, is shown here for the first time. As will be recalled, previous evidence—referred to in the review above—was based on Swedish data only.

In line with the theoretical discussion of the production regime perspective, class should be jointly considered with gender. The lower two panels reveal the combined association between educational requirements, on the one hand, and class and gender together, on the other. As can be seen in the first of the two panels, men in the service class commonly have higher-skilled jobs than service class women. This is true for Germany, Spain, and Britain, while the difference is close to zero in France and actually tends to the opposite in Sweden. An important issue theoretically is to what extent such combination effects of class and gender are additive or interactive. To the exent that they are interactive—that they 'intersect' (cf., e.g., McCall and Orloff 2005)—class stratification is gendered, and vice versa, so that it is not only incomplete but misleading to analyse inequality along one dimension without simultaneously taking the other into account. In the specific case considered here: are the lower educational requirements among female members of the 'salariat' (or service class) than among service class men due entirely to the additive effects of class and gender, or do class effects differ significantly between men and women (or, equivalently, do gender effects differ significantly between classes)? Do we have 'intersections' between class and gender?

(p.55)

Table 2.4. Educational requirements of jobs by class and gender in five European countries, ESS 2004

	Germany	Spain	France	UK	Sweden
Constant (unskilled workers)	0.8 (3.2)	0.4 (1.8)	1.2 (4.9)	0.2 (1.1)	1.3 (6.1)
Service class I	3.8 (12.4)	4.7 (13.4)	5.3 (16.2)	3.2 (12.4)	4.5 (15.8)
Service class II	2.8 (9.4)	3.2 (10.2)	3.1 (10.2)	2.4 (9.4)	3.3 (12.5)
Routine non-manual	1.0 (3.3)	1.5 (4.7)	1.3 (4.1)	0.5 (2.2)	1.0 (3.8)
Skilled manual workers	1.4 (4.2)	1.0 (2.9)	1.0 (2.6)	1.2 (3.4)	1.2 (3.8)
R^2	0.237	0.238	0.326	0.237	0.338

	Germany	Spain	France	UK	Sweden
Constrant (non-service class, female)	1.6 (9.8)	1.0 (4.8)	2.1 (10.8)	0.7 (4.2)	2.0 (12.2)
Service class, male	2.7 (11.6)	3.6 (11.7)	3.2 (11.7)	2.6 (11.1)	2.9 (12.2)
Service class, female	2.1 (8.3)	2.6 (7.9)	3.1 (10.8)	2.0 (8.9)	3.2 (12.9)
Non-service class, male	0.2 (0.8)	0.4 (1.6)	0.0 (0.0)	0.0 (0.0)	0.0 (0.1)
R^2	0.208	0.206	0.253	0.217	0.301
Service class	2.3 (13.4)	2.9 (13.4)	3.2 (15.6)	2.3 (14.0)	3.1 (17.7)
Female	-0.4 (2.3)	-0.6 (3.0)	-0.1 (0.3)	-0.3 (1.6)	0.1 (0.7)
Service class* female	-0.5 (1.4)	-0.5 (1.2)	-0.1 (0.3)	-0.6 (1.7)	0.3 (0.8)
N	942	458	704	651	913

Note: Unstandardized regression coefficients (*t*-values in parentheses). *Denotes interaction effect.

Source: ESS (2004).

(p.56) According to the results in the lowest panel, we do not: interaction effects are small and insignificant in all countries. The main effect of class (a simple dichotomy between the service class and others) is very strong and highly significant everywhere. The main effect of gender is negative (for women) and significant in Germany and Spain, negative but not quite significant in Britain, and close to zero in France and Sweden. But even in the cases where the gender effect is significant, it is small relative to the class effect. The message comes across clearly: the schooling component of skill requirements is primarily associated with the class position of the person's job, while gender is a subordinate dimension. And this is true, with only minor variations, regardless of national context.

As we move from school-based skills to firm-based training and learning, the importance of gender should increase markedly. This is the prediction offered by the production regimes model, and would also be in line with common arguments in human capital theory, with statistical discrimination among employers against women as the demand-side mechanism. Table 2.5 provides a parallel account to the educational requirements distribution story of the previous table, but now with on-the-job initial learning as the outcome variable. The results are strikingly different.

Table 2.5. Post-entry learning requirements of jobs by class and gender in five European countries, ESS 2004

	Germany	Spain	France	UK	Sweden
Constant (unskilled workers)	4.5 (3.3)	2.2 (1.9)	5.6 (3.5)	6.7 (5.1)	6.3 (5.5)
Service class I	8.5 (4.8)	9.0 (5.2)	15.6 (7.3)	9.9 (5.6)	5.2 (3.4)
Service class II	5.0 (3.0)	8.2 (5.2)	9.9 (5.0)	8.3 (4.9)	4.6 (3.2)
Routine non-manual	0.0 (0.0)	3.0 (1.9)	0.6 (0.3)	-1.9 (1.1)	-2.5 (1.8)
Skilled manual workers	6.4 (3.5)	11.1 (6.2)	11.4 (4.7)	8.1 (3.4)	6.9 (4.1)

	Germany	Spain	France	UK	Sweden
R^2	0.058	0.071	0.114	0.101	0.074
Constant (non-service class, female)	3.8 (4.3)	3.1 (2.9)	5.1 (4.4)	4.6 (4.3)	3.7 (4.2)
Service class, male	9.7 (7.4)	8.7 (5.7)	16.3 (9.7)	14.9 (9.5)	9.2 (5.4)
Service class, female	4.1 (3.0)	6.3 (5.8)	8.4 (4.8)	7.7 (5.0)	5.4 (4.1)
Non-service class, male	5.6 (4.3)	5.4 (3.9)	7.0 (4.0)	4.8 (3.2)	6.0 (4.9)
R^2	0.069	0.043	0.112	0.113	0.068
Service class	4.1 (4.3)	4.5 (4.2)	8.9 (7.1)	8.9 (8.1)	4.3 (4.7)
Female	-5.6 (5.9)	-4.2 (3.9)	-7.4 (5.9)	-6.0 (5.4)	-5.0 (5.5)
Service class* female	0.1 (0.1)	3.1 (1.4)	-0.9 (0.3)	-2.5 (1.1)	2.2 (1.2)
N	942	458	704	651	913

Note: Unstandardized regression coefficients (*t*-values in parentheses). *Denotes interaction effect.

