

Inequality, Education and Comparative Political Economy

This report investigates the evolution of economic inequalities and the drivers behind these inequalities. The authors' economic and political analysis of developments in the labour markets and education and training systems of Germany and the UK, two countries marked by significant differences in political, economic and educational infrastructure, provides fresh contexts for thinking in these areas. The role played by changing political and industrial relations coalitions in the German political economy in the inclusion or exclusion of low-income groups is compared with the middle-class focus of the UK political system. The authors offer new insights to help shape policy for those seeking to maintain the difficult and delicate balance between social equity and economic efficiency.

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The findings of *creating sustainable growth in europe* are summarised in four reports, together with an accompanying volume of *reflections*:

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ISBN: 978-1-900834-52-0

Resource Productivity, Environmental Tax Reform and Sustainable Growth in Europe by Paul Ekins
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Inequality, Education and Comparative Political Economy

Christian Dustmann, Stephen Machin and David Soskice

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Authors' Note

Our original research agenda included the consequences of migration from the EU accession countries to western Europe, and this was reflected in the title of the research programme. This work is now underway, but has been considerably delayed because of issues of data availability and is not sufficiently advanced for the results to be included here. For this reason, the present report is entitled *Inequality, Education and Comparative Political Economy*.

Foreword

For over 35 years, the Anglo-German Foundation for the Study of Industrial Society has promoted study and discussion of the processes of wealth generation and social development in the United Kingdom and Germany. Over this time, it has made a significant contribution to our understanding of modern industrial society, and has been instrumental in establishing focused comparative research as an essential component of evidence-based policy development.

Towards the end of 2004, the Foundation's Trustees recognised a need to draw together the various strands of work funded over the preceding three decades. They were increasingly concerned that the traditional organisation of research into distinct academic disciplines and associated policy domains was leading to a damaging compartmentalisation in government, so that policies adopted by one department often ran counter to the objectives of policy in other departments. The pressing need, the Trustees believed, was for a broader, more integrative approach, rather than for ever more detailed and specialised knowledge.

The Foundation therefore decided to launch a major project designed to counteract that tendency while building on the comparative knowledge and expert networks established in its traditional priority areas. The title of the new initiative – *creating sustainable growth in europe* – confronts the central challenge facing both countries over the coming decades: how to reconcile the desire for growth with environmental and social sustainability.

An international Academic Advisory Board was convened under the chairmanship of Professor Sir Tony Atkinson, the distinguished economist and former Warden of Nuffield College Oxford, to advise the Foundation on the structure and content of the initiative. It was decided that the research should be organised in linked but largely autonomous programmes, each addressing one or more core themes within the general topic. The themes chosen were:

- innovation, productivity and growth
- environment and resources
- welfare, employment and social justice.

The initiative was formally launched in spring 2005 with a call for proposals. The research communities in Germany and the UK were invited to submit bids for programmes lasting up to three years and addressing one or more of the three core themes. The budget for the initiative was over £4 million. At the end of a rigorous selection process, the Foundation awarded grants to four programmes:

- Explaining Productivity and Growth in Europe, America and Asia (based mainly at LSE London, ZEW Mannheim and LMU Munich, and led by Professor Tobias Kretschmer, Ludwig-Maximilians-Universität Munich)
- Resource Productivity, Environmental Tax Reform and Sustainable Growth in Europe (based at six centres: King's College London (KCL); GWS Osnabrück; FU Berlin; Cambridge Econometrics; the University of Economics, Prague; and SERI, Vienna, and led by Professor Paul Ekins, then at KCL, now at University College London)
- The Economics and Politics of Employment, Migration and Social Justice (based at WZB Berlin, the Universities of Frankfurt and Hannover, and UCL and LSE London, and led by Professor Christian Dustmann, University College London)
- Sustainable Welfare and Sustainable Growth (based at Queen's University Belfast and FU Berlin and the Universities of Bremen, Edinburgh, Göttingen, Kent, Oxford and Southampton, and led by Professor Jochen Clasen, University of Edinburgh).

Meeting the challenge of sustainability will require far-reaching changes in institutions, processes and lifestyles. In launching its initiative, the Foundation wished to demonstrate the key role research could play in defining those changes and in identifying a fair division of the costs and burdens they would impose. Behind the innovative structure of the initiative lay the intention that each programme's distinctive contribution to knowledge and policy within its own academic and political area would be informed by contact with ideas and approaches from other disciplines and policy domains; and that the four programmes when viewed as a whole would add up to more than the sum of their parts. Their contribution would extend to how policy-makers think of their task – the breadth of data and knowledge to be drawn upon, and the nature and range of the implications to be considered.

The economic and political assumptions prevalent when *creating sustainable growth in europe* was launched have now been severely shaken. Many commentators argue that the present unprecedented conjuncture of financial, economic and ecological crises represents a crucial moment in the trajectory of capitalism. Many also argue that these crises represent an urgent call, and also a unique opportunity, for systemic rethinking, of a kind that happens only once in a generation. The findings of *creating sustainable growth in europe*, as summarised in the Foundation's series of four reports and in the accompanying set of *Reflections* by Tony Atkinson, are thus even more relevant and urgent than was originally foreseen. Taken together, they represent the essence of a generation's work by the founders, Trustees, staff and researchers associated with the Anglo-German Foundation, and the key component of its legacy.

Ray Cunningham
Director, Anglo-German Foundation
September 2009

Executive Summary

A smoothly running economy that can generate sustainable growth while maintaining a balance between efficiency and equity: an achievable goal? Or are the trade-offs between social justice and economic outcomes too difficult to balance?

It has long been the case that the economic performance of industrialised countries has been closely tied to the evolution of economic inequalities and the drivers for these inequalities. It is also true that to understand the reasons behind a country's economic performance and industrial efficiency one often has to look at the country's education systems, labour market institutions and political framework. This research programme, part of the Anglo-German Foundation's *creating sustainable growth in europe* initiative, investigates the evolution of economic inequalities and their drivers and seeks to throw some light on the sustainability question through an economic and political analysis of evolving labour markets and education systems in the United Kingdom and Germany, two countries marked by significant differences in economic, political and educational institutions. The research outputs are divided into three broad areas: economic inequality; education and training; and political economy.

Rising wage inequality is a phenomenon not limited to economies such as the UK or United States of America, but the differing patterns of wage inequality in countries has proved puzzling in the past. The UK, Canada and the US saw rising inequality from the mid-1970s onwards, which many commentators have attributed to the effects of technological change on the labour market. Germany did not experience this trend, despite being a highly industrialised country. This report finds that different processes explain the changes in the wage structure above and below the median wage. The widening of the wage structure at the lower end of the distribution was mainly driven by episodic events, such as institutional changes (an erosion of the minimum wage or a decline in trade union influence, for example) and supply shocks. Such events occurred during the 1980s in the UK and the US, but not until a decade later in Germany. Technical change has an asymmetric impact on wage distribution: while it increases inequality above the median, it tends to compress wages below the median. The reason is that new technologies are stronger substitutes for jobs in the middle rather than the lower end of the wage distribution. From all this can be concluded that the rise in inequality at the bottom of the wage structure during the 1990s and early 2000s in Germany may slow down or even be reversed in the near future, a trend that has been already observed in the UK and the US.

Raising standards of education and skills development at each stage of an individual's education, and at all levels, is essential for countries that want to achieve sustainable growth and economic prosperity. This research has looked at several aspects relevant to this aim, including literacy and numeracy development, the relationship between university quality and graduate wages, and vocational training.

Because some economies – typically those with more inequality – have a significant number of adults with poor literary and numeracy, a vital policy goal is to try to ensure that the current generation of children acquires sufficient basic skills; not just literacy and numeracy but also information and communications technology (ICT) skills. Our research in the UK shows that highly structured literacy and numeracy programmes in schools can deliver improved educational outcomes and be a long-term, cost-effective means of lifting individuals to a reasonable level of basic skill.

At the tertiary level, improved university quality is key to securing a nation's productivity, generating the skills necessary in the workforce to compete effectively in the global market place. The quality of the institution attended in the UK has a significant bearing on the wage return to individuals over time, and that connection has risen over time. This has important implications both because the UK government has a policy of encouraging more young people to enter higher education and in the light of government policies to introduce variable fees for universities.

The question of how best to organise vocational training is critical for the generation of a sound skill base to secure sustainable growth. Indeed, one of the key questions in educational policy in many countries has been whether an apprenticeship system as it works, very successfully, in Germany, Switzerland and Austria could be implemented in other countries. We have identified a crucial ingredient in the German success: commitment. Firms need to commit to the training they offer apprentices for the duration of the apprenticeship. Only then will workers be willing to accept low apprenticeship wages as they do in Germany. In Germany, such commitment is facilitated through institutions and regulations. In the UK, these institutions are largely absent, or have been abolished in the recent past. This contributes to explaining why currently the apprenticeship system works better in Germany than in the UK.

The labour markets, and the education and training systems, of all countries are framed by the 'rules' of the political economy in which they operate. These institutional frameworks are sustained by interactions between the political and the industrial relations systems and have long been very different in the UK and Germany. And, while they have changed in both countries, profound differences remain. The UK majoritarian political system, with a single-party government focused on 'average' voter concerns and little influenced by social partners, enables government to be quick and decisive in policy-making, but not effective when, for example, strong employer associations are needed to gain business commitment – as in the development of a successful apprenticeship system. The proportional representation political system in Germany results in coalition governments, together with 'industrial coalitions' between key trade unions, major employer associations and large companies, and requires political and industrial consensus for change. So change takes time and may be blocked; but if agreement is reached, policies that need business co-operation and commitment (as with the apprenticeship system) can be carried forward with great success.

So how do these elements relate to the basic sustainability question: *can a national system provide both efficiency and equity with trade openness and capital mobility?*

With deregulated labour markets, as in the UK, it seems difficult to avoid income inequality, even with minimum wages. This spills over into poor educational competences among low-income children and it has proved difficult to develop a serious apprenticeship system. Germany is a paradoxical case. Germany owes its outstanding export success in both the industrial and the service sectors to the interlocking institutions of vocational training, technology transfer institutions, and a co-operative and experienced workforce. Thus it has fulfilled the *efficiency* side of sustainability – but as a result of a stable institutional environment rather than one of highly flexible labour markets. But despite the importance of unions in the German institutional environment, *equity* has not been as well served over the past 20 years or so, as evidenced by the widening wage differential at the lower end of the scale.

Why? On the one hand, the German labour market now includes many people – mainly from the former Communist countries, including East Germany – without German vocational qualifications and it has been difficult for them to succeed in the labour market. On the other, German governments, oriented to the perceived needs of an export-led economy, have encouraged wage restraint in response to slow growth in demand in the last decade. This has reinforced a household savings mentality, in turn reinforcing the slow demand in growth. So, from the *equity-efficiency* political-industrial coalition of the 1980s, which included less-skilled workers and lower income groups, a new political-industrial coalition has emerged from which low-income groups are excluded industrially, as are their representatives in the Linkspartei politically.

When it comes to policy interventions designed to help balance the scales of social justice and economic growth, each country has to make decisions based on national and international circumstances, on what society will accept and, perhaps, also on political expediency. But carefully framed policy, based on sound research, can undoubtedly make a difference – as some of the educational interventions analysed in Chapter 2 show. The research carried out for this programme should add significantly to policy-makers' understanding of the complex drivers of both economic performance and social equity.

1 Earnings Inequality

Studying inequality in economic outcomes has been one of the key research areas of the Anglo-German Foundation's research programme. A comparison between the UK and Germany is of particular interest given the widespread consensus that the UK is economically unequal (especially since the 1979–90 Conservative government under Margaret Thatcher) and that Germany has maintained a more egalitarian structure. Our research challenges this apparent consensus and argues that some of the same drivers of inequality have been important in shaping distributional outcomes in both countries.

Why do we care about earnings inequality?

Growing inequality and poverty are major concerns in the public debate today. Most Organisation for Economic Co-operation and Development (OECD) countries have been affected in one way or another by changes in the distribution of earnings, as Tony Atkinson summarises and analyses well in his 2008 book, *The Changing Distribution of Earnings*. According to a global poll conducted by the BBC in February 2008, people in about two-thirds of the included countries felt that the benefits – and the burdens – of economic developments in our time are not shared fairly. Income from work is typically the largest income source of households. Earnings thus have a great influence on the economic well-being of individuals and families. The importance of income from work is also reflected in recent social policy reforms in the UK and in Germany. These reforms link the provision of financial support and integration services to an active participation in the labour market (see also Chapter 2 of the *csge* report *Sustainable Welfare and Sustainable Growth* (Clasen 2009)).

So what are, and have been, the drivers of earnings inequality? Economists have argued that rises in wage inequality may be related to technological change, as technological innovation is associated with skilled workers, and in chapter 2 of the *csge* report *Explaining Productivity and Growth in Europe, America and Asia* (Kretschmer 2009), the impact of technological and organisational change on business productivity is analysed. Germany, however, seemed to withstand this trend. Only in 2004, Prasad entitled his International Monetary Fund staff paper on inequality in Germany *The Unbearable Stability of the German Wage Structure*. Others (see, for example, Steiner and Wagner 1998) have also pointed out that while inequality in the Anglo-Saxon countries increased quite dramatically, in particular during the 1980s, inequality in Germany seemed to be unchanged.

Why – if technological change was indeed the key component behind the rise in inequality in countries like the US and the UK, as claimed by many economists – was the wage

structure stable in Germany, the largest European economy with the same opportunities to implement similar technological innovations? This question posed a puzzle for economists: if the reason for an increase in earnings inequality was skill-biased technical change, then why had Germany not experienced the same trend as the US and the UK? But did earnings inequality indeed remain unchanged during the 1980s and 1990s, as many studies suggested? Answers to these questions are key to understanding the dynamics of earnings structures in the developed countries, and to possibly devising mechanisms to influence the process.

