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**EMPLOYMENT RELATIONS  
RESEARCH SERIES NO. 66**

Labour market flexibility  
and sectoral productivity:  
a comparative study

JEREMY ANDERSON, JOHN GRAHL,  
STEVE JEFFERYS, ALI TASIRAN,  
WORKING LIVES INSTITUTE

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# About EMAR

Employment Market Analysis and Research (EMAR) is as a multidisciplinary team of economists, social researchers and statisticians based in the Employment Relations Directorate of DTI.

Our role is to provide the evidence base for good policy making on employment relations, labour market and discrimination at work issues. We do this through:

- Conducting periodic socio-economic benchmark surveys.
- Commissioning external research projects and reports.
- Conducting in-house research and analysis.
- Assessing the regulatory impact of proposed employment law.
- Monitoring and evaluating of the impact of government policies

We publicly disseminate results of this research through the DTI Employment Relations Research Series and other publications. For further details of EMAR's work please see our web pages at:

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## About this publication

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# Foreword

The Department of Trade and Industry is working to create the conditions for business success, and help the UK respond to the challenge of globalisation. As part of that challenge we aspire to full employment and high performing workplaces – while ensuring decent minimum employment standards.

To achieve those goals requires a dynamic, adaptable labour market. One that:

- can respond quickly to changes in markets and consumer preference;
- ensures people have suitable opportunities for work;
- enables business to find the right people with the right skills;
- adopts a ‘light touch’ approach to employment regulation.

That is why DTI is committed to maintaining and improving labour market flexibility in its Public Service Agreements.

We have an active research programme on labour market flexibility, to ensure a sound evidence base for policy. As part of this work, DTI are developing an Index of Labour Market Adaptability to track progress against this objective.

This paper is one of ten funded under the DTI Labour Market Flexibility Small Grants Fund. The Fund was an EMAR initiative to develop the evidence base and encourage debate on labour market flexibility issues, through small research grants of up to £10,000. Proposals were selected for their contribution to the evidence base, and their relevance to UK government policy makers.

This paper highlights the relationship between employment flexibility and labour market productivity on a sectoral basis, with some implications for British labour market policy.

Results of other research funded under the Labour Market Flexibility Small Grants Fund will be published soon. Further details can also be found here:

<http://www.dti.gov.uk/employment/research-evaluation/grants/flexibility>

Anyone interested in receiving regular email updates on EMAR’s research programme, new publications and forthcoming seminars should send their details to us at: [emar@dti.gov.uk](mailto:emar@dti.gov.uk)



Grant Fitzner  
Director, Employment Market Analysis and Research (EMAR)

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# Executive summary

*This report looks at the relationship between employment flexibility and labour market productivity across sectors, comparing Britain with France, Germany and Sweden using data from the Groningen sixty-industry database and the European Labour Force Survey.*

*Initial comparisons indicate strong productivity performance in the recently privatised Inland Transport and Electricity, Gas and Water supply sectors in Britain, and in the IT sectors in all four countries. Further findings suggest that productivity levels in France are positively correlated with temporary work; while productivity growth in Sweden is positively correlated with part-time and temporary work. Only in Sweden is there a positive association between women workers and productivity which suggests that in the other countries female workers still tend to be crowded into the lower productivity sectors.*

*As regards British policy, there is evidence that self-employment may be the most successful form of flexibility in terms of productivity; temporary and part-time contracts are not associated with better performance. As a whole, high-productivity sectors still tend to employ prime age males on permanent contracts.*

The basic aim of the research reported here is to examine the relationship between employment flexibility and labour productivity on a sectoral basis. For this first, essentially exploratory, study data is examined for Britain and three comparator countries: France, Germany and Sweden.

## *Data sources*

Sectoral productivity data (together with sectoral employment) are taken from the Groningen sixty-industry database. The European Labour Force Survey provides information on the employment characteristics of a very large sample of workers across EU member states, coded on a sectoral basis. Overlapping data were available over the time period 1993-2001. The sectoral categories used by the two data sets are consistent, except that some of the Groningen sectors had to be aggregated. The combination of these two sources offers a rich body of data which would merit much more examination than has been possible here.