Source: ESS (2004).

(p.57) It turns out that class has a much weaker but gender a much stronger association with this kind of firm-based skill formation than with educationally based skills. The upper panel shows that the class effects have a strikingly different pattern than in the case of educational requirements. The skilled manual workers—a class heavily dominated by men—have a conspicuously large amount of firm-based learning, in all countries. Their level of firm-based skill requirements is in fact not very different from that of the service class; in some cases it even appears to be higher.

This appearance is partly due to a strong gender effect. The middle panel reveals that, when the class and gender dimensions are considered jointly, men in the service class receive the largest amount of firm-based learning, while women in the service class and men outside it receive roughly comparable amounts.

The lowest panel shows the main and interaction effects of class and gender in a way that provides a test of their significance. The very strong main effect of gender comes clearly across, and—in distinction to the educational requirements case—the main effect of class is about equal in magnitude. So the production regime prediction that women are much disadvantaged in processes of skill formation taking place at the firm instead of in school is clearly supported. But once again, the ‘intersection’ account does not add anything of explanatory value: there is not a single case among the five countries of a significant interaction effect.

Nor do the countries differ much in the magnitude of the gender and class effects. The strong findings from the analyses in Tables 2.4 and 2.5 are that: (*a*) gender is closely connected to firm-based skill formation but weakly if at all to school-based skill requirements; and, conversely, (*b*) that the class position of the person's job is tightly connected to the school-based skills dimension and to a clearly lower degree (although significantly) to firm-based learning. These

findings apply to all countries; it is commonality rather than variation that stands out in this respect.

What are the implications of these results for wages? In Table 2.6, wage differences by class and gender are shown, in the same kind of regression framework as in the skills analyses. Two kinds of wage effects are estimated: total effects and the proportion of the total effects that is due to skill-related factors. Here, skills are defined broadly and include both: (*a*) the supply-side factors of individuals' education (years of post-compulsory schooling) and experience; and (*b*) the demand-side factors of educational requirements, on-the-job initial learning, and on-the-job continuous learning. Hence, wage gaps by class and by **(p.58)**

Tabel 2.6. Regression analyses of hourly wages (ln) on class and gender in five European countries, ESS 20047.38.8

	Germany	Spain	France	UK	Sweden
Constant (unskilled workers)	2.31	1.74	2.18	2.32	2.55
Service class I					
Total	0.70	0.67	0.66	0.68	0.43
%skill	64	70	77	72	74
Service class II					
Total	0.51	0.45	0.33	0.35	0.25
%skill	61	76	94	112	96
Routine non-manual					
Total	0.12	0.03	−0.01	−0.12	−0.04
%skill	59	483	-1311	-64	−213
Skilled manual workers					
Total	0.15	0.32	0.09	0.20	0.06
% skill	55	43	113	83	124
R^2	0.218	0.264	0.259	0.245	0.290
Constant (non-service class, female)	2.32	1.66	2.11	2.16	2.47
Service class, male					
Total	0.66	0.72	0.64	0.95	0.49
% skill	55	51	51	48	41
Service class, female					
Total	0.47	0.48	0.41	0.40	0.29
% skill	57	51	68	75	73
Non-service class, male					
Total	0.19	0.30	0.17	0.26	0.13
% skill	14	7	−2	3	−16
R^2	0.231	0.284	0.245	0.304	0.315

	Germany	Spain	France	UK	Sweden
Service class					
Total (nominal)	0.47	0.45	0.44	0.54	0.33
Percentile	26	27	28	27	29
% skill	65	67	69	69	66
% OJIL	7	7	15	26	9
Female					
Total (nominal)	−0.19	−0.27	−0.20	−0.40	−0.16
Percentile	−10	−16	−11	−19	−15
% skill	30	20	10	20	−9
% OJIL	24	11	27	23	21
Service class female*					
Total	0.00	0.06	−0.06	−0.28	−0.07
% skill	0	0	77	51	18
% OJIL	25	35	10	14	21
N	595	278	554	522	877

Note: Unstandardized regression coefficients (p ≤ .05 in bold) and decomposition by source.
*Denotes interaction effect. OJIL = on-the-job initial learning.

Source: ESS (2004).

gender are decomposed into one skill-related part and one part unrelated to (measured) skills. The purpose of this decomposition is to evaluate the role played by skills for economic inequality by class and gender.

(p.59) The results show a stark contrast between the two dimensions of stratification. While most of the class wage gap is ‘explained’ by skill (again an indication that class is actually a measure of skill), only a minor part (although significant in several cases) of the gender wage gap is skill-related. As can be seen from the upper panel, as much as around 70 per cent of the wage difference between service class I and unskilled workers can be attributed to differences in skill-related factors. This is the case in all countries. For service class II, close to all of the wage effect is skill-related in three of the countries (France, Britain, and Sweden), and most of the effect in the other two.

The lowest panel brings out the contrast between class and gender very clearly: around two thirds of the class wage gap (i.e. the wage difference between the service class—the middle- and upper-white-collar occupational segment—and all others) is connected to skill, whereas only around one fifth or even less of the gender wage gap is skill-related. The class result is remarkably similar across countries, despite a clear cross-national difference in the total gap, with Britain displaying a level of economic class inequality significantly above other countries, and Sweden significantly below. In contrast, the gender wage gap differs clearly across countries both with regard to level and to source. The total gender gap is comparatively large in

Britain (with the clearly largest difference of all) and Spain, and comparatively small (but only comparatively) in Germany, France, and Sweden. But the French and Swedish gender wage gaps are not to any significant degree explained by skill differences between women and men, or at least not if skills are measured as a combination of school and firm-based factors.