Research on the evolution of Germany's wage structure by Dustmann, Ludsteck and Schönberg (2009) – DLS in what follows – provides a unifying framework to explain trends in Germany and the UK/US over the last decades. The research shows that rising wage inequality is a phenomenon not limited to economies such as the UK or the US. In fact, earnings inequality above the median increased in Germany throughout the 1980s and 1990s to a similar extent as in the UK and US. Lower-end inequality started to rise only in the 1990s. This contrasts with the British and American experience where lower-tail inequality increased mainly during the 1980s and tended to decline in the 1990s.

DLS provide evidence consistent with the idea that skill-biased technical change is an important explanation for increased inequality above the median of the earnings distribution. In contrast, trends in lower-tail inequality seem to be better explained by episodic events, such as supply shocks and changes in labour market institutions – the decline in unionisation, for example – that occurred during the 1980s in the UK and the US and a decade or more later in Germany. Moreover, a shift in labour demand favouring high-skilled workers and replacing medium-skilled workers has contributed to polarising the employment structure in Germany as well as in the UK and US. This is a more nuanced view of skill-biased technical change, according to which technological change does not simply increase the demand for skilled versus unskilled labour, but instead affects the lower and the upper half of the wage distribution asymmetrically, increasing inequality above the median and possibly compressing it below the median.

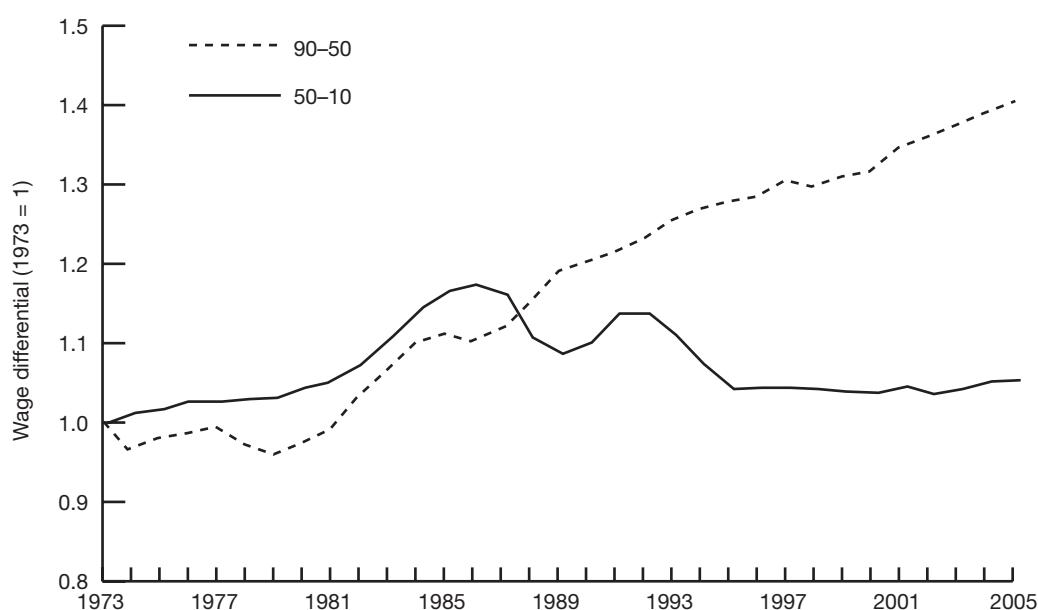
It seems unlikely that the rise in inequality at the bottom of the wage distribution seen in Germany since the early 1990s will continue. If Germany follows the US and the UK, wages at the bottom of the distribution will stabilise, while wages in the middle of the distribution may decline, thus increasing further the gap between the upper part of the distribution and the median earner, but possibly slightly closing the gap between the median and the lower part of the distribution. It could be that policy may want to focus more on middle earners in jobs that are easily substituted through new technologies.

Patterns of earnings inequality in Germany, the UK and the US

The US witnessed a sharp increase in wage and earnings inequality during the 1980s, as described by Bound and Johnson (1992), Katz and Murphy (1992), Levy and Murnane

(1992), and Acemoglu (2002). Upper-tail inequality, measured as the wage gap between the 90th and 50th percentile (the 90-50), continued to rise at a similar pace during the 1990s, whereas lower-tail inequality, measured as the wage gap between the 50th and 10th percentile (the 50-10), has been falling or flat since the late 1980s (Autor, Katz and Kearney 2008). Figure 1.1 displays the evolution of the 90-50 and the 50-10 wage gaps in men in the US between 1973 and 2005. From the end of the 1970s until 2005, the gap between the 50th and the 90th percentile grew steadily. As regards low-end wage inequality, the 50-10 wage ratio for men increased sharply until the mid-1980s, then declined slightly and remained unchanged from the mid-1990s onwards.

Figure 1.1
Indexed 90-50 and 50-10 hourly wage differentials of men in the US

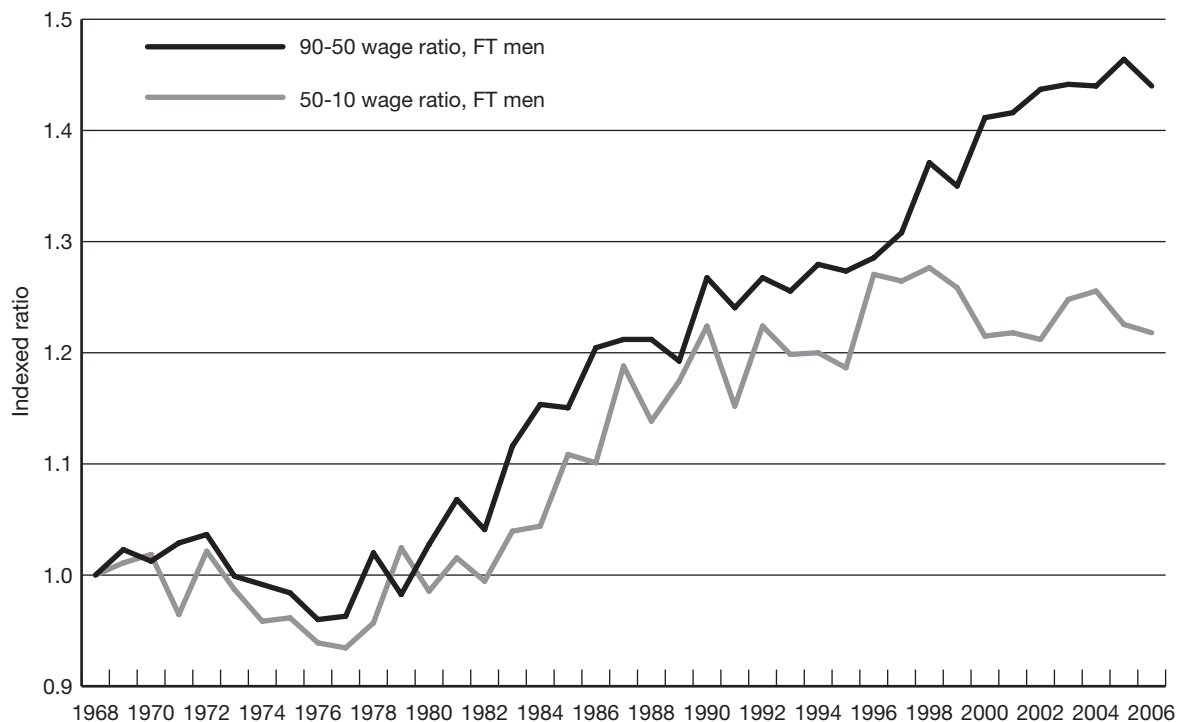


Note: The figure shows the evolution of hourly wage ratios of the 90th to 50th and 50th to 10th percentile of the wage distribution (normalised with the respective value in 1973) from 1973 to 2005 (normalised with the respective value in 1973). It is based on data from the Current Population Survey.
Source: Lemieux (2008)

An increase in inequality in the 1980s has also been documented in other Anglo-Saxon countries, such as the UK (Gosling, Machin and Meghir 2000, or Machin 2008, for example) and Canada (Boudarbat, Lemieux and Riddell 2006, for example). Figure 1.2 displays the evolution of the upper-tail (90-50) and lower-tail (50-10) wage inequality in the UK (for men working full time) over time. After falling a little in the early 1970s, from the late 1970s onwards the 90-50 differential began a continuous upward trend. In the 1980s, and to a lesser extent the 1990s, the same was true of the 50-10 differential. In the 2000s, however, lower-tail inequality narrowed.

By contrast, most countries in continental Europe seem to have experienced much smaller increases in inequality in the 1980s, or no increases at all. Among others, Acemoglu (2003), Freeman and Katz (1995), and OECD (1996) summarise trends in inequality in European countries. In particular, West Germany, the third largest economy and the largest exporter

Figure 1.2
Indexed 90-50 and 50-10 earnings differentials of men working full-time in the UK, 1968–2006



Note: 90-50 and 50-10 wage ratios are from the Family Expenditure Survey and Family Resources Survey. Thanks to Mike Brewer, Ali Muriel and Liam Wren-Lewis for providing the underlying numbers (from their 2009 Institute for Fiscal Studies report).

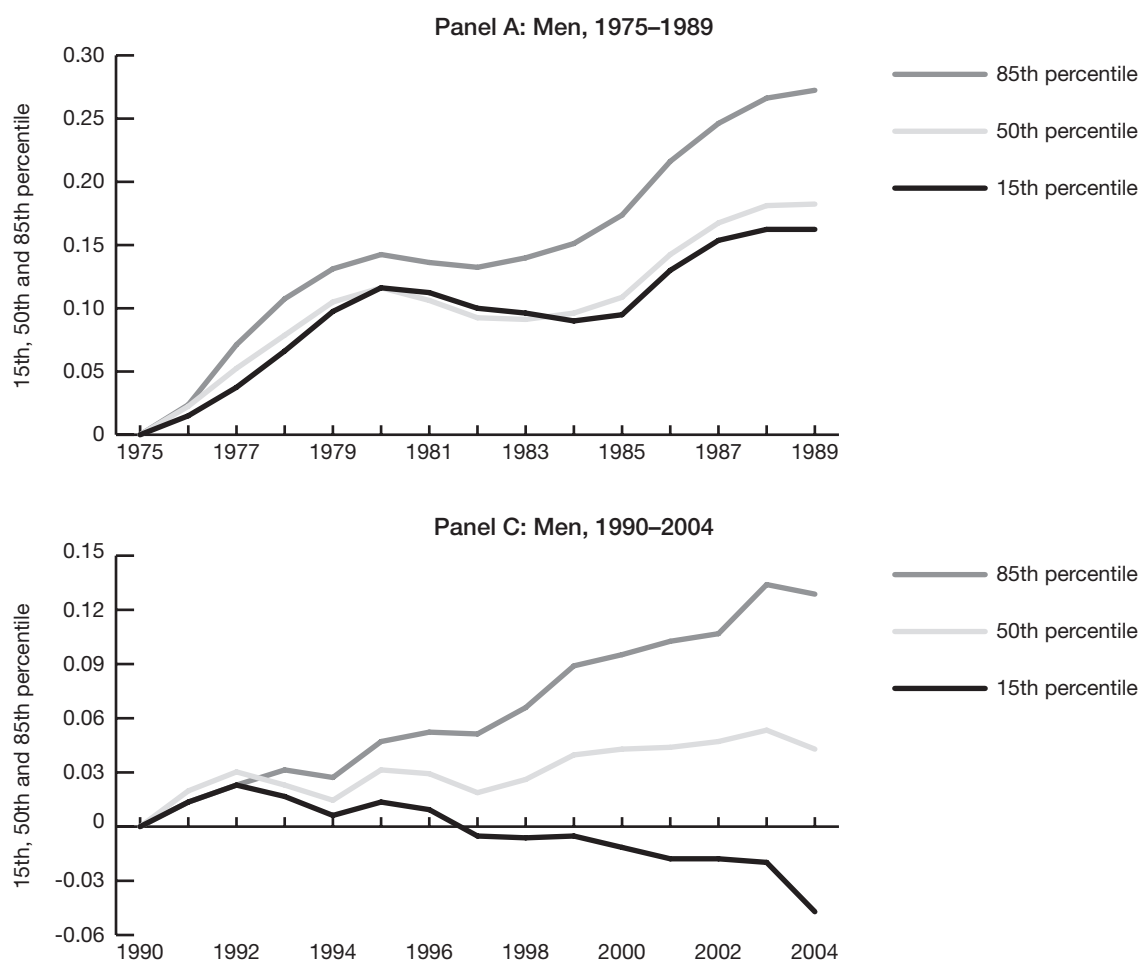
in the world, has been singled out as a country characterised by a relatively stable wage distribution during the 1980s (see, for example, Steiner and Wagner 1998 and Prasad 2004). Many scholars, such as Card, Kramarz and Lemieux (1999), cite this stability as evidence against the hypothesis that the growth of inequality observed in the US and UK is primarily due to skill-biased technological change, as firms in continental Europe had access to the same technologies as firms in the US and UK.

So does Germany provide a case *against* the skill-biased technological change hypothesis? New evidence from DLS reveals a more nuanced picture for Germany, contradicting the common belief that wage inequality has been unchanged in Germany throughout the 1980s and 1990s. Previous work had been based on a single data source: the German Socio-Economic Panel. An exception is Fitzenberger (1999), who uses an earlier version of the DLS data for the years 1975 to 1990. He mentions that wage inequality at the top of the distribution has been increasing in the 1980s but did not establish the long-term trend that is so similar to that of the US. DLS show that the German Socio-Economic Panel data masks developments at the top of the distribution, because of small sample sizes and imprecise estimates of wage changes. They show that the difference between the top of the wage distribution (measured as the 85th percentile) and the median has consistently widened in Germany since the late 1970s – at a pace only slightly lower than in the US.