The employment data give some indicators of 'flexibility' which relate to the use of some kinds of 'atypical' contracts: part-time work, temporary work, sub-contracted work and self-employment. (It is an important limitation that no

industrial relations variables are included.) Thus it is the relationship between these employment forms and productivity that is explored.

### *The productivity record*

An initial comparison of the British productivity data with those from the other three countries, although the broad pattern is similar, leads to some interesting findings – particularly the strong productivity performance of two sectors affected by privatisation: Inland Transport and Electricity, Gas and Water Supply. The productivity data also confirm the well-known result that the IT sectors themselves (here, electronic equipment and office equipment) display very exceptional productivity growth rates in all four countries, making them clear outliers. This was dealt with by running all regressions both with and without these sectors, and pointing out where the results differ.

### *The regressions*

These were ‘panel’ or fixed-effect regressions, taking each country in turn and making the sectoral productivity of each worker the dependent variable. Note that this procedure tends to attach more weight to the larger sectors. It is not claimed that all the findings derived in this way represent genuine causal relations from the employment characteristics to productivity; in some cases the opposite interpretation – for example that women employees may be crowded into low productivity sectors – seems more plausible.

### *The findings*

Sectoral variations in employment characteristics rarely account for more than two or three per cent of the sectoral variation in productivity performance – which must presumably be explained by technology in the broad sense. However, the very large number of observations available permitted significant effects to be detected.

In the results as a whole, there are usually negative associations between productivity on the one hand and self-employment, part-time work, temporary work and contract work. The exceptions with significant coefficients are:

- Temporary work and productivity level (France);
- Part-time work and productivity growth (Sweden, excluding the two outliers, office equipment and electronic equipment);
- Temporary work and productivity growth (Sweden, excluding outliers);
- Self-employment and productivity growth (Britain, excluding outliers).

In addition, some other findings seem worth reporting, although they do not bear directly on the flexibility issue:

- Gender effects are different in Sweden from those in the other three countries in that the high productivity sectors are more feminised than the economy as a whole;
- Anomalous results for education in Britain where it is difficult to find any clear relationship between educational characteristics and sectoral productivity.

### *Qualitative information*

Some comments on the labour market issues in the countries concerned are offered to put the quantitative results into context. It can be noted that the concern, in particular in Germany but also in France, may lead to policies with a negative impact on measured productivity – such as an attempt to expand some low-wage service sectors. In Sweden, our quantitative results indicate that, just as in Britain, relatively effective use is being made of flexible employment but it must of course be remembered that the social policy context is very different. In particular, our results suggest that in Britain, female workers still tend to be crowded into low productivity sectors.

In recent years Britain's productivity performance relative to European comparators has improved markedly and comparisons with the US have received more attention. The sources, procedures and statistical explorations developed here could be usefully applied also to a comparative study of European countries with the US.

### *About this project*

This research was carried out as part of the Department of Trade and Industry's employment relations research programme, and was funded under the Labour Market Flexibility Small Grants Fund. Further details on the Fund can be found here:

<http://www.dti.gov.uk/employment/research-evaluation/grants/flexibility>

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# Introduction

The aim of this study is to examine the relationship between employment flexibility and labour productivity in sectoral terms. The productivity data are taken from the Groningen sixty-industry database while a range of variables relating to employment, including some variables reflecting certain aspects of flexibility, are taken from the European Labour Force Survey. Data are examined for Britain and three comparators – France, Germany and Sweden. It is found that, in general, sectors with a strong productivity performance are not characterised by more flexible forms of employment; however, there are several interesting exceptions to this general result. The quantitative study is then complemented by a short qualitative discussion of labour market issues in the four countries.

## *The data*

The quantitative part of this study is based on the combination of two data sets: the European Labour Force Survey and the Groningen sixty industry database. The first of these allows us to associate, over a large sample of workers, several employment variables with industrial sectors. The second gives productivity data for the sectors concerned. We have employment variables over the period 1993-2001. The usable variables are:

- Gender;
- Age (under 15; 15-24; 25-54; 55-64; 65 or over);
- Education (lower secondary; upper secondary; third level);
- Employment status (employee; family worker; self-employed);
- Employment duration (permanent; temporary; contract worker);
- Working hours (full-time; part-time).