When wage gaps by class and gender are measured in nominal terms they thus tend to be positively correlated across countries: a large class gap in wages goes together with a large gender gap in wages, and vice versa, with Britain and Sweden as polar cases. But it is also of interest to examine the extent to which this cross-national pattern is due to the overall inequality in wages, that is, the general wage structure, of each country. Blau and Kahn (1996) show that most of the international variation in wage differences by gender may be accounted for by the general degree of wage inequality in each national labour market. For instance, they show that female and male workers in the United States are at the same distance from each other in the American percentile distribution of wages as women and men are in the Swedish wage distribution, despite the fact that the nominal gender wage gap is significantly larger in the United States (since the nominal **(p.60)** wage difference across percentiles grows with the degree of general wage inequality).

In Table 2.6 the wage gaps by class and gender measured as percentile differences ('standardized' with respect to the overall wage distribution) reveal a different cross-national pattern of inequality compared to the case of nominal wage gaps.[2] The standardized class gap is essentially identical in magnitude in all five countries: the wages of service class employees are on average twenty-six to twenty-nine percentiles above the wages of other employees. (This finding of constancy is intriguing and calls for further analyses which, however, are outside the scope here. But it may be noted that the result is consistent with the strong similarity across countries in the tight connection between class location, wages, and skills.) By contrast, the standardized gender wage gap differs markedly between countries, ranging from a percentile difference between women and men of around ten in Germany and France to almost twenty in Britain. Standardization moves Sweden from a top position (smallest gap) in nominal terms to a middle position, with a wage percentile gender difference of fifteen. Controlling for the overall degree of wage inequality, then, reveals a cross-national correlation between class and gender gaps close to zero.

We saw above that the class wage gap is strongly connected to skills, while the gender wage gap is only weakly skill-driven. This empirical picture changes in a theoretically important way when the firm-based skill component of on-the-job initial learning is considered separately as a wage determinant. It can be seen that gender differences in the incidence of this kind of skill explains a significant part of the wage gap between women and men in all countries. The reason is that this particular skill component—in contrast to others—is strongly biased against females. This finding further supports the claim by the production regime perspective that firm-based skill formation works to the disadvantage of women. But again, cross-national variation in this respect appears to be small. The bias against women in job-based learning seems to be universal, even if—as we have seen—the incidence of such skill formation differs across countries.

(p.61) Finally, we may note that there is one significant interaction effect between class and gender on wages. In Britain, the class wage gap is smaller among women than among men. This is in line with the production regime idea that in countries where firm-based skill formation is widespread, women will be disadvantaged, and that this will especially be the case in classes where such skill formation is common. Further, a significant part of this negative interaction is skill-related, supporting the conclusion. But the specific test of the importance of job-based learning contradicts this interpretation, as the effect is not significant. Thus, some further explanation is needed, eluding us for the moment.

Inequality in Skills and Wages by Industry and Contract

Aside from the major stratification dimensions of class and gender, how are skills and wages distributed across other lines of division in the labour market? Specifically, how important are the dimensions of industry and contract? As discussed in the volume's introductory chapter, the industrial division is of interest in the context of large-scale and long-term evolution of the economy: how is the quality of working life affected as the transition to a post-industrial society unfolds? One way to look at this is to compare working conditions in the growing service industries with manufacturing jobs. Although only a partial test of this issue, a simple way to examine this question is to focus on some particular kind of service jobs that arguably can be seen as representative in some sense. We do this here by looking at jobs in consumer services, that is, restaurants, hotels, and retail and wholesale trade. What is the quality of jobs in this sector compared to jobs in manufacturing? The test is tilted against evidence of progress, since consumer services may be seen as the low end of the larger sector of service jobs. So if restaurant jobs—as we call them—turn out not to be of a significantly lower quality than manufacturing jobs, it is an indication that work in post-industrial society might well be an improvement over traditional industrial work.

The contract dimension is of a different kind. We consider two aspects of contract—first, whether employment is on a fixed-term or permanent basis, and, second, whether the job is full-time or part-time. In general, we can view the association between these contract forms and job quality as an indication of labour market institutions. A strong association between fixed-term versus permanent contract and working conditions indicates that insider–outsider relations in the labour market are a significant source of differentiation. Fixed-term contracts may in those cases be seen **(p.62)** as solutions to make flexible employment possible in a context generally marked by high entry barriers connected to significant firing costs. In the case of part-time work, labour markets with universal rights should display weak associations with job quality, and vice versa in labour markets with more fragmented rights. Translating these predictions to expectations of country differences, we can suppose, for instance, that Britain has small effects of fixed-term contracts but large effects of part-time work, while Germany or France are more likely to have large effects of fixed-term contracts and Sweden to have small effects of part-time work.