Figure 1.3, taken from the DLS paper, shows the evolution of real wages at different percentiles of the distribution in West Germany, concentrating on men (patterns for women are not dissimilar, and are illustrated in the paper). During the pre- as well as the post-unification period, wages grew consistently faster at the top of the distribution compared with the lower percentiles, in particular for men. This is consistent with the skill-biased technological change hypothesis in which the wage gap between the top and the middle of the wage distribution widens.

But what happened at the bottom of the distribution? The figure shows that wages for men in the middle and the bottom of the distribution grew at a similar pace during the 1980s and until the early 1990s. Hence, while inequality increased similarly in Germany as it did in the US and the UK at the top of the wage distribution, the trend was markedly

Figure 1.3
Indexed real wage growth by percentile in Germany: pre- versus post-unification period



Note: The figures show the indexed (log) real wage growth different percentiles of the wage distribution. Panel A refers to the pre-unification period between 1975 and 1989, with 1975 as the base year. Panel C refers to the post-unification period between 1990 and 2004, with 1990 as the base year. Calculations are based on a sample of West German full-time employed men aged 21 to 60 extracted from the IAB Employment Sample.
 Source: Dustmann, Ludsteck, and Schönberg (2009)

different at the bottom of the wage distribution, at least until the early 1990s. Germany's wage structure remained unchanged over this period, while the 50-10 difference in the US and the UK increased dramatically. During the 1980s, real wages in the UK grew by about 5 per cent at the 10th percentile, 19 per cent at the median, and 33 per cent at the 90th percentile (Gosling, Machin and Meghir 2000). In Germany, real wages for men at the 15th and 50th percentile both rose by about 16 per cent from 1975 to 1989, while at the 85th percentile growth was 27 per cent. After the early 1990s the trends in the Anglo-Saxon countries and in Germany diverge again: now wage inequality increases dramatically in Germany, with the 85th percentile increasing by 13 percentage points from 1990 to 2004, and wage growth at the 15th percentile even becoming negative, while real wages at the 50th percentile continued to increase. In contrast, in the US and the UK wages differences between the 10th and 50th percentile remained largely constant, or even decreased.

What are the reasons for these diverging trends? The basic story is: skill-biased technological change is indeed an important driving force behind the widening of the wage distribution; technology does not, however, affect the wage distribution symmetrically. While it widens the distance between the top percentiles and the median, it has little impact on, or even contracts, the distance between the median and the lowest percentiles. But what explains the widening of the wage distribution below the median, occurring in the 1980s in the US and in the UK, and in the 1990s in Germany? Episodic events, like supply shocks and changes in labour market institutions, which occurred in the Anglo-Saxon countries in the 1980s, but in Germany in the 1990s, are potential causes.

Explanations for changes in inequality

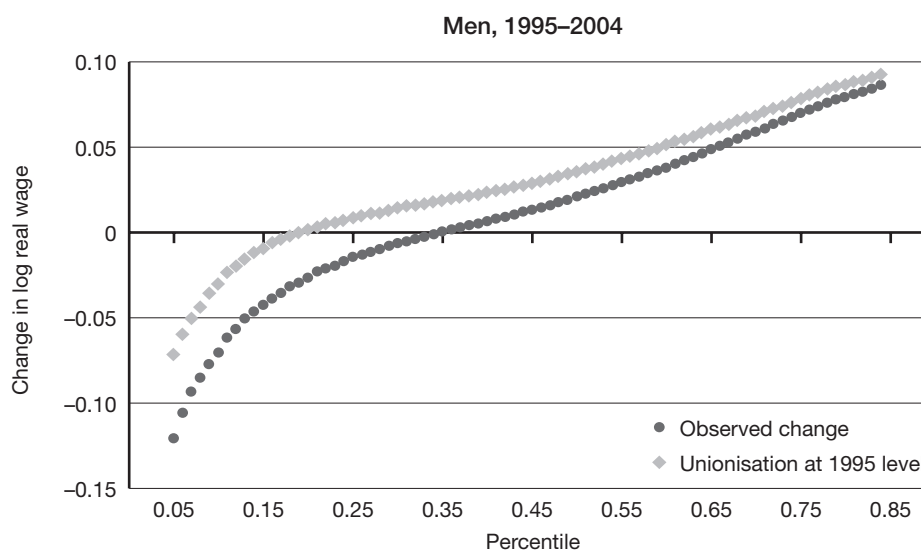
DLS's main hypothesis is that supply shocks and changes in labour market institutions in Germany in the 1990s influenced the widening in the wage gap at the low end of the distribution. For the US, it has been argued (Lemieux 2008) that the widening of the earnings distribution in the 1980s is closely linked to a reduction in both the minimum wage and the influence of trade unions; up to 20 per cent of the overall widening of the wage distribution during the 1980s can be attributed to a decline in union membership. Similarly, trade union reforms and actions to relax minimum wage controls taken in the UK during the 1980s contributed to an increase in lower-tail inequality during that period. Moreover, the narrowing of the UK 50-10 differential in the 2000s is almost certainly attributable to the introduction of the National Minimum Wage in April 1999.

In Germany, wages of workers are determined through collective bargaining between trade unions and individual employers or employers' federations. These agreements cover all workers in firms that acknowledge union agreements; they do not cover those who work in firms without union agreements, even if these workers are themselves union members. From the mid-1990s to mid-2000s, union coverage declined sharply: between

1995 and 2004, the share of workers covered by an industry-level or firm-level agreement declined by about 15 percentage points.

This had substantial effects on workers' wages at the low end of the wage distribution. This is illustrated in Figure 1.4, which plots the observed wage changes across the distribution between 1995 and 2004 as well as the counterfactual wage changes that would have prevailed had unionisation remained at its 1995 level in Germany (see DLS for details). The figure shows that workers at all points of the wage distribution would have experienced a higher wage growth if unionisation had not declined. The impact of the decline in union representation is substantially stronger at the lower end of the distribution: here, de-unionisation can account for 28 per cent of the increase in the overall 50-15 wage gap.

Figure 1.4
The impact of de-unionisation on real wage growth by percentile in Germany



Note: The figure plots actual wage growth by percentile from 1995 to 2004, as well as the wage growth that would have prevailed if unionisation had remained at its 1995 level. Calculations are based on a sample of West German male full-time employees aged 21 to 60 extracted from the IAB Linked Employer Employee Dataset.
Source: Dustmann, Ludsteck, and Schönberg (2009)

A further important factor in widening the wage gap at the lower end of the distribution may be labour supply shocks. An important component of the rise in inequality in the US is the remarkable increase in the financial benefits the higher the educational level attained despite a general upward trend in the educational attainment of the workforce. Table 1.1 shows evidence for the UK and US. In the upper part of the table, the first column for each country gives the share of graduates from tertiary education in the respective year. The second column displays the relative wage of graduates compared to non-graduates for a given age and gender. Over the period 1980 to 2004, the share of graduates increased by 16 and 13.4 percentage points in the UK and the US respectively. The relative wage of graduates rose by 0.16 and 0.25 respectively. This means that the skill premium increased by about 11 percentage points in the UK and 18 percentage points in the US. The lower panel of the table shows that this trend was very strong in the 1980s but slowed dramatically in the 1990s.

Table 1.1
Aggregate US and UK trends in graduate/non-graduate wages and employment

	UK		USA	
	% Graduate share of employment	Relative weekly wage (full-time)	% Graduate share of employment	Relative weekly wage (full-time)
1980	5.0	1.48	20.8	1.41
1985	9.8	1.50	24.2	1.53
1990	10.2	1.60	25.7	1.60
1995	14.0	1.60	31.8	1.65
2000	17.2	1.64	31.8	1.69
2004	21.0	1.64	34.2	1.66
Changes:				
1980–2004	16.0	0.16	13.4	0.25
1980–1990	5.2	0.12	4.9	0.19
1990–2000	7.0	0.04	6.1	0.09
2000–2004	3.8	0.00	2.4	–0.02

Note: The sample consists of all individuals aged 18–64 in work and earnings, except for relative wages that are defined for full-time workers. The relative wage ratios are derived from coefficient estimates on a graduate dummy variable in semi-log earnings equations controlling for age, age squared, and gender (they are the exponent of the coefficient on the graduate dummy). Data for the UK are taken from the General Household Survey and the Labour Force Survey, data for the US from the Current Population Survey.

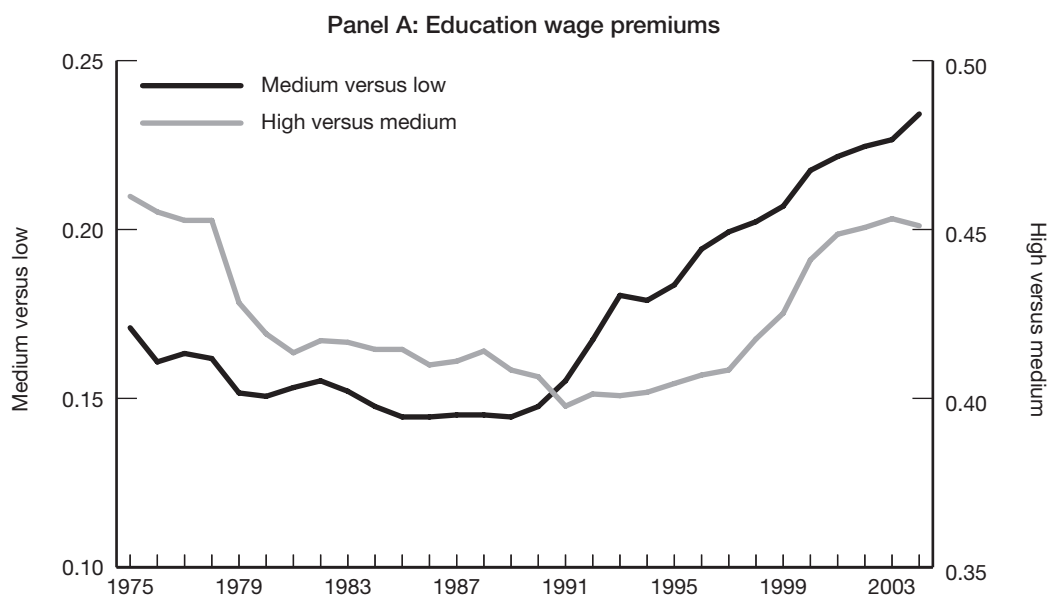
Source: Machin (2008)

Figure 1.5 plots the wage differential between the low- and medium-skilled and the medium- and high-skilled in Germany. The medium to low wage differential declined slightly between 1975 and 1989, and then increased sharply by about 0.7 percentage points a year. This timing coincides with the sharp rise in lower-tail wage inequality. It also coincides with the deceleration in the decline of the share of the low-skilled during the 1990s: while during the 1970s and 1980s, the share of low-skilled workers fell from 25.6 per cent in 1976 to 12.5 per cent in 1990, it decreased by only 3.6 percentage points between 1990 and 2004.

Further, estimates of how sensitive relative wages of medium- and low-skilled workers are to changes in their relative supply suggest that a 10 per cent decrease in the supply of medium-skilled workers relative to low-skilled workers increases the relative wage of the medium skilled by about 2 per cent. An influx of low-skilled labour to the market, relative to medium-skilled labour, would contribute to widening inequality at the lower tail of the earnings distribution.

This suggests that the slowing decline of low-skill employment in the 1990s had a profound impact on the price of skills and thus the wage structure – particularly at the lower tail of the wage distribution. The timing suggests that it may be a consequence of the breakdown of the communist regimes in eastern Europe, as well as the reunification of East and West Germany. These events led to a large flow of East Germans, eastern Europeans and ethnic Germans from eastern Europe into the West German labour

Figure 1.5
Evolution of education wage premiums in Germany



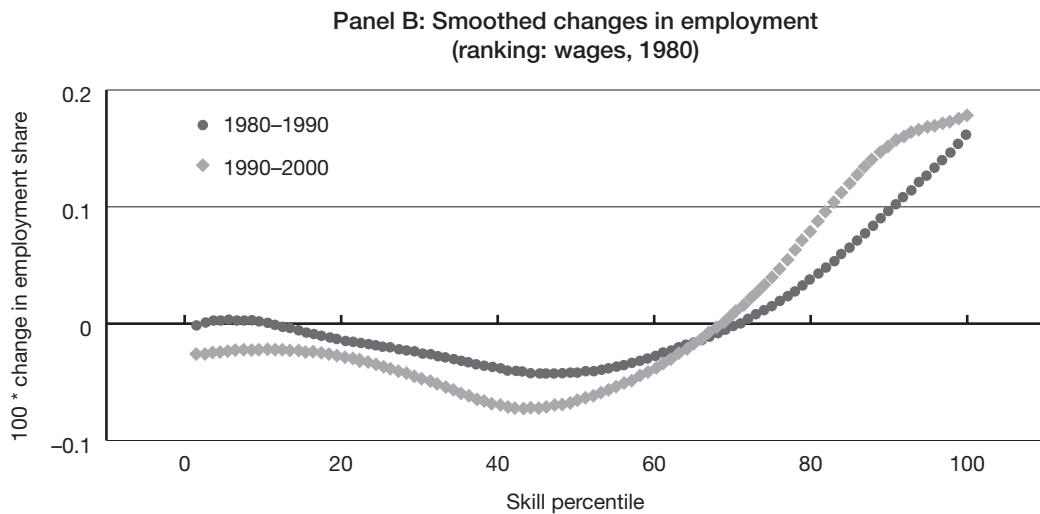
Note: The left axis shows fixed-weighted wage ratio of the medium-skilled (apprenticeship degree) and the low-skilled (no post-secondary education) for a composition-constant set of age groups (8 age categories). On the right axis, the figure plots the fixed-weighted wage ratio of the high-skilled (university degree) and medium-skilled for a composition-constant set of age groups. Calculations are based on a sample of West German male full-time employees aged 21 to 60 extracted from the IAB Employment Sample. Source: Dustmann, Ludsteck, and Schönberg (2009)

market. Many of these immigrants were low-skilled; see Glitz (2006) and Bauer, Dietz, Zimmermann and Zwintz (2005) for more details.