Although not ideal, these variables reflect some aspects of employment 'flexibility'.

The Groningen data cover sixty industries over the time period 1979-2001. Not all these industries can be directly related to the employment data. For the most part this is because the Groningen data, with an emphasis on high technology, separate out certain sub-sectors; for instance electronic equipment is divided into three sub-sectors which have had to be aggregated again in order to get a match with the employment data. This has left some 48 or 49 usable sectors, depending on the country.

Since both data sets are based on the same industrial classification, the match should be close. Indeed, the combined data set is very rich and would merit a much more complete analysis than has been possible in this first study.

### *An exploratory analysis*

To trace the effect of employment relationships on labour productivity would require a full model of the latter, which is beyond the scope of the present study. Not only would that require the use of many more economic variables, it would also be necessary to disentangle actions and interactions from productivity change to employment relations and in the other direction.

Thus the present study takes a descriptive and exploratory approach to obtain preliminary results. It asks the questions, what kind of employment relations is found in high and low productivity sectors? And, does this sectoral pattern vary across countries?

# The productivity record

## *The sectoral pattern of productivity*

We first present the pattern of sectoral productivity in the four countries. Note that, although all these comparisons derive from the Groningen sixty-industry database, the actual number of sectors involved is 48 or 49 because of the aggregation of sectors referred to above.

The Groningen data point to very similar linear patterns of sectoral productivity differentials in our four countries, whether we look at current levels of productivity or at its growth rates. In terms of levels, the simple correlations are as in Table 1.

**Table 1. Labour productivity levels in 2001**

	Britain	France	Germany	Sweden
Britain	1.00			
France	0.83	1.00		
Germany	0.78	0.96	1.00	
Sweden	0.72	0.92	0.87	1.00

All correlations significant at the 0.1 % level. Correlations over 48 or 49 sectors; calculated from Groningen sixty-industry database.

These calculations are reassuring in that they suggest that the Groningen data are highly structured and accurate (the similarity of the structures in France and Germany matches the usual view of these economies as very similar). They are at the same time a little disappointing from the point of view of the present study in that they suggest that broad systematic forces (presumably technological in the widest sense) are at work which narrow the scope for differential factors linked to employment relations. However, it is the case that Britain is the least similar of the four countries in that correlations among pairs of the other countries are always lower than with Britain.

These correlations for the current (2001) period may be contrasted with the same figures relating to averages over the whole Groningen sample (1979-2001) in Table 2.

**Table 2. Average labour productivity levels 1979-2001**

	Britain	France	Germany	Sweden
Britain	1.00			
France	0.80	1.00		
Germany	0.75	0.95	1.00	
Sweden	0.81	0.92	0.90	1.00

All correlations significant at the 0.1 % level. Correlations over 48 or 49 sectors; calculated from Groningen sixty-industry database.

These are very similar, but in general lower: the indication then is of some convergence in productivity patterns, except perhaps for Sweden.

From an examination of industry rankings by productivity levels and growth a rough attempt was made to find exceptional cases: the criteria were that the British ranking was higher (lower) than in all three comparators and that the average difference in rank was 10 places or more. The five sectors where

British industries display much higher productivity rankings than their continental counterparts are shown in Table 3.

**Table 3. British industries ranked very high by Productivity Level in 2001**

Industry	Britain	France	Germany	Sweden
Inland Transport	2	38	35	31
Motor Vehicle Maintenance, Sale and Repair	21	37	41	35
Leather and Footwear	25	39	43	39
Mining	4	8	26	11
Agriculture	37	45	46	47

Calculated from Groningen sixty-industry database.

Although there is no pattern, the presence of *two radically privatised sectors*, Inland Transport and Mining, on this list is suggestive. More so in the case of Inland Transport because the decline in employment in Mining, from 1.7 per cent to 0.3 per cent of total hours worked in the economy between 1979 and 2001, clearly was responsible for the high level of productivity among the remaining workers. However, the changes to employment relations as a result of privatisation may be difficult to measure with the data available.