Table 2.7 shows the variation in educational requirements across industries and contract types. The upper panel displays gross associations, with one factor considered at a time, while the lower panel (Panel B) contains

Table 2.7. Educational requirements of jobs by gender, class, industry, and contract in five European countries, ESS 2004

	Germany	Spain	France	UK	Sweden
PANEL A					
Female	−0.6	−0.7	−0.3	−0.2	0.0
	(2.9)	(2.7)	(1.3)	(1.3)	(0.1)
Unskilled workers	−4.7	−3.8	−5.3	−3.2	−4.5
	(12.4)	(13.4)	(16.2)	(12.4)	(15.8)
Restaurants, hotels, and trade	−1.4	−1.2	−1.1	−1.2	−1.0
	(4.5)	(3.0)	(2.5)	(3.7)	(2.5)
Fixed-term contract	−0.6	−1.1	−1.3	0.2	−0.3
	(1.9)	(3.9)	(3.0)	(0.6)	(0.8)
Part-time	−0.7	−0.3	−0.4	−1.1	−1.1
	(3.2)	(0.7)	(1.4)	(5.5)	(3.8)
PANEL B					
Female	−0.3	−1.0	−0.3	−0.2	−0.1
	(?1.6)	(4.5)	(1.3)	(0.8)	(0.6)
Unskilled workers	−3.4	−4.2	−5.0	−3.2	−4.1
	(10.9)	(11.8)	(14.7)	(10.5)	(14.8)
Restaurants, hotels, and trade	−0.7	−1.3	−0.7	−0.9	−0.8
	(2.4)	(3.6)	(1.8)	(2.6)	(2.3)
Fixed-term contract	−0.2	−0.4	−0.3	0.2	0.3
	(0.8)	(1.7)	(0.8)	(0.7)	(0.9)
Part-time	−0.3	0.0	0.0	−0.4	−0.6
	(1.4)	(0.0)	(?0.1)	(1.9)	(2.5)
R^2	0.297	0.311	0.350	0.272	0.442
N	928	445	694	578	909

Note: Unstandardized regression coefficients (*t*-values in parentheses). Upper panel shows gross coefficients, lower panel shows net coefficients (holding other covariates constant). For class (unskilled workers) the reference category is service class I, for industry (restaurants, hotel, retail and wholesale trade) the reference category is manufacturing.

Source: ESS (2004).

(p.63) net effects, with the different factors plus age considered simultaneously (by multiple regression). Class and gender are included in the analyses, but are not the focus here since they have already been dealt with in the previous section.

We see that restaurant jobs have lower educational requirements than manufacturing jobs in all countries, although the difference tends to diminish somewhat when net effects are estimated.

Fixed-term contract jobs and part-time jobs are not significantly less skilled than others in any country when other factors are taken into account, with the exception of Sweden where part-time workers tend to have relatively low-skilled jobs. However, in gross terms, fixed-term contract jobs are significantly less skilled than permanent jobs in Spain and France, while part-time jobs are significantly less skilled than full-time jobs in Britain.

Turning to firm-based skills (see Table 2.8), the pattern of net effects is almost reversed. Industry is not significantly related to this component of skill formation, while fixed-term contract jobs have less on-the-job learning than others in Germany, Spain, and Sweden, and part-time jobs have less firm-based learning than full-time jobs in Germany and Britain. One interpretation is that in the two countries where firm-based learning is most widespread (France and Britain), such skill formation is not contingent upon longer-term employment relationships. The negative part-time effect in Britain is in line with the marginal status of workers on such contracts. The significant contract effects in Germany and Spain indicate the force of an insider–outsider cleavage in those countries. This may also apply to Sweden, while France has net contract effects close to zero.

Wage differentials by industry and contract are shown in Table 2.9. We saw in the previous section that class is clearly distinct from gender as a stratification dimension in that the class wage gap is strongly skill-driven, whereas the gender wage gap must mainly be explained by factors unrelated to (measured) skills. The results in Table 2.9 reveal that class is distinct in the same way relative to industry and contract: for the latter dimensions skills are not the prime driver of wage differentials. In all countries, restaurant jobs are paid significantly lower wages than manufacturing jobs, but in most cases (Spain is a partial exception) this is not primarily due to skill differences. Almost the same goes for wages in fixed-term contract jobs: the gross wage effects are significantly negative in all countries except (in line with expectations) Britain, but differential skills are not the main explanation. **(p.64)**

Table 2.8. Post-entry learning requirements of jobs by gender, class, industry, and contract in five European countries, ESS 2004

	Germany	Spain	France	UK	Sweden
PANEL A					
Female	−5.9	−4.2	−8.1	−5.8	−5.1
	(6.1)	(3.9)	(6.3)	(5.1)	(5.6)
Unskilled workers	−8.5	−9.0	−15.6	−9.9	−5.2
	(4.8)	(5.2)	(7.3)	(5.6)	(3.4)
Restaurants, hotels, and trade	−5.6	−3.2	−8.3	−2.8	−3.6
	(3.3)	(1.7)	(3.2)	(1.3)	(1.8)
Fixed-term contract	−4.9	−4.2	−4.6	1.0	−5.8
	(2.9)	(3.2)	(1.9)	(0.5)	(3.8)
Part-time	−6.4	−1.8	−5.0	−7.6	−4.9
	(5.4)	(1.0)	(2.9)	(6.1)	(3.8)
PANEL B					

	Germany	Spain	France	UK	Sweden
Female	−3.7	−3.7	−5.7	−4.7	−3.2
	(3.1)	(3.1)	(3.8)	(3.3)	(3.0)
Unskilled workers	−6.0	−8.5	−13.7	−9.1	−5.1
	(3.3)	(4.6)	(6.2)	(?4.5)	(3.2)
Restaurants, hotels, and trade	−1.1	−1.5	−3.6	0.6	0.4
	(0.6)	(0.8)	(1.4)	(0.2)	(0.2)
Fixed-term contract	−3.3	−3.2	−0.6	−0.5	−3.1
	(2.0)	(2.4)	(0.3)	(0.2)	(2.0)
Part-time	−3.6	0.0	−1.5	−3.7	−1.6
	(2.8)	(0.0)	(0.9)	(2.5)	(1.2)
R^2	0.103	0.085	0.142	0.161	0.111
N	928	445	694	578	909

Note: Unstandardized regression coefficients (*t*-values in parentheses). Upper panel shows gross coefficients, lower panel shows net coefficients (holding other covariates constant). For class (unskilled workers) the reference category is service class I, for industry (rest = retail and wholesale trade, restaurants, hotels) the reference category is manufacturing.