While skill-biased technological progress is the main force behind a widening of the wage distribution in the US as well as Germany and the UK at the upper part of the wage distribution, it is changes to institutions and the labour supply that explain changes below the median. Is there more direct evidence for an uneven effect of technological change on wage structures? Recent research suggests that technological advances during the 1980s and 1990s, notably in the area of information and communication technologies (ICT), have led to an increase in the demand for employees whose jobs are supposed to be complementary to these technologies and to a reduction in the demand for workers whose jobs can be substituted by automation (Autor, Katz, and Kearney 2006, 2008). In particular, many of the routine skills needed for clerical or manufacturing jobs in the middle of the wage distribution can be computerised. In contrast, computer technology complements non-routine tasks performed by executives and professionals at the top of the distribution and neither complements nor substitutes for non-routine tasks done by service workers at the bottom of the distribution. Technological change may, therefore, contribute to a polarisation of the wage distribution: it increases the gap between the top and the middle of the distribution, but decreases the gap between the middle and the bottom (Goos and Manning 2007).

Figure 1.6 presents empirical evidence for Germany to support this hypothesis. In particular, Figure 1.6 plots smoothed log changes in employment shares by occupational

Figure 1.6
Change in employment share by occupational skill percentile in Germany



Note: The figure depicts log changes in male employment shares, where the 3-digit occupations in the data are ranked according to employment-duration weighted median wages, and then aggregated into 100 equally sized groups. We employ locally weighted smoothing regressions with 100 observations and bandwidth 0.8. Calculations are based on a sample of West German male full-time employees aged 21 to 60 extracted from the IAB Employment Sample.

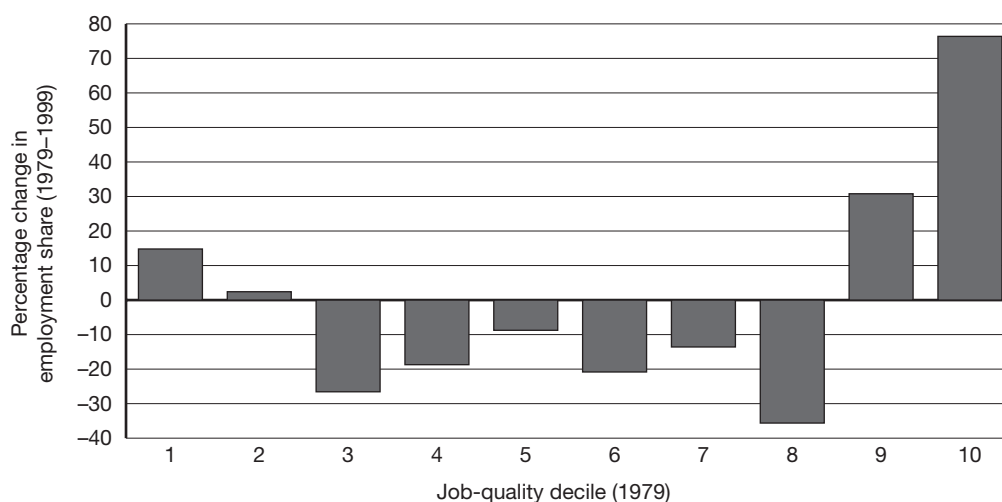
Source: Dustmann, Ludsteck, and Schönberg (2009)

skill percentiles for the periods 1980 to 1990 and 1990 to 2000. It can be seen that the employment shares of occupations at the top of the skill distribution in 1980 experienced the largest growth rates during the 1980s as well as the 1990s, whereas occupations in the middle of the 1980 skill distribution lost ground relative to occupations at the bottom.

Figure 1.7 presents similar evidence on employment polarisation for the UK. In this picture, occupations are divided into ten equally sized groups according to their median wage and employment share in 1979. Over the period 1979 to 1999, the employment share of the two top-quality job deciles grew dramatically, while the employment share of medium-quality jobs declined significantly.

DLS investigate other possible sources for the change in Germany's wage structure. Suppose that the spread between the top and the bottom end of the wage distribution increases according to education and age. If the employment share of more educated and older workers increases over time, then this will mechanically increase wage inequality (see Lemieux 2006 for details). To see how much such changes may have contributed to the increase in wage inequality, DLS reconstruct the counterfactual wage distribution that would be observed had characteristics been kept constant. Table 1.2 shows the evolution of the observed and the predicted inequality at constant composition for the ratio of the 85th to 15th percentile (panel A), the 85th to 50th (panel B), and the 50th to 15th percentile (panel C). If the characteristics of the workers were held the same as in 1980, the gap between the 85th and the 15th percentile would have increased by 0.055 log-points instead of the observed 0.083 log-points. Thus, about one-third of the observed increase in overall wage inequality can be attributed to changes in the composition of the workforce.

Figure 1.7
Change in employment share by job-quality decile in the UK



Note: Employment data are taken from the Labour Force Survey using three-digit occupation codes. Employment changes are taken between 1979 and 1999. Quality deciles are based on three-digit occupation median wages in 1979 taken from the New Earnings Survey. Source: Goos and Manning (2007)

Table 1.2
Observed versus composition-constant changes in male wage inequality in Germany

	1980–1990	1990–2000	1975–2004
		Panel A: Δ 85/15	
observed	0.083	0.107	0.284
1980 X's	0.055	0.085	0.195
		Panel B: Δ 85/50	
observed	0.058	0.051	0.167
1980 X's	0.037	0.023	0.081
		Panel C: Δ 50/15	
observed	0.025	0.056	0.117
1980 X's	0.018	0.061	0.114

Note: In each panel, the first row reports the observed change in the difference between the 85th and 15th (panel A), 85th and 50th (panel B) and the 50th and 15th (panel C) percentiles of the overall wage distribution. The next row shows the change that would have prevailed if the age and education distributions were the same as in 1980. Calculations are based on a sample of West German male full-time employees aged 21 to 60 extracted from the IAB Employment Sample. Source: Dustmann, Ludsteck and Schönberg (2009)

Table 1.2 also illustrates that, in Germany, composition effects play a more important role at the top of the distribution than at the bottom. During the 1980s and 1990s changes in workforce composition can explain up to 55 per cent of the increase in upper-tail inequality (panel B), but at most 28 per cent of the increase at the lower tail (panel C). DLS also investigate whether changes in the age structure can explain some of the increase in inequality, but conclude that this is far less important than changes in educational achievement.

2 Education

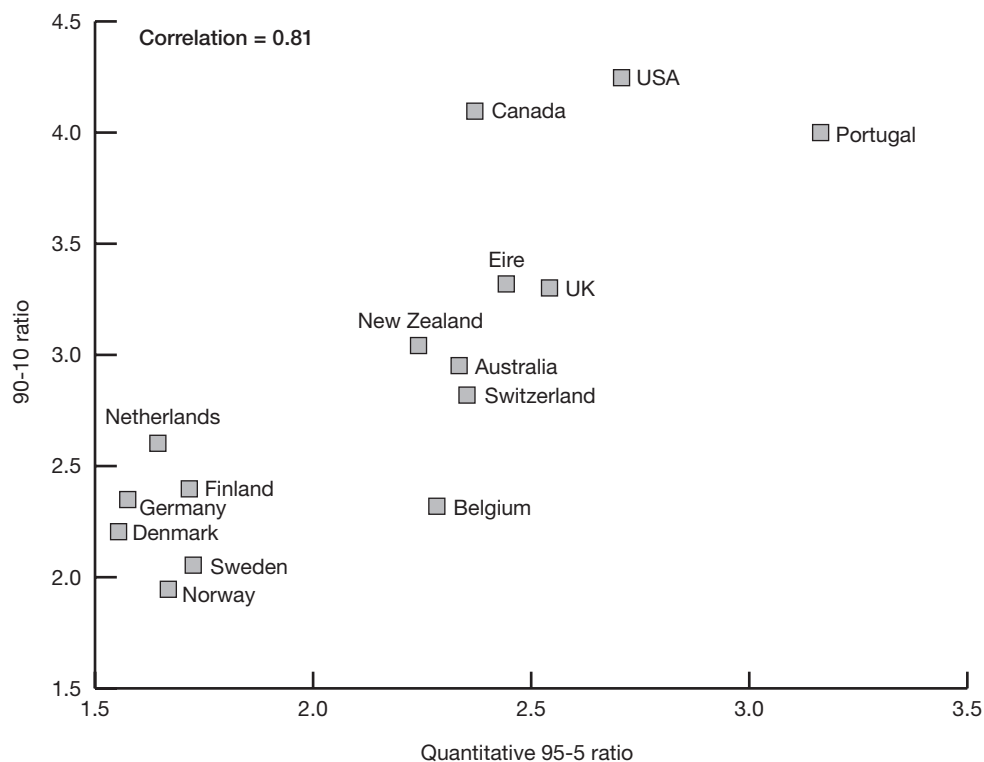
A large body of recent research has made it very clear that a good education and the acquisition of skills have become more important over time for labour market outcomes for individuals – such as higher earning power and entry into better jobs – and that having an appropriately skilled workforce is key to securing improved and sustainable levels of economic growth at a national level. The UK and German governments have, to varying degrees and in different guises, introduced and implemented education policies aimed directly at creating just such a skilled workforce. This chapter discusses some of this original research and considers how the key findings shed light on the way in which education – and education policies – in Germany and the UK are connected to the development of the skills people need to compete in the modern labour market.

Education and skills acquisition: basic skills

Many industrialised countries have a high number of adults with very poor literacy and numeracy skills. This is bad news not only for their own economic and social welfare and for that of their children and communities but for national productivity. These problems are more pronounced in some countries than in others. Numbers from the International Adult Literacy Survey (IALS) of 1995 show countries like the UK and US to have very dense lower tails of weak adult literacy (including among younger adults), whereas other countries like Sweden and Germany have hardly any adults at these levels. One reflection of these differences is the extent of the wage penalty for these low skills in different countries: the wage penalty in the UK, for example, is nearly three times that in Germany (Machin and Vignoles 2005). Moreover, countries with high inequality in basic skills are characterised by higher levels of earnings inequalities in the labour market. Figure 2.1 shows this clearly, where countries with a higher 95-5 differential in numeracy (from the IALS data) are very clearly those with higher 90-10 earnings differentials.

Many commentators suggest that differences in education systems across countries can generate both differences in the basic skills distributions and the returns to such skills (although discussions in Germany have also considered the OECD Programme for International Student Assessment (PISA) data on schoolchildren, where perhaps there are more issues with lower-tail performance than for the adults in the IALS data). The challenge for education policy-makers is clear: how to ensure that the next generation does not suffer from these problems. Many adults, for example, do not have primary-level standards of literacy and numeracy. So if primary school education were better, perhaps most or all children would be able to achieve a higher standard, commensurate with a basic required skill level, by the time they leave primary school at age 11.

Figure 2.1
Inequality in basic skills and earnings inequality



Notes: The 90-10 ratio is the ratio of the 90th to the 10th percentile of the earnings distribution (source, OECD) and the quantitative 95-5 ratio is the ratio of the 95th to the 5th percentile of the numeracy test score distribution from the International Adult Literacy Survey of 1995.

The UK government has made efforts to improve standards of literacy and numeracy in primary schools through national strategies for these subjects. Specifically, all English primary schools since the late 1990s have been required to teach a daily literacy and numeracy hour according to a method closely defined for them in terms of content and pedagogy. These strategies were introduced to a small number of Local Education Authorities before the national roll-out and were not introduced to other countries of the UK. This allows us to compare differences between England and Wales and differences in the timing of implementation (within England) and thus to contrast the effect of these policies on pupil attainment in schools that implemented the policy and in other schools where the policies were not implemented (after controlling for other factors).

These literacy and numeracy programmes have raised primary school achievement in English and mathematics. Table 2.1 shows percentage improvements in Key Stage 2 (age 7–11) English and mathematics for pupils exposed to more years of tuition under the literacy and numeracy hours. The table shows an improvement of between 1.44 and 1.56 percentage points in the probability of achieving Level 4 in Key Stage 2 English per year of exposure to the literacy hour and an analogous effect of the numeracy hour on the probability of achieving Level 4 in Key Stage 2 mathematics of 1.16 to 1.22 percentage points. In Machin and McNally (2008, 2009) the magnitudes of these effects are considered,

squaring up earnings returns to English and mathematics test scores: the earnings gains they imply are sizeable.

Over and above the improvements, it seems that these policies raised achievement in a relatively cost-effective manner since the likely earnings gains are sizeable and the main costs of the programmes were incurred through modest levels of teacher training (and some management training for headteachers). The analysis also finds that the (pilot) projects raised pupil performance by more than the national strategies themselves (most likely because of their smaller-scale, more targeted nature). In terms of the national England to Wales comparison there is evidence that pupils in English schools did better than their Welsh counterparts. Finally, the beneficiaries of the literacy and numeracy hours show improved exam results at the end of their secondary education, although this can be fully explained by the boost in performance seen in the primary school years.