The productivity levels for Agriculture and Leather and Footwear were also based on big declines in employment so that the other interesting case here is Motor Vehicle Maintenance, Sale and Repair.

British relative underperformance is more diffuse, there only being three cases where the British industry lies substantially below its counterparts in all three countries (Table 4).

**Table 4. British industries ranked very low by productivity level in 2001**

Industry	Britain	France	Germany	Sweden
Auxiliary Transport Activities	44	22	22	32
Shipbuilding	34	21	18	30
Insulated Wire	26	16	14	20

Calculated from Groningen sixty-industry database.

Auxiliary Transport Activities is perhaps the most interesting of the three because employment has been growing rapidly; the employment share of Insulated Wire is stable while that of Shipbuilding is of course in rapid decline.

There is one sector where Britain is at a heavy disadvantage to both France and Germany: Research and Development, but in this case the Swedish ranking is the same as in Britain. In the case of Forestry it is the other way round: the Swedish sector is ranked high; that in the other three countries very low.

If we look now at productivity growth rates, there is again a close linear correspondence in the four countries. If trend productivity growth is measured by the average percentage change between the first and last observations (1979 and 2001), then the correlations are as given in Table 5.

**Table 5. Labour productivity growth rate correlations 1979-2001**

	Britain	France	Germany	Sweden
Britain	1.00			
France	0.91	1.00		
Germany	0.92	0.90	1.00	
Sweden	0.83	0.82	0.88	1.00

All correlations significant at 0.1 %. Correlations over 48 or 49 sectors; calculated from Groningen sixty-industry database.

In this case, it is Sweden, not Britain, which seems to be the most 'dissimilar', with France, Germany and Britain as a homogeneous group. As will be seen below, labour market analysis tends to confirm this view of Sweden as the exception.

Clearly, current levels are to a considerable extent explained by growth rates over the last two decades. In the case of Britain, for example, the correlation between level ranks and growth rate ranks is 49 per cent. Again in Britain, Clothing, Forestry and Agriculture are still low productivity sectors in spite of rapid productivity growth rates, while Minerals is still a high productivity sector in spite of the absence of productivity gains.

Once again we look for the most striking exceptions, that is now, sectors in which British productivity growth has been much higher than in the other countries. In this case eight sectors stand out (Table 6).

**Table 6. British industries ranked very high by productivity growth 1979-2003**

Industry	Britain	France	Germany	Sweden	Change in British employment share 1979-2001 %
Inland Transport	3	30	20	30	-0.66
Mining	4	4	35	17	-1.42
Motor Vehicle Maintenance, Sale and Repair	15	33	37	19	-0.04
Leather and Footwear	10	36	18	12	-0.32
Other Community and Social Services	26	46	38	32	1.75
Scientific and Other Instruments	30	45	33	35	-0.35
Construction	27	32	45	37	-0.69
Electricity, Gas and Water Supply	6	8	16	25	-0.84

Calculated from Groningen sixty-industry database.

This group includes all the sectors ranked high by level, with the exception of Agriculture. (The data in fact suggest that British agriculture enjoys a long-standing productivity advantage over continental agriculture. This advantage has been somewhat eroded but by no means eliminated over the last 20 years).

We now find another case of thoroughgoing privatisation, Electricity, Gas and Water Supply. There can be no doubt that this involved a radical transformation of employment relations; the issue might be whether the resulting gains were once-and-for-all or continuing.

The presence of the notoriously 'flexible' British construction industry on this list is interesting. Many studies of the industry have suggested that it lags its continental counterparts in terms of productivity. Although this is still true for levels, the growth rankings suggest some catching up.

The presence of Other Community and Social Services is also intriguing. No such result is available for Health or Education, where performance is far more intensely discussed.

Some of the other cases of relatively high growth may reflect labour-shedding. In terms of employment the cases of construction and other social services dwarf the others; these two sectors account for 13.6 per cent of British employment (measured in hours) in 2001.

Turning to relative British underperformance, nine sectors stand out as ranking well below their counterparts in the comparator countries (Table 7).