Long-term Change in the Structure of Skill Demand

I now turn to an analysis of changes in inequality by class and gender. The data consist of information on the size of different occupational classes (EGP) among women and men from the 1970s to the 1990s (Breen and Luijkx 2004: 74–5) adjusted with OECD statistics on employment rates by gender for the respective time-points and updated with class information from 2003–5 via large national data-sets (the Labour Force Surveys in France and Sweden for 2003 and in Britain for 2004–5, and the German Microcensus for 2004).[3] Change data on Spain are not **(p. 65)**

Table 2.9. Regression analyses of hourly wages (ln) on gender, class, industry, and contract in five European countries, ESS 2004

	Germany	Spain	France	UK	Sweden
Female					
Total	−0.22	−0.30	−0.22	−0.39	−0.18
%skill	35	24	17	17	−4
Unskilled workers					
Total	−0.70	−0.67	−0.66	−0.68	−0.43
%skill	64	70	77	72	74
Restaurants, hotels, and trade					
Total	−0.40	−0.16	−0.33	−0.51	−0.22

	Germany	Spain	France	UK	Sweden
% skill	37	64	47	33	38
Fixed-term contract					
Total	−0.45	−.027	−0.28	−0.10	−0.22
% skill	36	48	48	−40	29
Part-time					
Total	−0.17	0.11	−0.03	−0.47	−0.06
% skill	54	−58	69	45	109
Female					
Total	−0.18	−0.25	−0.15	−0.32	−0.16
% skill	24	37	15	27	5
Unskilled workers					
Total	−0.59	−0.56	−0.60	−0.73	−0.45
% skill	65	76	73	64	64
Restaurants, hotels, and trade					
Total	−0.32	−0.11	−0.18	−0.39	−0.18
% skill	14	90	39	35	34
Fixed-term contract					
Total	−0.35	−0.21	−0.12	−0.10	−0.11
% skill	18	22	-22	−40	1
Part-time					
Total	0.02	0.27	0.06	−0.11	0.10
% skill					
−186	−12	−3	68	−38	
R^2	0.346	0.399	0.325	0.399	0.427
N	595	278	554	522	877

Note: Unstandardized regression coefficients (p ≤ in bold) and decomposition by source.

Source: ESS (2004).

available. Four classes among employees are distinguished: I–II (the service class or salariat, i.e. middle- and upper-white-collar occupations), III (lower-white-collar occupations), V–VI (skilled manual workers) and VII (unskilled manual workers); and four time-points: around 1975, 1985, 1995, and 2004.

As in the cross-sectional analyses above, the dimensions of stratification that are in focus in the trend analyses below are class and gender. Based on the theoretical reasoning in the chapter's introduction, and supported by the empirical findings in subsequent sections, class is taken here to indicate—in addition to the manual–non-manual divide—the skill **(p.66)** requirements of jobs.

By contrast, gender divisions in the labour market are of course conceptually orthogonal to skill, but the empirical relation between them is an important matter for investigation to which we now turn. The general evolution of skill levels and distributions is examined in the following section.

Gender Segregation of the Skill Structure

When assessing gender segregation in the occupational structure, we follow the approach of Charles and Grusky (2004) by distinguishing between horizontal and vertical segregation. I define the horizontal dimension of segregation as the difference between: (*a*) the proportion females of all employees in non-manual occupations (classes I–III); and (*b*) the proportion females of all employees in manual occupations (classes V–VII). Also in line with the Charles and Grusky approach, I define vertical segregation separately for non-manual and manual occupations. In the former case, vertical segregation is defined as the difference between: (*a*) the proportion females of all employees in upper non-manual occupations (class I–II); and (*b*) the proportion females of all employees in lower non-manual occupations (class III). Similarly, in the manual case, vertical segregation is the difference between: (*a*) the female share of class V–VI, and (*b*) the female share of class VII. All differences are expressed in absolute percentage points, with positive numbers meaning that the share of females is larger in (*a*) than in (*b*) as just defined.

According to Charles and Grusky (2004), horizontal gender segregation tends to increase with the development from industrial to post-industrial societies, because jobs in the expanding service sector are disproportionately filled by women. Vertical gender segregation, on the other hand, tends to decrease over time, especially in the non-manual occupational segment. These claims are based on long-term trend data for the United States, Japan, and Switzerland, and on detailed cross-sectional data from the early 1990s for ten countries, including the four nations we consider here. Persistent or growing horizontal segregation is interpreted as deeply rooted expressions of ‘gender essentialism’, that differences between women and men in the kind of work they carry out are seen as natural and difficult or even undesirable to change. Vertical segregation, on the other hand, is interpreted by Charles and Grusky as expressions of ‘male primacy’, which is seen by them as more susceptible to change as societies develop, especially among non-manual occupations **(p.67)** with strong norms of professionalism and an ideology of equal opportunity.

The broad occupational class data used here are obviously rather crude relative to the detailed breakdowns (sixty-four occupational categories) in the Charles and Grusky analysis. Nonetheless, the simple division between four classes appears to contain much of the essential variance between occupational groups that is of importance for gender segregation. And the big advantage of the data we use here is the possibility to make cross-national comparisons of long-term change.

Table 2.10 shows the evolution of gender segregation (in the sense spelled out above) from the 1970s to around 2004 in Germany, France, Britain, and Sweden. Note that the first three time-points—1975 through 1995—belong to a harmonized set of trend data, while the numbers for the fourth and most recent time-point are based on separate sets of information and are therefore not directly comparable to the earlier numbers. Having said this, the overall

impression of the results is that gender segregation of the class structure is rather stable across the several decades that the data span. In line with the Charles and Grusky perspective, however, horizontal segregation appears to have increased somewhat, while vertical segregation seems to have declined (but with no marked difference in change between the service and production segments). There is a certain division between the four countries in these regards. Concentrating on the first three (more comparable) time-points, horizontal segregation has been roughly constant in Britain, increased in Germany and France, and first increased sharply and then declined somewhat in Sweden. Along the vertical dimension, gender segregation has been more or less constant in Germany and France but tended to decline in Britain and Sweden. All in all, then, the pattern of long-term change in gender segregation of the class structure is one of stability, but with some cross-national differences such that women's conditions appear to have improved more in Britain and to some extent in Sweden than in Germany and France.