Table 2.1
Estimates of the impact of years of exposure to the literacy/numeracy hours on Key Stage 2 achievement – percentage improvements per year

	Literacy hour and percentage achieving Level 4 Key Stage 2 English (13,890 primary schools, 1995–2002, sample size 95,412)			Numeracy hour and percentage achieving Level 4 Key Stage 2 mathematics (13,869 primary schools, 1995–2003, sample size 108,829)		
	(1)	(2)	(3)	(4)	(5)	(6)
Years of exposure	1.440 (0.450)	1.559 (0.455)	1.560 (0.494)	1.215 (0.277)	1.172 (0.271)	1.158 (0.295)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Control variables	No	Yes	Yes	No	Yes	Yes
School-specific trends (P-Value)	No	No	Yes (P = 0.16)	No	No	Yes (P = 0.16)

Notes: These are percentage effects derived from school-level statistical regressions specified in first-differences, estimated by weighted least squares (where the weights are the change in pupil numbers). Standard errors clustered by school are reported in brackets. Control variables are: % eligible for free school meals; % non-white students; % students with Special Educational Needs, with statement and without statement; pupil-teacher ratio; number of pupils; % teachers who are not fully qualified; ratio of support staff to teachers.

Source: Machin and McNally (2009)

Early tracking and school starting age

In Germany, the PISA results started a debate on various aspects of the educational system. In particular, the system of early tracking, in which students are selected into one of three different types of school at age 10, has recently been criticised for putting at a disadvantage certain groups like immigrants or native Germans from families with a low socio-economic status. The comparative international study by Brunello and Checchi (2006), for example, suggests that the relationship between family background and

educational outcomes is stronger in countries with earlier tracking. Early tracking, as practised in Germany, is usually justified on the grounds that the different school tracks can support children according to their abilities and specific vocational or academic needs.

In Germany, there are in essence three types of secondary school:

- the highest school track (Gymnasium), which prepares students for academic study in a nine-year programme (recently reduced to eight years)
- the middle track (Realschule), which mostly prepares for clerical-type white-collar jobs in a six-year programme
- the lowest track (Hauptschule), a five-year programme, preparing for mostly blue-collar careers.

In this system, described in more detail by Dustmann (2004), the two lower tracks are planned to be followed by a three-year apprenticeship period that also includes some classroom education. The overall efficiency of this system compared with a more comprehensive secondary schooling system – as practised in Britain – is hard to assess. It depends on many factors, such as whether good students benefit from it more than weaker students lose. Gains and losses are hard to measure, however, because they cannot simply be assessed in terms of test scores in school.

Using quasi-experimental research designs allows the tracking system to be evaluated. A 'school-entry age effect' (explained below) is used as a randomly allocated disadvantage to test how disadvantaged students perform in the German tracking system. This test proves important because critics of the tracking system argue that it does not simply select students on the basis of their innate ability, but also on backgrounds, in the sense that it makes it more difficult for students with disadvantaged backgrounds to catch up because they are selected into the lower tracks too early.

In Germany (as well as in the different parts of the UK) school entry age depends on a child's month of birth. Children born prior to the cut-off date enter school at a relatively younger age and children born after the cut-off enter when they are somewhat older. Puhani and Weber (2007) and Mühlenweg and Puhani (2010) show that, for German children, being born in June rather than July (which means a younger school entry age as the cut-off date is 30 June) constitutes a randomly allocated disadvantage in the sense that younger school entrants display lower test scores at the end of Grade 4, when the decision on tracking is made. The research also shows that young school entrants are only two-thirds as likely to attend the highest track as older school entrants. This is a large and statistically significant effect. The comparison is made for students born in June and July (i.e. around the enrolment cut-off) because this creates the largest variation in school entry ages of all combinations of adjacent birth months. Using two adjacent months also minimises the potential bias that could emerge from confounding influences of the season of a child's birth.

The key point of interest for policy-makers is whether differences in school starting age affect the economic and social outcomes of individuals. Following students over time

shows that the randomly allocated disadvantage of being born in June rather than July persists until Grade 10 (that is, for six years) and even beyond. Disadvantaged students remain stuck in the track they were allocated to at age 10 until they reach age 16. Only then, when after Grade 10 the German school system allows greater flexibility to change track, is this entry-age effect on track choice partly mitigated by track upgrading or downgrading. Interestingly, the disadvantaged June-born students are more likely to be upgraded at age 16 and the advantaged July-born students are more likely to be downgraded. The results of the track changes after Grade 10 show that the disadvantaged students still tend to end up in the lower tracks.

For policy, these results clearly show that disadvantaged students get selected into lower tracks holding innate ability constant. Clearly, there should not be any differences in innate ability between June- and July-born students; nevertheless, June-born students are less likely to attend the highest track at age 10. One can easily think of further disadvantages, like certain family backgrounds or language problems of immigrants, which may cause similar lower-track outcomes, even in students who may have the innate ability to attend the highest track. Because these types of disadvantage are empirically hard to separate from innate abilities, this approach to investigating the disadvantage generated by month of birth can be seen as an interesting research design to empirically identify a disadvantage while holding ability constant. Policy-makers should pay more attention to designing mechanisms to learn about students' disadvantages separately from their abilities, especially at the time when the decision is being made on which track they should follow. This may also involve special training of teachers to increase awareness of this problem.

The evidence does not suggest that children should generally enter school later. In fact, *relatively* older (and more mature) students do better than *relatively* younger students. Shifting the school entry age for everybody by the same amount would not change this fact. A simulation in Mühlenweg and Puhani (2010) shows that the financial gains from entering school (and hence the labour market) a year earlier outweigh the losses from obtaining a lower-quality school certificate from a higher-track school. More research would be needed to identify the causal effect of school track attendance on financial outcomes. Another misinterpretation would be to conclude that tracking should be abolished. Indeed, much more information would be needed to answer this question: although tracking may perpetuate a disadvantage, at least for several years, tracking may also have advantages, such as a better-tailored education for students of similar abilities.

Labour market returns to different higher education institutions

While there is much evidence about the financial returns that come from higher education, there is much less evidence about whether the wage return is affected by the quality of institution attended. This has become a very important question in the UK in the light

of government policies and measures to encourage more young people to enter higher education. An analysis of university quality is also important to parents and students as they decide which university to attend. Questions arise as to whether different measures of institutional quality are reflected in labour market outcomes of graduates such as earnings, employment, or occupational positions.

In Hussain, McNally and Telhaj (2009) the wage returns to measures of institutional quality in the UK are investigated. The analysis utilises the Graduate Cohort Studies for 1985, 1990, 1995 and 1999, together with data from the Higher Education Statistics Agency, to obtain information about institutional quality. Emphasis is placed on six measures of quality:

- research assessment exercise (RAE) score
- the faculty–student ratio
- the retention rate
- the total tariff score (which is based on A-levels or other eligible qualifications)
- mean faculty salary
- expenditure per student.

The analysis explores how these variables can be combined to an aggregate proxy for quality. It attempts to control for all other variables that might influence both the quality of institution attended by the graduate and his/her wage. Like all studies in this literature, the analysis relies on an (untestable) assumption that relevant variables have not been omitted.

The key finding is that there is a positive return to attending a higher-quality institution for most of the indicators. Table 2.2 shows percentage wage effects associated with different indicators from the four graduate cohort surveys. The table shows separate effects associated with each indicator. The reported coefficients expressed in percentage terms are from regressions where only one indicator of quality has been included at any one time. Hence the quality indicator needs to be thought of as reflecting the underlying latent quality index. Some quality indicators are more highly correlated with graduate wages than with others. Mean faculty salary displays the weakest relationship and is only statistically different from zero in one year. When using an overall proxy for quality based on a combination of measures, the earnings differential from attending a higher-quality institution is about 6 per cent on average.

The analysis also asks whether it makes a difference if an individual attends an institution in the second, third or fourth quartile of the quality distribution, as compared to an institution in the first (lowest) quartile. Results suggest that, if a student attends an institution in the highest quartile of the RAE score or the retention rate or the total tariff, this leads to higher wages of between 10 and 16 per cent compared with an individual who attends an institution in the lowest quartile. If an individual attends an institution in the second highest quartile of quality, however, the earnings differential is only 5 to 7 per cent compared with the bottom-ranked institutions. It also appears that returns

Table 2.2
Estimated percentage wage effects of university quality indicators from
different graduate cohort surveys

	1985	1990	1995	1999
RAE Score	2.88 (0.86)	3.32 (1.54)	4.28 (1.15)	4.03 (1.24)
Faculty–student ratio	1.69 (0.85)	3.13 (1.34)	2.23 (0.74)	2.99 (1.09)
Retention rate	1.24 (0.98)	1.48 (1.39)	3.77 (0.98)	4.42 (1.14)
Total tariff	3.58 (0.78)	3.82 (0.70)	4.42 (0.93)	5.87 (1.23)
Expenditure per pupil/10,000	2.88 (0.58)	3.56 (1.23)	2.14 (0.64)	4.68 (1.25)
All factors apart from the RAE score	2.36 (1.10)	3.83 (1.71)	4.67 (1.12)	6.46 (1.21)
All factors including the RAE Score	2.68 (0.86)	3.43 (1.59)	3.27 (0.85)	5.30 (1.21)
Sample size	2435	3744	6612	6465

Note: Coefficients reported and standard errors in brackets. All coefficients and standard errors are multiplied by 100. Standard errors are clustered at the institution level. The institution quality measures are normalised to have unit variance. Controls include: the individual's A-level points score; gender; age and age squared; whether mother works; whether father works; whether attended private school; whether non-white; whether father (mother) is educated to degree level, has some higher education, O-levels, number of O-levels; A-levels; dummies for subject of degree at university.

Source: Hussain, McNally and Telhaj (2009)

to institutional quality have increased over time, although within a modest range, as Table 2.2 shows.

Apprenticeship education and training

Over the years, many policy discussions in Germany and the UK have focused on apprenticeship and training systems. While most countries are united in providing a significant part of their post-secondary education in the form of academic university education, they differ widely in the way they offer post-secondary programmes for those seeking a vocational route. Some countries, such as Sweden, France, and Italy, offer such training opportunities in the form of full-time school-based vocational education. In contrast, some other countries run large-scale employer-based apprenticeship schemes that combine on-the-job training with an employer and state-provided education in a school or college.

The best-known example of this type of training system is that of Germany, with nearly two in three individuals in each educational cohort being educated within this scheme. The apprenticeship training system provides an intensive two to three years of training in more than 300 occupations. One particular feature is that the training provided is only to a small extent employer-specific; nevertheless, employers are willing to finance some of the training. Apprentices themselves make a significant contribution by accepting a training contract that pays wages below their productivity. Thus, one apparent advantage of employer-based apprenticeship schemes is that they require less tax-financed training than college-based systems.

But why does the system work well in Germany, but not in the UK and many other countries? It is important to keep in mind that the German system of early tracking, discussed earlier in this chapter, is possibly better adapted to prepare students for entry to apprenticeships: the two lower tracks have led traditionally to blue-collar and white-collar apprenticeship training. But this in itself is not reason enough to explain why training schemes may work better in Germany.

Throughout the 1990s several countries, including the US, the UK, France and Norway, attempted to implement new, or to expand existing, employer-based apprenticeship schemes (see for example Bowers, Sonnet and Bardone 1999 for an overview) – often less successfully than expected. To assess these attempts, and to guide future educational reforms, two related questions need to be answered. First, why are countries like Germany and Austria successful in employer-based apprenticeship training? Second, why have recent attempts to boost apprenticeship programmes in other countries met with mixed success?

In a series of papers, Acemoglu and Pischke (1998, 1999a, 1999b) point out that in an imperfect labour market characterised by wage compression (see also Stevens 1994) firms can increase future profits through training and are therefore willing to provide and finance training. Wage compression means in essence that training increases the productivity of workers to a greater level than their wage, so that – in principle – firms can profit from training their workers. The larger the wage compression, the more training firms are willing to provide in general skills.

Acemoglu and Pischke (1998) argue that Germany is in a high-training and low-turnover equilibrium, characterised by high wage compression, while the US is in a low-training and high-turnover equilibrium, characterised by low wage compression. Wage compression, however, only explains why firms should be willing to pay for some of their workers' training in general skills. It does not explain why workers are willing to accept training contracts at a wage below their productivity. Dustmann and Schönberg (2009) argue that wage compression, although being important to understand why firms are willing to contribute to training, is not the only reason why firm-based training schemes work well in some countries, but less so in others. They argue that commitment to training provision, and not wage compression, is key for apprenticeship programmes to be successful, and that firm-based apprenticeship training works better in Germany than in many other countries because more firms commit to training provision. Commitment can be best thought of as the ability of the firm to convince the worker that the training it promises in the training contract will be delivered. A reason why more firms commit to training in Germany is their ability to hook on to an existing system of institutions and regulations (such as non-governmental sector associations with strong regulatory responsibilities) that are seen by workers as devices to keep firms to their training promises.

In the absence of such devices, and since apprenticeship training takes place within firms, it may not be accountable externally. Training contracts may therefore not be enforceable. Apprenticeship programmes appear to work well if commitment to training provision is widespread, and apprenticeship training is more prominent in Germany than in the US

and the UK because in Germany more firms commit to training provision. This aspect, although discussed in Acemoglu and Pischke (1998, 1999a, 1999b), has not previously been emphasised as a main reason behind the success of employer-based apprenticeships.

Dustmann and Schönberg (2009) have developed a model that builds on the work by Acemoglu and Pischke (1998, 1999a, 1999b), and in which firms have an incentive to finance training because of wage compression. This model has been analysed under two assumptions: commitment to training and no commitment to training. The level of training for both cases has been compared, using parameter values estimated from survey and administrative data. The intensity of training would be considerably lower under the 'no commitment' assumption. Overall, training levels for the 'no commitment' scenario are at most 50 per cent of those under 'commitment', and may be as low as 3 per cent. This supports the hypothesis that commitment to training provision, and not wage compression, is the key to apprenticeship programmes working well.

Attempts to create employer-based apprenticeship training schemes in countries like the UK have overlooked the importance of commitment and invested in less crucial aspects, like apprenticeship wages. The UK has set a particularly ambitious target for employer-based apprenticeship training: by 2010, 35 per cent of 16-year-olds are to be trained within apprenticeship schemes. With current enrolment rates of about 13 per cent, the UK is, so far, well short of this target, and the low quality of apprenticeship training has been and remains a prime concern (for example Ryan and Unwin 2001; Ryan, Gospel and Lewis 2007; Adult Learning Inspectorate 2006).

Attempts to revitalise and rebrand apprenticeship training in the UK have so far met with, at best, mixed success. Policy-makers have tended to concentrate on providing incentives for workers to enrol on training programmes, mostly through subsidising apprentices' wages. The focus has not been on devising methods of ensuring commitment from employers. Commitment to training provision may be difficult to achieve, and Dustmann and Schönberg (2009) provide evidence that the UK may well find it more difficult than Germany. Countries that would like to expand structured training opportunities for the less academically inclined may want to invest in school-based vocational education instead, as this mitigates the commitment problem. Canada and the state of California, among others, have opted for this approach.

The success of apprenticeship systems in Germany and the UK

Work by Ryan, Wagner, Backes-Gellner and Teuber (2009) is examining reasons why more apprenticeship training takes place in Germany and Switzerland than in the UK. The work pays particular attention to financial factors; the division of the costs of training between employers, apprentices, and taxpayers; and the influence of dispersed corporate ownership on training volume.

The first main hypothesis is that apprentices' pay is higher in the UK than in the other two countries as a result of traditional bargaining outcomes and low trust in the quality of training programmes. This is in line with the hypothesis in Dustmann and Schönberg (2009) that low (or no) commitment will lead potential apprentices not to accept wages below their productivity. The result is higher training costs to employers and greater demand for training places among young people in the UK than in Germany and Switzerland. Work by Ryan, Wagner, Backes-Gellner and Teuber (2009) suggests, however, that the principal distinction is that between Germany and the UK on the one side, and Switzerland on the other. Trade unions have regularly been able to raise the relative pay of apprentices in Germany, while the weakening of unionism in the UK has been associated with a fall in relative pay. In Switzerland, by contrast, trade unions have had neither the inclination nor the power to affect the low pay regime that has traditionally characterised apprenticeships. Moreover, most employers in both the industry sectors that provide evidence for the study – metalworking and retailing – in all three countries deny that their decisions about the quantity and quality of apprenticeships on offer are significantly influenced, whether actually or hypothetically, by apprentice pay – ironically for opposing reasons: in metalworking, because training is so expensive, and in retailing because it is so cheap.

The second main hypothesis is that the greater incidence of dispersed ownership (shareholder capitalism) in the UK than in Germany and Switzerland (stakeholder capitalism) is associated with lower levels of training in general. Allied to this is the idea that short-term business planning, which means that training volume is more sensitive to external financial pressures, is more prevalent in the UK than in the other two countries. There is evidence of such effects, but they appear to play a secondary role, and even a declining one, relative to technological factors (skill requirements) and labour market structure (the intensity of competition for skilled labour).

Policy implications

The findings in this chapter are relevant to a number of contemporary policy issues connected to improving education and skill levels. Overall, they suggest that policy can be important to generate better levels of education and skills at all stages and all levels.

Ensuring that the current generation of children acquire good enough basic skills (literacy and numeracy but also ICT skills) is vital for countries to achieve improved and sustainable growth and economic prosperity. To maintain global competitiveness it is also the case that improving the quality of universities is essential to generate the skills necessary to compete effectively in the global marketplace.

In the UK and German context, the question of apprenticeships and how they can work best is also critical. The German apprenticeship system is perhaps the most important ingredient for the sustained competitiveness and strength of the German economy. A highly competitive manufacturing sector depends crucially on a skilled and versatile

workforce, which the German system has been successful in producing. Not surprisingly, other countries have attempted to implement similar training schemes, with mixed success. The research conducted as part of this csge programme provides an answer to why these attempts have been less successful. The commitment of employers, facilitated through institutions and regulations, is the key to understanding why the apprenticeship system works well in Germany, but less so in countries like the UK.

3 Political Economy

Under what political and economic conditions are *efficiency* and *equity* jointly sustainable in an economy with low barriers to trade and capital movements? In different ways both the UK and the German economies are efficient – leaving the current global financial crisis out of the discussion. But the UK has been unsuccessful in producing equity and Germany has been more successful, although in the last decade and a half the gap between median- and low-income workers in Germany has substantially increased, coinciding with a decline of the collective bargaining coverage of low-income workers and their labour market protection. So the big question is: why did the German political economic coalition (in the broad sense) of the 1980s, which underwrote protection for low-income workers, give way to a new coalition that ceased to do so? One of the most interesting aspects of the answer is that unions are as central to the new coalition as they were to the old.

The role played by the political system in structuring and restructuring the German and UK political economies and the co-evolution of political systems with economic institutions is laid out in this chapter. These findings complement the main findings in Chapter 1 and Chapter 2. From Chapter 1 comes a key finding that a decline in unionisation, especially among less skilled workers in Germany post-1990, explains the widening of the 50-15 earnings ratio, a ratio that had remained constant during the 1980s. In turn, this chapter explains:

- how the complex pressures on the German economy through the 1990s and onwards led to a shift in the political and industrial coalitions which had until then solidly underpinned support for lower-income groups;
- how these pressures were exacerbated by the nature of the German macro-economic regime compared with those of the UK and the US;
- the political and economic reasons for the difference;
- why this situation was consistent with a modernised Modell Deutschland in the advanced and highly successful export sectors of the German economy.

By contrast, the significant weakening of trade unions in the UK in the 1980s is explained by the need for flexible labour markets to underpin competitiveness and a quite different set of political institutions. And the findings from Chapter 2 are set in a political-economic perspective, showing why some of the characteristics for successful apprenticeship training – greater co-ordination of businesses, a higher demand for skills, and the block-shareholding of businesses – are more likely to hold for German than for UK firms.

Feasible coalitions and distribution in Germany and the UK

The German landscape has changed in the past decade in significant ways, both in terms of the operation of the labour market and the political and industrial coalitions that support it. A little background information is necessary to understand the system. Lijphart (1984) classified the political systems of advanced countries into two types, consensus and competitive:

- Consensus systems have proportional representation in their electoral systems, multiple 'representative' political parties, coalition governments and an involvement of interest groups in policy-making; parties are representative in that interest groups close to the party have defined roles in party policy-making.
- Competitive systems have majoritarian, first-past-the-post elections, typically two major 'leadership' parties, one-party government and with interest groups kept in the lobby; parties are leadership parties in that the leader is typically given power to make policy – and parties are often defined by their leader in the eyes of the electorate.

Varieties of Capitalism (Hall and Soskice 2001) classifies advanced countries into Co-ordinated Market Economies (CME) and Liberal Market Economies (LME). The ideal-type CME has strong associations representing business and labour; an emphasis on vocational training with transferable occupational and company-specific skills; co-determination within companies; collective bargaining co-ordinated across industries; block share-holders and patient (long-term) capital. The ideal-type LME emphasises flexible labour markets; unilateral management control; general education and skills; an absence of social partners; and diffused shareholding. There is a more or less perfect match between consensus political systems and CMEs and between competitive political systems and LMEs.

Germany, at least very broadly, was a CME and also a consensus polity at the start of the period covered by this research and certainly in the 1980s; but, while Germany is probably still best described as a CME with a consensus political system today, there are significant changes in the way both its capitalist and its political system work. The UK is still an LME with a competitive political system: if anything it has become more so.

Although consensus politics slows down reform because it is negotiated out by the different interests involved, research suggests that a consensus approach to politics is unlikely to change in a major way. The only change in a CME from consensus proportional representation (PR) to competitive majoritarian since the general adoption of PR in the first quarter of the twentieth century has been in Italy; this was associated with the exceptional circumstances of the break-up of the Christian Democracy party.

An important implication of the consensus political system in general and PR in particular is the centre-left bias of the system. The high proportion of centre-left government

coalitions in consensus-PR systems (nearly 75 per cent of government years in the second half of the twentieth century) stems from the need nearly always to form coalitions and the preference of centrist voters for centre-left coalitions that could impose high taxes on higher-income groups. Middle-income groups in CMEs – with relatively compressed 5:1 earnings ratios – tend to have common interests with lower-income groups over education and health (Iversen and Soskice 2006).

Centre-left coalitions are reinforced by the fact that parties in PR consensus systems are representative, with close relations to economic groupings of voters cemented by institutions representing those voters and with a voice in the relevant political party. This has been particularly the case in CMEs, where associational activity is important. An implication is that parties of the right cannot easily move to the centre of the political spectrum without losing voters: if these parties could move to the centre and commit to centrist policies, centrist voters could have centrist coalitions.

But the centre-left bias works out very differently in CMEs in continental Europe than in Scandinavia. Manow (2009) shows that, in Scandinavia, coalitions have been between Social Democratic parties and agrarian parties, often with tacit centrist party support for minority governments. But in CMEs in continental Europe, power has been to a major degree shared between Christian Democratic parties and Social Democratic parties. Centrist voters are prepared to vote Christian Democratic or to vote for centrist parties which form coalitions with Christian Democratic parties because Christian Democratic parties are based on economic groups across the spectrum, with social as well as business wings. The internal compromise position within Christian Democratic parties thus accepts taxing higher-income earners and redistributing to middle- and lower-income voters. This in turn requires Social Democratic parties to be not too far to the left of this position if they are to be attractive coalition partners for centrist parties. And this in turn explains the contributory basis to social security in continental Europe (modifying redistribution) by comparison with tax-financed social security in Scandinavia.

The traditionally different structure of the provision of social services and education is also explained by a position of internal compromise. In effect the state provision of social services in Scandinavia, through a high proportion of female public-sector employment and the absence of tax subsidies for homeworkers, represents an egalitarian solution compared to the greater emphasis in continental Europe of home and charitable provision. Similarly, the split provision of secondary education separates children from different class backgrounds on the continent in a way that the single school system in Scandinavia does not. Despite the more inegalitarian nature of welfare states on the continent, both continental and Scandinavian welfare states have traditionally been more effective than those in LMEs.

These broad results are supported by three factors:

- Unions were linked to Social Democratic and to a lesser extent Christian Democratic parties, so that there was no political coalition available to attack the institutional nature of the industrial relations system.

- The interests of larger and also more advanced businesses, especially in manufacturing, in the CME environment reinforced this: needing a co-operative and skilled workforce, large companies in particular have traditionally supported representative employee bodies in which the long-term interests of employees – whose skills give them power within the company – can be supported in exchange for co-operation and peer-monitoring. Thus a major sector of business has had an interest in an insurance-based welfare state and an effective industry-wide industrial relations system, including industry bargaining over wages. This extends too to the broad system of vocational training which provides a large proportion of the workforce with relatively occupational-specific skills.
- Middle-income workers with occupational and often company-specific skills support an insurance-based welfare state, since relatively long tenure means that if jobs are lost it takes time to find a new appropriate one. This is particularly the case for older workers; hence median voters would not be in favour of dismantling the welfare state.

Broadly speaking, until reunification in 1990, the German system provided relatively good jobs with high security for most workers in manufacturing, the public sector and the higher-skill parts of the service sector; somewhat less good jobs in the more traditionally low-skill services, but still with some security; and a relatively high proportion of women were care-workers at home. Employment problems were taken care of by early retirement, and social security contributions paid for this. The bifurcated education and vocational training systems channelled children into different employment paths. This set-up was supported by an implicit and sometimes explicit political coalition of social and christian democracy; by a coalition of employer associations and unions; and by supportive skilled workers and middle-income voters. Although the distribution of income was far from equal it could be described as a solidaristic compromise. It is this broad compromise which has begun partially to unravel in the past decade.

The relation between a liberal market economy and a majoritarian polity was and has remained more clear cut in the UK. Majoritarian systems almost inevitably involve two major parties (centre-left and centre-right) competing for the median vote. There is a centre-right bias in governments:

- The distribution of educational competences is sharply unequal at the lower end of the spectrum (see, for example, Figure 2.1 in Chapter 2), so that middle-class electors see the welfare state as directed towards these groups.
- Given general skills and a more flexible mid-career labour market, there is less concern among middle-class voters for an insurance-based welfare state to maintain living standards in the event of unemployment.
- Middle-class voters are more concerned that a centre-left party in power will raise taxes on the middle classes to spend on the welfare state, than they are concerned that a Conservative party will move right and cut taxes and public expenditure. It follows that middle-class voters would only be prepared to vote Labour with a leader such as Tony Blair, whom they believed had the interest of the middle class

at heart. This is reinforced by low voting participation rates among lower-income groups. In addition, business is in general hostile to the welfare state; and weakened unions have had little influence.

Policy stances in the UK have had three major characteristics over the past two decades:

- Labour policies have not been significantly more left-wing than Conservative policies over this period; instead the major appeal of both parties has been to middle-income voters.
- Because of the need to appeal to middle-income voters, and because of their perception of the welfare state as geared to lower-income groups often outside the labour market, welfare state policy and reform have focused on welfare-to-work.
- Neither Conservative nor Labour policies have been of comfort to the unions. Structural economic policy has been driven by the goal of flexible labour markets.