The General Evolution of Skill Demand

The approach used above to assess segregation may also be applied to the issue of general changes in the level and distribution of skill demand. Substituting the share of all employees for the share of female employees in the same kind of difference estimates as in the assessment of segregation **(p.68)**

Table 2.10. Gender segregation of the class structure in four European countries, 1975–2004

	All	Germany	France	UK	Sweden
Horizontal					
1975	28	24	37	27	22
1985	33	26	40	28	39
1995	34	32	42	27	34
2004	32	33	31	24	38
Vertical					
1975	36	36	27	41	41
1985	34	38	27	39	33
1995	32	33	26	36	31
2004	28	33	31	22	28
Average					
1975	32	30	32	34	31
1985	34	32	34	34	36
1995	33	32	34	31	33
2004	30	33	31	23	33
Vertical service					
1975	39	34	33	46	42
1985	38	36	32	44	38
1995	34	33	30	39	32

	All	Germany	France	UK	Sweden
2004	35	35	38	33	35
Vertical production					
1975	34	38	20	35	40
1985	31	39	22	35	29
1995	30	33	21	34	31
2004	21	30	24	11	21

yields useful indicators of skill demand. Thus, the level of skill demand among service (in the sense of non-manual occupations may be indicated by the difference between (*a*) the share of employees in class I–II and (*b*) the share of all employees in class III. Let us call this number (the absolute difference in percentage points between *a* and *b*) ss (for 'skill demand in service occupations'; note again that 'service' is used here in the sense of 'non-manual', not in the sense of the 'service *class*' or 'salariat'). Similarly, the level of skill demand among production (manual) occupations may be indicated by the difference between (*a*) the share of employees in class V–VI and (*b*) the share of all employees in class VII. We call this number sp. By combining these two numbers—ss and sp—we get indicators of two phenomena: the overall skill demand level and the overall skill demand distribution (or degree of polarization). The level is indicated by the sum of ss and sp while the distribution is indicated by the difference between ss and sp. **(p.69)**

Table 2.11. Skill composition of the class structure in four European countries, 1975–2004

	All	Germany	France	UK	Sweden
Skill level					
1975	6	26	-4	9	-8
1985	12	29	4	19	-5
1995	18	33	8	25	5
2004	3	8	-11	12	3
Skill polarization					
1975	2	2	-5	-2	12
1985	1	3	-8	10	-2
1995	7	6	-8	21	11
2004	4	-2	-3	14	7
Service–production					
1975	2	11	-3	8	-6
1985	19	17	13	21	24
1995	28	28	20	32	33
2004	32	26	32	28	41

	All	Germany	France	UK	Sweden
Skill service					
1975	4	14	-4	4	2
1985	6	16	-2	15	-3
1995	13	19	0	23	8
2004	3	3	-7	13	5
Skill production					
1975	2	12	1	6	-10
1985	5	13	6	4	-1
1995	5	14	8	2	-3
2004	-1	5	-4	-1	-2

To clarify these definitions, an example may be helpful. Assume that 35 per cent of all employees have occupations in class I–II, 20 per cent in class III, 25 per cent in class V–VI, and the remaining 20 per cent have occupations in class VII. The level of skill demand in service occupations (the component ss in the definition above) is then 35-20=15, while the level of skill demand in production occupations (the component sp) is 25-20=5. The overall skill demand level, defined above as ss + sp, is then 15+5=20, while the distribution of skill demand, defined as ss - sp, is 15-5=10. It can be seen that the skill demand level rises with the sum of the proportions in classes I–II and V–VI and falls with the sum of the proportions in classes III and VII. If all employees are in classes I, II, V, and VI, the estimated level of skill demand reaches its maximum possible value, 100; by contrast, if all employees are in classes III and VII, the lowest possible level of skill demand is reached, that is—100. With an even split of all employees between classes I, II, V, and VI, on **(p.70)**

Table 2.12. Skill composition of the male class structure in four European countries, 1975–2004

	All	Germany	France	UK	Sweden
Skill level					
1975	35	52	19	43	25
1985	41	57	30	50	29
1995	45	60	35	53	33
2004	30	39	18	32	31
Skill polarization					
1975	3	-1	0	2	12
1985	7	2	-2	16	12
1995	13	5	-2	27	21
2004	18	6	16	27	25
Service–production					

	All	Germany	France	UK	Sweden
1975	-20	-7	-33	-14	-25
1985	-9	-3	-21	-2	-11
1995	0	2	-16	11	4
2004	5	-3	6	7	11
Skill service					
1975	19	26	10	23	19
1985	24	29	14	33	20
1995	29	33	16	40	27
2004	24	23	17	29	28
Skill production					
1975	16	27	9	20	7
1985	17	28	16	17	9
1995	16	27	19	13	6
2004	6	17	1	2	3

the one hand, and classes III and VII, on the other, the medium level of skill demand results: zero. Similarly, the skill demand distribution (or polarization) expands with the sum of the proportions in classes I–II and VII and contracts with the sum of the proportions in classes III and V–VI. As in the level case, the measure of distribution can take values between plus and minus 100.