Germany's changing political economy in the last decade

One picture of Germany over the past decade is that it has moved from a solidaristic, co-ordinated market economy with stakeholder corporate governance and a consensus polity to an individualistic, liberal market economy with shareholder values enforcing short-term profitability and a competitive polity. Carlin and Soskice (2009) and Hancké and Johnston (2009) show this vision to be very wide of the mark. Instead, a hybrid has emerged: a successful, modern, export-led economy operating on co-ordinated market economy lines, together with a flexible labour market for the low-skills sector. Behind this emergence has been an important shift of both political and industrial coalitions, and some modification of the rules of the political game.

The prolonged economic slowdown in Germany since the mid-1990s has played a large part in precipitating the strategic policy shift to bottom-end labour market flexibility. It has also stimulated the industrial and political coalitional realignments that made the shift possible. In addition, this slowdown was maintained directly and indirectly by the nature of the German macroeconomic demand-management regime, contrasting with recovery in the UK and US recovery in the post-2001 period. Moreover, while co-ordinated wage restraint by unions was beneficial for exports, it appears to have had adverse macroeconomic effects in Germany.

Since the mid-1990s, after the initial boom caused by reunification, both monetary and fiscal policy have operated conservatively. This reflected the need to fulfil the conditions of the Treaty of Maastricht through restraining public expenditure increases; and the deflationary impact of the rise in the D-Mark in 1994 was augmented by cuts in employment as companies attempted to rebuild profitability from the low levels of the 1980s to the levels needed to finance new investment in a global financial market. From 1999 onwards, membership of the European Monetary Union (EMU) meant that the

Bundesbank had no control over interest rates; and fiscal policy was not used in a counter-cyclical way in 2001–03 to counter the recession of that period as it was in the US and UK.

Fiscal conservatism is common to advanced countries with powerful, but not fully coordinated, wage- and price-setters. This is now a widely held view in monetary policy. Basically, the argument is that powerful wage-setters will adopt more moderate wage demands if they believe that fiscal policy is unlikely to respond to increased unemployment. If there are many wage-setters the fiscal stance of the government is irrelevant to the behaviour of the individual wage-setter because the small wage-setter has no influence on aggregate unemployment: hence the UK and US can adopt a discretionary fiscal policy. Or if there is a (more or less) encompassing wage-setter, it will know it has a dominant influence on unemployment and will therefore have a perfect trade-off between wages and unemployment (Soskice and Iversen, 2000; Soskice, 2008). Thus, it is not accidental that Germany has had a conservative position on fiscal policy.

This conservatism reinforces the operation of wage behaviour in Germany. Because German fiscal policy is unresponsive to unemployment, large unions are highly responsive to the employment concerns of their members. The large wage-leading unions are most powerfully represented in large companies in the export sector; the major exception to this is *ver.di*, representing the large public and services sector, whose key members are skilled workers and technicians with relatively long tenure. These unions have adopted wage restraint, carefully calibrated against world price developments to boost exports and maintain company profitability so that their key members' employment is not at risk.

However, this wage restraint has, counter-intuitively, increased deflationary pressures in the German economy. This is because the demand-boosting effects on employment from exports – which have benefited union members – are more than counterbalanced by the adverse effect on domestic demand, given that wage increases are broadly similar across the economy with its high collective-bargaining coverage. The price elasticity effect on exports is less than the income effect of the real wage restraint on domestic demand. This contrasts with the small open CMEs of Scandinavia, Belgium, the Netherlands or Austria, which have all enjoyed relatively low unemployment, and where positive export effects outweigh negative domestic-demand effects.

Slow growth and rising unemployment, together with the classic resort to early retirement, put pressure on the public-sector deficit in Germany. Successive German finance ministers, with the exception of Oskar Lafontaine (1998-99), took very seriously the rules of the EMU Stability and Growth Pact that the deficit should not rise above 3 per cent of GDP. This led to fierce debate about changing early retirement rules, the pensions system and the system of unemployment benefits. The vigour of the debates was precisely because the polity was consensus-based and wide political agreement to change was required. And they had an unexpected and unwelcome economic consequence. Those who were employed became anxious about the future value of both unemployment benefits and pensions, increasing their savings to compensate. This magnified the deflationary pressures. Germany got caught in a slow-growth, rising-unemployment equilibrium.

Unemployment can be pushed up by a slow growth in demand. All this requires, assuming economies have to be on real-wage bargaining schedules or upward-sloping labour supply curves, is that the real exchange rate depreciates, permitting the relative decline in real wages. A parallel but opposite course was taken by the UK, where real exchange rate appreciation allowed real wages to rise and unemployment to fall. The German system (like the Japanese and for similar reasons, aside from the banking sector) experienced a combination of slow growth, strong export performance, high household savings levels and rising unemployment.

Restructuring the advanced sector

Strong export performance was not only the result of wage restraint in the export sector. Major structural changes took place within companies in the advanced sectors of the economy. What is interesting is that the 'institutions' of the co-ordinated market economy have all changed significantly yet retain recognisable forms and functions:

- the consensus-based organisation of companies, in which the works council plays an important role in co-determination;
- the vocational training system, and the higher levels of vocational education in German higher education, including Fachhochschulen and many university departments, especially in the Technical Universities;
- the internal-external system of wage determination, and the role played by trade unions and employer associations;
- the patient capital system of corporate governance.

While some caution against over-generalisation is needed, the broad changes are:

- further alignment of the interests of companies and their skilled workforce while reducing the number of semi-skilled workers, often by outsourcing;
- integrating the leader of the works council into company decision-making;
- concentrating on ensuring long-term, risk-corrected, rates of return required by world financial markets, without moving to Anglo-Saxon methods of short-term management;
- a more company-oriented view of the benefits of vocational training while continuing to support the system, for example tailoring specialisations in the last two years of an apprenticeship to company needs but concentrating more on relevant general skills in the first two.

Interestingly, changes have been brought about by co-operation between works councils and management. Given that the average-skilled worker is looking for long-term tenure, the interest of the works council has been to help management meet long-term financial goals. This has often been against the interests of less-skilled employees. And thus there

has been a corresponding divergence of interests between works councils in the advanced sector, representing skilled workers, and trade unions representing semi-skilled as well.

But while companies have if anything got closer to their works councils, large companies still remain strong supporters of trade unions. While they wish to expand the range of agreements with their works council, they are generally opposed to the idea of getting rid of industry bargaining. For companies do not at the end of the day want wage levels bargained out on the basis of individual company profits, which would lead to lower returns on investments and leave them vulnerable to the threat of industrial action at the company or plant level. Behind the continuing relation between large companies and employer associations, on the one hand, and trade unions on the other, is the fact that unions themselves have shifted to giving more power within the union to works council chairs in the large companies. This power shift within trade unions is important in understanding the new coalitional structures.

Reshaping the welfare system in Germany

The bulk of rising unemployment in Germany fell on less-skilled and less-educated workers. It is generally true that these workers bear the brunt of labour market dislocations, arguably because employers have less incentive to develop company-specific skills in them. But in CMEs this effect is magnified institutionally, for skilled workers are core union members and in effect median voters. Especially in larger and more advanced companies, which depend heavily on a skilled co-operative workforce, the jobs and tenure of these workers are increasingly protected by works council rules, and management is usually happy with this result.

Unemployment has risen to quite unaccustomed levels, standing at 8.6 per cent in March 2009 according to figures from the German Federal Labour Office – the unemployment rate in West Germany was lower than that of the US for almost all the period from the mid-1950s to 1990. In the absence of the strong export-led growth of much of that period, the existing strategy of using early retirement to keep down unemployment is largely incompatible with Germany's desire for fiscal restraint. Whatever one may think about the logic of conservative German fiscal policy, it is central to understanding the strategic switch initiated by the Social Democratic Party (SPD) and, in effect, supported by the Christian Democratic Union (CDU).

The strategic switch was to cut back on pensions and unemployment benefits, as well as on health expenditure. Among other things, standard unemployment benefits were to last for a shorter period, there were to be more restrictive conditions on jobs that could be rejected by benefit recipients, and claimants would be moved into means-tested assistance after a period. More dramatically, a major move towards flexibility at the low end of the labour market began, consisting of low-paid 'mini-jobs' (paying less than €400 per month or requiring less than 50 days' work per year). What is interesting is how it was

possible to push these complex measures through in a consensus polity with a centre-left bias.

Reconfiguring industrial and political coalitions

This strategic policy shift required multiple changes in the German polity. It required a shift in the industrial coalition between unions and employer associations as well as a shift in the broad political coalition. Since both coalitional shifts required – or were premised on – changes in the underlying goals of the participants, it implied changes in those participants. The research is based on Carlin and Soskice (2009) and Hancké and Johnston (2009, forthcoming).

A new industrial coalition has slowly been emerging, based on unions (with the leaders of the major works councils being of particular importance), large companies and employer associations in the export sector. No one is technically excluded by such ‘social partnerships’, but in practice less-skilled and less-educated workers, small companies, the Handwerk sector (small, high-quality artisan producers), and the eastern Länder are. This new industrial coalition if anything gains by the development of flexible labour markets at the low end of the economy: at least in principle it reduces the cost of less-skilled sheltered sector services, thus raising the real earnings of skilled workers. Moreover, since most longer-term unemployed workers are low-skilled, skilled workers are unlikely to fall foul of the welfare reforms.

The series of reforms launched by Gerhard Schröder in 2003 and known as Agenda 2010 required the SPD to move rightwards along the political spectrum, and – before the Grand Coalition formed in 2005 – to carry the Greens with them. Although it did not technically require CDU and Christian Social Union (CSU) votes in the Bundestag, it would have been difficult to push the new strategy through in the face of stiff opposition; and in both the SPD and the CDU, and even more in the CSU, there was an important left or social wing. The same was true of the Green party. The reforms also required Bundesrat approval. Such major party shifts are very difficult without changing the nature of the party. Indeed, although Schröder got the majority of the SPD to support him, it led to a fracture of the party, and contributed to the formation of the Linkspartei as an electoral vacuum developed on the left and some of those on the left of the SPD moved out. The SPD is now identified as a more centrist party with a substantial decline in electoral support while electoral support for the Linkspartei has grown to double figures: very crudely, and allowing for continuing fluctuations, the SPD now represents about 25 per cent of the electorate and the Linkspartei 15 per cent.

The shifts in the CDU and the CSU are if anything more complicated. Because there is no ‘left-wing’ home for CDU and CSU social-wing politicians – they obviously cannot move to the Linkspartei – the tensions within the Union are greater. The free market liberal wing of the CDU has become less powerful; the new leadership of the CSU gives greater weight

to its social wing and Angela Merkel as leader has become a moderator across factions within the CDU and between the CDU and the CSU.

From a UK perspective, the basket of reforms originally in Agenda 2010 should have been quite acceptable to the 'middle-class' voter or skilled worker. Why then has it been so evidently difficult in Germany to construct a balanced political coalition around them? What they do is to move Germany from a solidaristic society to a more segmented society: put crudely, it may seem a little surprising that the protected two-thirds at the top of the segmented society should not be happy with the increased real incomes which come from, in effect, withdrawing protection from the bottom third.

The difficulty can possibly be explained by two factors. First, research on the political institutions of a consensus polity underlines the notion of a representative party in which different social groups (or their political representatives) have an organisational right to be heard. Schröder upset this balance in moving the centre of gravity of the SPD to the right. And, as previously explained, the CDU has had major difficulties in following suit as its left-leaning wing has no other potential political home.

Second, research – on the German production regime – on the nature of skills in German labour markets shows that highly skilled workers with long-tenure employment may be nervous about unemployment because of the length of time they think it will take to find appropriate alternative employment, even though the probability of losing their job may be low; and the older they are the greater their concern. Thus, even though they are well protected by their works council, the previous guarantee of adequate unemployment benefits for an adequate length of time and early retirement for older workers was of great importance. Indeed, so strong was the pressure inside the CDU and CSU that the Grand Coalition modified the rules on the duration of benefits and on early retirement.

Bringing together the pieces

The research findings outlined above can help shed light on some of the questions explored in Chapters 1 and 2 of this volume. In Chapter 1, the cause of the rise in the 50-10 earnings differential in Germany over the past decade was identified as stemming from the decline of unionisation in Germany, and more generally the winding back of institutional protection, especially at the lower end of the economy. This lessening of union influence can be seen as a response to the infeasibility of the previous solidaristic, export-led and early retirement model, the infeasibility of which only emerged clearly with the decline of European growth in the 1990s after German unification. The depressive effects of real wage restraint in Germany (but not the smaller countries of Europe) and the maintenance of a conservative fiscal policy (unlike the UK and the US) were also factors. Looking back at the 1980s in Germany, trade unions, integrated with business in a strong vocational training system, were part of the solution, not the problem. This is in contrast to the UK during that period, when the Conservative government's attack on

trade unions, designed to force business and its largely semi-skilled workforce to become more competitive in a world characterised by skill-biased technical change, effectively reduced trade unions to bit players in the skills development of the workforce.

The education research in Chapter 2 identified characteristics of German private-sector businesses that help create a climate in which apprenticeships can flourish. These characteristics can be summed up as: the ability of business to co-operate; the maintenance of patient capital; and a continued demand for a depth of skills in workers. As explained above, the advanced sector in Germany has continued to drive Germany's high value-added export success along classical German lines, specialising in markets in which success depends on a skilled and co-operative workforce, with company-industry technologies and both industry/occupational and related company-specific skills. This requires blockholder share ownership capable of both self-evaluation and a long-term perspective. In addition, companies have a strong incentive in a range of areas (technology transmission and innovation systems, and collective bargaining) to retain close relationships with other companies and with business and employer associations. This explains why German companies appear still to display the characteristics the research in Chapter 2 identifies as central to German success in apprenticeships.

UK companies share few of these characteristics. Their comparative advantages (in high value-added sectors) are in markets that require high risk-taking, the ability to draw in and, if necessary, push out employees with specific skills, and the freedom to structure rewards without external interference. The incentive structure for top managers in such companies is influenced by diversified shareholders, who pull out if they are concerned about inadequate performance. Add to this the fact that UK companies in lower value-added markets are typically concerned about low costs and you have a British business environment that has few of the characteristics needed for an effective apprenticeship system. As for the question of minimum wages, it is not difficult to see why minimum wages fit well with governmental capacity in the UK. It is because they can be imposed directly by government and do not require business co-operation or commitment. Though not so immediately easy to see, minimum wages also have an important political function for a Labour government in signalling to party activists that it is concerned to reduce poverty – although even here there is a silver lining for the middle classes as their children work their way through tertiary education.

Conversely, a minimum wage sits uneasily in environments dominated by collective bargaining as in many northern European countries. Indeed Germany is the only northern European economy with extensive collective bargaining that has (and only very recently) passed minimum wage legislation, albeit only in a few sectors. But even here the legislation requires both the employer association and union in a sector to apply to impose 'minimum wages' on a sector. In effect, a collectively agreed minimum wage is extended to all companies in a sector whether or not they are members of the sectoral employment association. Thus it is a very German form of minimum wage.

Policy conclusions on sustainability

Of the world's large economies, Germany has long been closest to showing how equity could be complementary to efficiency rather than traded off against it. Core in Germany to that complementarity, and central to this research programme, is a vocational training system that both raises productivity and safeguards real wages and employment tenure. The success of the German apprenticeship system depends on a complex web of political and economic institutions that ultimately generate commitment from businesses and confidence among apprentices. And it is the absence of such an institutional web that prevents effective apprenticeships developing in the UK.

But in the past decade and a half, Germany has in effect discarded the system as it operated for those at the bottom of the labour market, by deregulating and deunionising that part of the market. Moreover, since acceptance into private-sector apprenticeships requires good behaviour and diligence in schools, it is at least tempting to link the contrast between the relatively high IALS scores on literacy and numeracy of less-educated German adults, and PISA scores, with a decline in apprenticeships. Since educational performance is positively correlated with family income, it is not difficult to see this as a vicious circle for less advantaged families.

The genesis of deregulation and deunionisation in Germany has stemmed from two factors: sizeable inflows since 1990 into the West German labour market from the former Communist states, none of whom passed through the German vocational training system; and negative external demand shocks combined with the absence of compensating drivers of domestic demand. This is of course part of a much wider problem that Germany and Japan have generated for the world economy by excess savings.

The most straightforward way to reverse this policy direction is through public-sector provision of a wide range of social services along Scandinavian lines, and the creation of flexible employment opportunities for women. If these jobs are sufficiently flexible, this will also raise earnings in low-paid sectors, such as retailing.

Aside from the fact that Germany is likely to need a strong driver of domestic demand during a prolonged period in which demand for exports of capital goods will remain sluggish, an expansion of public-sector employment will require an expansion of apprenticeships. So long as these are made contingent on appropriate school performance this can act as a catalyst to raising school standards.

The most important question is whether there is a restructuring of the current political and industrial coalition that will support such changes. There are three reasons for thinking that there is. First, there is now a large potential workforce and electorate of younger educated women who want opportunities to move in and out of the labour force with some guarantees of continuing good employment; this has proved difficult for the private sector to provide in Germany, and the public sector fulfils this function well in Scandinavia – explaining in part the higher Scandinavian reproduction rate. Both the SPD and the CDU

are beginning to compete for this expanding section of the electorate. Second, if skilled male industrial workers become more worried about their jobs, this offers in effect additional social security if it enables their wives to earn reasonable incomes. And this will be a powerful voice in the key unions in the industrial coalition. Finally, the SPD in particular has been badly damaged by the new coalitional structures of the last decade (despite the central role of Schröder in their formation). This offers a way of recapturing support from the Linkspartei.

4 Conclusions

This csge research programme set out to investigate the evolution of economic inequalities and their drivers along one fundamental research and policy question: Is there necessarily a trade-off between efficiency and social justice in a world in which barriers to trade and capital movements are low? Or is it possible to imagine policies that allow high efficiency and social justice in a sustainable model? The research outputs were organised into three areas: earnings inequality; education; and political economy.

Research on the evolution of the wage structure in Germany shows that rising wage inequality is a phenomenon not limited to economies such as the UK or the US. The widening of the wage structure at the lower end of the distribution was mainly driven by episodic events such as institutional change, events that occurred during the 1980s in the UK and the US but one decade later in Germany. The evidence provided supports further the hypothesis that skill-biased technical change has an asymmetric impact on the wage distribution: while it increases inequality above the middle of the wage distribution, it compresses wages below the middle. The view that such technical changes have been pervasive in affecting both labour market inequalities and the demand and supply for more educated workers is also reinforced. Thus, if this 'common technological trends' story holds, the rise in inequality at the bottom of the wage structure during the 1990s in Germany should slow down over the next years, in a similar way to that already observed in the UK and the US.

Policy is important to generate better levels of education and skills throughout the education distribution and at different phases of the education life cycle. More specifically, ensuring the current generation of children acquire sufficient basic skills (literacy and numeracy but also ICT skills) is vital for countries to achieve improved and sustainable growth and economic prosperity in the future. Improved university quality is key to securing productivity by generating skills necessary to compete effectively in the global marketplace. The question of how to best organise apprenticeship training is also critical. The commitment of firms, facilitated through institutions and regulations, contributes to explaining why the apprenticeship system currently works better in Germany than in the UK.

The political and industrial/economic coalitions differ in Germany and the UK. The German political economic system 'fits' better with a conservative macro regime than the UK system. The export-led growth, early retirement German model became unfeasible in the 1990s after reunification. The advanced sector of the German economy continues to be based on co-determination, vocational training, and patient capital, although these elements have all been modernised. The German political system, but not the British (or the American), was constrained to adopt structural change at the low end of labour markets in response to adverse external shocks. The generally perceived need to do this led both Social Democrats and Christian Democrats to engage in coalitional changes.

The restructuring has been along relatively consensus-based lines with a coalition of skilled workers and export-oriented business. This coalition 'excluded' low-skilled workers by creating low-level flexible labour markets from which unions in effect pulled out. The previously egalitarian coalition in Germany was fractured, and this is reflected in changes in the political landscape, including the shift of the Social Democrats to the centre and the creation of the Linkspartei.

It should be clear that there is no single optimal set of policy interventions to achieve efficiency as well as social justice, but that policies implemented in different countries depend on the specific preferences of a society. Moreover, as was highlighted by Chapter 3 in this report, political and industrial coalitions may change in response to changes of the general economic environment. However, as the results from Chapter 2 on education show, policy interventions can be used effectively to improve both the productivity of the economy as well as social justice. In order to be able to monitor the achievement of policy goals it is important that policy-makers provide the fundamental structures that enable researchers to analyse and explain the development of the economy. At the same time it is evident that the fundamental trade-off between efficiency and equality can, under the right circumstances, be addressed within the policy setting remit of different governments.

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Programme Structure and Participants

This research programme provides comparative political and economic analysis of evolving labour markets in the UK and Germany, with close attention paid to the inter-related areas of education and training systems, inequality and migration, and to the changing institutional frameworks. The output of the programme is large, and includes research papers, journal publications and PhD theses; young researchers have been involved in this research. Some of the output has already received significant attention in the media.

The past 30 years have seen very marked shifts in the nature of the labour markets of many advanced countries. In almost all cases, labour market inequality – defined as one or all of rising wage inequality, shifts in the skill structure of employment and/or unemployment – has risen. Increased inequalities have appeared more on the *wages* side in countries sometimes thought of as being more ‘flexible’ and on the *jobs* side in more ‘rigid’ countries. Much of the work on changes in labour market inequality has focused on the role of technology in shaping the observed patterns of change. It is argued that skill-biased technological change has improved the prospects of more skilled or educated workers, while at the same time damaging the wage and employment positions of the less skilled.

The research we have conducted has fundamentally added to this debate, by changing the view about Germany as being an outlier in adhering to a technology-based explanation of inequality, by emphasising the role of institutional change in wage inequality, and by providing a common framework that allows the accommodation of both Germany and the UK within a common conceptual framework. The work has been very influential in the public debate in Germany, and has been extensively cited in the media. It has also generated a number of follow-up studies, not only in Germany but in other countries such as Japan, Spain and Italy.

Further, the role played by labour market institutions, especially the potentially different role across countries, is highly germane to these questions. Study of the political and strategic aspects of labour market institutions is a key area in the research programme. The nature of the industrial relations landscape and the prominence of institutions in promoting (or hindering) labour market reform is an important, but still under-studied, area of research. This potentially matters a lot in understanding the differences in the performance of the UK and German economies. We generate a framework and methodology to consider cross-country evolutions in labour market inequalities, with a clear focus upon economic and political factors.

Labour market institutions often change as a result of political processes, and these changes have an impact on the real economy, sometimes creating feedback to the institutional structure. This programme looked at how a number of important institutions relate to the real economy, possibly explaining differences between the UK and Germany. For

instance, high employment protection in the public sector results in strategic over-employment if government divisions compete for budgets in a dynamic setting. Bureaucrats who are interested in maximising their divisions' output employ excess labour, since this induces the sponsor to provide complementary inputs in the future. Further, redistributive income taxation may affect marriage patterns – a high-income earner may not marry a low-income earner even though they might be a perfect match emotionally, because the high-income earner may dislike the income redistribution implied by such a marriage.

Non-economic considerations like patriotism may affect the way institutions are run. For instance, if individuals feel a patriotic warm glow from honest tax compliance, this has implications for optimal auditing and tax compliance. All these issues are studied in a series of papers, details of which appear on pages 51–53.

The work on geographic mobility of unemployed workers investigates whether unemployed individuals in declining regions choose to look for work that favours migrating out of these regions, and how jobsearch strategies are affected by local labour market programmes. The findings indicate that the unemployed in West Germany are responsive to local labour market conditions and are more likely to leave regions with unfavourable re-employment opportunities. No locking-in effect from labour market programmes is found. The probability of migration is found to increase the longer a person has been unemployed.

The roles of human capital and knowledge have long been recognised as important determinants of the long-term growth and sustainability of an economy. Knowledge accumulation and human capital investments are crucial factors both at the microeconomic and at the national level. They have featured prominently in research by macro- and micro-economists alike and the political aspects of education have a high profile across the world. Education matters for growth and inequality. From a microeconomic perspective, education is an investment in human capital that is known to yield significant wage returns in the labour market and to confer significant non-economic benefits on individuals and society as a whole.

One of the significant challenges facing policy-makers is to ensure that an education system delivers to the labour market workers with the requisite skills, while ensuring that concerns about social justice are met. The importance of education as an effective measure to assure long-term growth is obvious, yet remains compelling. Social justice concerns underpin this need since increased education can, in different circumstances and policy regimes, result in higher or lower inequality. Indeed, in both the UK and Germany, inequality between educational groups is growing rather than lessening. Because groups of people with poor education seem to have been affected by net demand shocks – with subsequently lower wages or higher unemployment – across the industrialised world, matters of education increasingly grab the attention of labour economists as well as politicians. The debate not only relates to the amount of education for disadvantaged groups and how they access it, but also to the quality and type of human capital accumulation at the higher end of the skill spectrum, as the recent British and German debates on student fees and elite universities demonstrate.

The fact that education reform can produce economic and social benefits to individuals and to society underpins the quest for better levels of education and skill acquisition in economies across the world. Yet social justice concerns prevail here as well since it is clear that many routes exist whereby education can increase already existing inequalities and, rather than the stated goal of enhancing equity, may actually exacerbate inequalities. This is particularly true since education raises individuals' earning capacities and so it very much depends on who benefits from proposed and implemented policy reforms in the area of education.

We consider the work we have conducted under this theme to date as significant. One important aspect of social justice is the elimination of circumstances that could lead to the disadvantage of some groups. We show that the *causal* effect of school entry age on educational outcomes for Germany is substantial: pupils who enter school at seven instead of six years of age have test scores at the end of primary school that are increased by about 0.40 standard deviations; further, the probability that they will attend the highest secondary schooling track (Gymnasium) increases by about 12 percentage points.

In further work in this area, with additional focus on the tracking decision in Germany at age ten, the importance of later revisions to initial track choices are highlighted. Based on exogenous variation in the school entry age, the work shows that the effect of school entry age on a student's later attending the highest secondary track is attenuated exactly at the grade level in which educational institutions facilitate track modification. Current research along these lines is trying to measure the effects of school entry age on the long-term outcomes of individuals.

Other ongoing work investigates the effects of school entry age on pupils' future outcomes in Germany and the UK. This comparison is interesting, as the countries differ in their age regulations: while school entry age regulations in the UK mostly only define the *maximum* age of school entry, regulations in Germany are more rigid and also refer to the *minimum* entry age.

Work concerned with vocational training schemes looks at why apprenticeship schemes work well in some countries, like Germany and Austria, but less well in others, like the UK. We argue that an important factor in the success of apprenticeship schemes is the enforceability of the apprenticeship contract, most notably the firm's ability to commit to training provision. We hypothesise that, by linking into an existing regulatory framework, firms in Germany are more able to commit than in the UK.

Further work discusses carefully the institutions that surround apprenticeship training in Great Britain, Germany, and other countries. Work here is based on secondary sources, but also on primary fieldwork conducted by Ryan and Wagner. We provide evidence of training activity and extent in the two countries, and relate this to the theoretical discussion. We conclude with some thoughts about how, based on our analysis, a successful vocational training system can be implemented in the UK, and the requirements to maintain the German system in its current way.

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Programme Publications

Published and forthcoming papers

Dustmann, C., Ludsteck, J. and Schönberg U. 2009. 'Revisiting the German Wage Structure', *Quarterly Journal of Economics* 2009, 124 (2), 843–881.

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