Table 2.11 shows the results of these calculations on the basis of the class distribution data for the four countries and four time-points. Again concentrating on the first three (more comparable) time-points, overall skill demand has increased in all countries. This increase has been rather evenly divided between the service and production occupational segments, coupled with a strong shift everywhere towards service employment. An exception is Britain, which has had a strong upgrading of the service–job structure—much stronger than elsewhere—and a small decline in the skill level of production occupations. The result is a marked **(p.71)**

Table 2.13. Skill composition of the female class structure in four European countries, 1975–2004

	All	Germany	France	UK	Sweden
Skill level					
1975	-40	-21	-41	-46	-52
1985	-29	-16	-33	-26	-41
1995	-15	-2	-26	-10	-24
2004	-29	-30	-47	-11	-26
Skill polarization					
1975	-1	8	-14	-10	11

	All	Germany	France	UK	Sweden
1985	-6	6	-16	2	-17
1995	2	7	-14	13	1
2004	-12	-11	-25	-2	-12
Service–production					
1975	38	43	47	44	19
1985	57	50	61	53	63
1995	63	62	65	59	64
2004	62	60	63	53	73
Skill service					
1975	-21	-6	-28	-28	-20
1985	-18	-5	-25	-12	-29
1995	-7	2	-20	2	-12
2004	-20	-20	-36	-7	-19
Skill production					
1975	-19	-14	-14	-18	-31
1985	-11	-11	-9	-14	-12
1995	-8	-4	-6	-12	-12
2004	-8	-10	-11	-5	-7

polarization of the British class structure, unmatched by developments elsewhere. This is an important finding, in line with the analysis by Goos and Manning (2007) indicating that job polarization has contributed significantly to the rise in wage inequality in Britain. Indeed, they conclude that much of what has often been interpreted in the research literature as increasing wage dispersion within observed skill categories (mainly by education), and seen as rising returns to ‘unmeasured individual skills’, may in fact be due to the polarization of the job structure. This would shift the theoretical arguments and future empirical research on changes in wage inequality a good deal.

The evolution of skill demand, its level and distribution, is broken down by gender in Tables 2.12 –2.14. Tables 2.12 and 2.13 show the skill composition of the male and female class structure, respectively, while Table 2.14 contains the differences between them. The main results are the following: Except in France, the skill demand level among women **(p.72)**

Table 2.14. Gender differences (female minus male) in the skill composition of the class structure in four European countries, 1975–2004

	All	Germany	France	UK	Sweden
Skill level					
1975	-75	-73	-60	-89	-77
1985	-71	-73	-63	-76	-69

	All	Germany	France	UK	Sweden
1995	-60	-62	-61	-63	-56
2004	-59	-69	-65	-43	-57
Skill polarization					
1975	-5	9	-15	-13	-1
1985	-13	4	-14	-14	-28
1995	-11	2	-12	-14	-20
2004	-31	-17	-41	-28	-37
Service–production					
1975	58	51	80	58	44
1985	66	53	82	55	74
1995	62	60	81	48	61
2004	57	63	57	45	63
Skill service					
1975	-40	-32	-37	-51	-39
1985	-42	-35	-39	-45	-49
1995	-36	-30	-36	-38	-38
2004	-45	-43	-53	-36	-47
Skill production					
1975	-35	-41	-23	-38	-38
1985	-29	-39	-24	-31	-21
1995	-25	-32	-24	-24	-18
2004	-14	-26	-12	-7	-10

has risen faster than among men. This is especially the case in Britain and Sweden. Skill polarization has increased strongly in Britain both among men and among women. Germany and Sweden have seen a slight increase in the distribution of skill demand among men, while the male skill distribution has been stable in France. Among women, Britain alone has experienced polarization. In Sweden, the female skill demand distribution has instead narrowed somewhat, while it has hardly changed at all in Germany and France.

Conclusions

The empirical analyses above have produced several important findings that are novel in the research literature on skills and wages. The basis for these findings consists of data with explicit measurement of the skill **(p.73)** requirements of jobs, data that have been designed with internationally comparative purposes in mind. Another crucial part of the analysis has been a comparative assessment of the connection between skills and wages, something that also has been difficult to accomplish in previous research. The main findings are as follows.

First, firm-based skill formation seems to be more widespread and more important in Britain than in several other European countries considered here, including Germany and Sweden. This is the opposite of what the production regimes perspective predicts, but is a reasonable result given the general character of British schooling. General schooling thus seems to give employers a larger role in skill formation, not smaller.

Second, in line with the production regime perspective, women are disadvantaged in firm-based skill formation. This is true for all countries, and to a roughly similar extent.

Third, there is no strong indication of an interaction effect between class and gender, such that women's disadvantage relative to men is larger in the service class than in the working class. But there is some tendency in this direction in Britain.

Fourth, nominal wage gaps by class and gender tend to go together rather than trade off. For example, both gaps are relatively large in Britain. But standardized wage gaps (i.e. percentile differences) by class and gender tend to be uncorrelated across countries. Notably, standardized class gaps appear to be identical in magnitude in all considered countries.

Fifth, class and skill are tightly connected in all countries, to a remarkably similar extent. This appears to be a universal trait across labour markets. Class theory should be accordingly revised, since current versions downplay or even ignore the skill character of jobs that seem to be the very basis of class distinctions between employees.

Sixth, most of the class wage gap is due to skill-related factors. In contrast, most of the gender wage gap—in all countries—seems to depend on other factors than skill. But differences between men and women in firm-based (rather than school-based) skill formation accounts for a significant part of the gender wage gap in all countries.

Seventh, class dominates all other considered dimensions of stratification—including industry and contract—with regard to the distribution of skills and wages. Indeed, as argued above, class may be seen as a measure of occupational skill requirements, and is probably linked to wages through productivity. Industry (indicated by the contrast between jobs in consumer services and manufacturing) tends to be significantly **(p.74)** related to school-based but not firm-based skill requirements, although the comparatively low wages in consumer services appear to mainly be associated with other factors than skills. Fixed-term contracts carry significant wage penalties in Germany, Spain, and Sweden but not in Britain or France. These penalties are not explained by differences in skill-related factors.

Eighth, the evolution of class structures over time indicates a significant increase in skill demand in all countries. In Germany, Britain, and Sweden, but not in France, this upgrading of the occupational structure has been larger for women than for men. The overall rise in skill demand appears to have been strongest in Britain.

Ninth, the distribution of skill demand has been rather stable in Germany, France, and Sweden. By contrast, Britain is marked by a strong polarization of its job structure, both among men and women. This has probably contributed significantly to the rise in wage inequality.

Tenth, gender segregation of the class structure has changed very little in overall terms. Disaggregation reveals, however, that horizontal segregation has increased somewhat over time, while vertical segregation has declined. Women's occupational attainment has tended to improve more in Britain and Sweden than in Germany and France.

These findings add considerably to our knowledge of the distribution and evolution of skills and wages in Europe. Evidently, current theoretical perspectives on cross-national differences in labour market inequality—such as the production regimes model—are partly in line with the data, but partly not. More research is needed on several issues, one prominent example being the role of employers in skill formation. But perhaps the most urgent task is to make theoretical sense of the pieces of empirical evidence that are now available. Some initial remarks in this direction are offered below.

The trends in skill demand observed above show that Britain has had the most rapid rise among the countries considered, although this rise is entirely confined to white-collar (or service) occupations. This upgrading appears to contradict the early claim (see, e.g., Finegold and Soskice 1988) by proponents of the production regime approach that LMEs such as Britain are locked in a low-skill ‘equilibrium’ while CMEs such as Germany are high-skill production regimes. As spelled out in the introductory chapter, though, more recent accounts (e.g. Estevez-Abe, Iversen, and Soskice 2001) instead suggest the possibility that upgrading at the high end of the occupational structure is in fact more pronounced in LMEs **(p.75)** than in CMEs: ‘[W]here there is a large pool of workers with advanced and highly portable skills, and where social protection is low, companies enjoy considerable flexibility …[that] allows for high responsiveness to new business opportunities, and facilitates the use of rapid product innovation strategies’ (Estevez-Abe, Iversen, and Soskice 2001: 174). In contrast, CMEs ‘advantage companies that seek to …continuously upgrade and diversify existing product lines’ (Estevez-Abe, Iversen, and Soskice 2001: 174).

Crucially, however, the mechanisms singled out in the production regime approach do not seem to operate in the expected way. Even if general skills dominate British schooling, most of this education occurs at the compulsory level. Accordingly, the British labour market does not seem to have ‘a large pool of workers with advanced and highly portable skills’, at least not skills based on formal education. Rather, skill formation to a large extent takes place in (or is paid by) firms. It seems likely that these skills—learned on the job—are less portable than skills learned in school. The German labour market, by contrast, appears to be dominated by skills that, while specific to an occupation or an industry, are highly portable across firms. So, although the strong average rise of skill demand in Britain—coupled with polarization—is empirically compatible with predictions from the production regime approach (and squares well with the relatively large increase in wage dispersion in that country), and the relatively stagnant skill demand evolution in Germany may also be in line with expectations in that perspective, the theoretical arguments offered seem rather far off the mark.

This conclusion is reinforced by the case of Sweden, which deviates clearly from both Britain and Germany. In distinction to Britain, skill formation in Sweden to a large extent occurs in schools before labour market entry. In distinction to Germany, continuing learning during working life is widespread, although not quite reaching British levels. Over time, skill demand in

Sweden appears to have increased more than in Germany but less than in Britain. Further, the rise in demand is more evenly distributed than in the British case, with no strong trend of polarization. The distinctiveness of the overall Swedish pattern in comparison to other countries would appear to support theoretical approaches that make a clear difference between Nordic and Continental European varieties of CMEs. In this regard, the perspective of employment regimes seems more fruitful than that of production regimes.

In sum, while the empirical findings in the present chapter are complex and cannot be seen as corroborating a single theoretical model, it seems clear that different approaches are not equally supported. Despite the fact **(p.76)** that some empirical regularities are remarkably similar across countries—with the tight connection between class and skill as perhaps the most significant example—labour markets under capitalism do appear to come in distinct varieties. In considering the nature of this variation, there are two fairly strong arguments against production regime theory: First, the simple distinction between coordinated and liberal market economies fails to account for the sizeable within-category differences between countries such as Germany and Sweden. Second, the suggested driving mechanisms—in particular the cross-national differences in the character of skill formation—do not seem to operate as predicted. The number of categories argument favours the more elaborate typology of employment regimes. But the mechanism argument is less valid in the employment regime case, because the drivers of variation in this model—that is, conflicts of interest, partisan politics, and bargaining outcomes—have not been explicitly measured and tested, at least not with micro-level data. In addition, the employment regime approach may not be sufficiently clear theoretically on how power struggles, the supply and demand of skills, and wage determination are connected. These tasks—and many others—lie ahead. It seems highly probable that new theoretical perspectives will emerge along the way.

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Notes:

(1) I am grateful to Ying Zhou of Nuffield College for running these models.

(2) See Gornick (1999) and Mandel and Semyonov (2005) for earlier applications of this contrast on gender wage gaps; the application on class wage gaps in the present paper is new in the literature, as far as I know. The general approach is originally due to Juhn, Murphy, and Pierce (1991) who examine racial wage gaps in the United States. It is not obvious whether the nominal or the percentile wage gap is closest to the ‘true’ gap. Both measures are relevant and answer partly different questions. It is clear, however, that taking both rather than only one of them into account leads to a significant gain in information.

(3) I thank Karin Halldén (SOFI, Stockholm University) for providing runs on the French and Swedish Labour Force Surveys, Eric Harrison (City University, London) on the British Labour Force Survey, and Heike Wirth (MZES, Mannheim) on the German Microcensus.