**Table 7. British industries ranked very low by productivity growth 1979-2003**

Industry	Britain	France	Germany	Sweden	Change in British Employment Share 1979-2001 %
Textiles	36	23	21	7	-1.13
Wood Products	45	14	25	41	-0.10
Activities Auxiliary to Financial Intermediation	40	26	36	6	0.57
Furniture and Miscellaneous Manufacturing	42	22	40	20	-0.19
Mineral Oil Refining, Coke and Nuclear Fuel	43	49	33	3	-0.01
Financial Intermediation	32	19	9	26	0.61
Research	46	29	26	43	-0.04
Printing and Publishing	37	5	27	15	-0.10
Computer and Related Activities	38	37	8	36	1.39

Calculated from Groningen sixty-industry database.

The most striking feature here is the presence of four service activities: Activities Auxiliary to Financial Intermediation; Financial Intermediation; Printing and Publishing; and Computer and Related Activities. These all involve in particular business-to-business services, where trade data show that Britain enjoys a comparative advantage. Two of the four are financial sectors. It should be remembered, however, that other EU member states have launched major reforms of their financial sectors in recent years and that these are probably changing their organisation and their practices much more rapidly than is the case in Britain.

### *Conjecture: flexibility against productivity*

Since the approach adopted here is not just descriptive, a broad working hypothesis was adopted, according to which employment flexibility and productivity might well be hostile to each other. Of course, to the extent that flexibility leads to more employment, this is simply to repeat the well-known opposition between employment and productivity. To the extent that flexibility is a matter of reducing wage costs then there are good reasons to expect that it will work against productivity. Naastepad and Kleinknecht (2004) offer a whole array of theoretical positions to justify such a conjecture:

- In standard *neo-classical theory*, an increase in the relative price of labour leads to substitution of capital for labour, shifting along a given production function, until the marginal productivity of labour equals the given real wage. Causality in this argument runs from relative factor prices to choice of technique and hence productivity.
- In *vintage models*, wage increases lead to scrapping of old, labour-intensive vintages of capital in favour of new and more productive vintages of capital.
- In the theory of *induced technological change*, higher relative wages increase the labour-saving bias of newly developed technology.
- In the *Schumpeterian theory of creative destruction*, one can argue that, due to their monopoly rents from innovation, innovating firms can live better than others with an aggressive wage policy by trade unions. Higher real wage growth enhances the process of Schumpeterian '*creative destruction*' in which innovators compete away technological laggards. Conversely, slow wage growth and flexible labour relations increase the likelihood of survival of low-quality entrepreneurs. While this is favourable for employment in the short-run, it leads to a loss of innovative dynamism in the long run (see Kleinknecht 1998).
- According to *Schmooklerian demand-pull theory* and the *Verdoorn-Kaldor law*, higher effective demand raises innovative activity and labour productivity. This implies that wage restraint or downward wage flexibility can impede innovation as far as it leads to a lack of effective demand.
- Within an *endogenous growth framework*, a profit-maximising firm's decision to invest in (labour productivity increasing) R&D can be shown to depend on the share of wages in total costs. The higher the wage share, the more profitable it becomes to devote resources to increasing the productivity of labour (see Grahl and Kleinknecht, 2005).

Thus we begin with the general view that, whatever its contribution to raising employment, flexible labour contracts are unlikely to contribute much to productivity growth.

# Employment relations and productivity: results

The preferred approach to the examination of interactions between productivity and employment characteristics was to study each country in turn, using panel data. This was possible for the years 1993-2001. In this analysis, productivity (level, or annual growth rate) is an appropriate left-hand variable because it seems to be subject to greater observation errors – in effect, the productivity of each individual worker is set equal to the average over the industry in the year in question. Thus, the regression equations are simply interpreted as giving the expected value of productivity, conditional on such employment characteristics as are available.

On the panel basis, there were some 214,000 observations for France, 224,000 for Germany and 48,000 for Sweden. Even so, high levels of collinearity between the employment duration (permanent, temporary, contract) and the working hours (full-time, part-time) variables often prevented the inclusion of both in the same model. Models were estimated with and without year dummies, but the results indicated that it was usually better to include them because the employment effects were more significant when this was done. In order to get the most up-to-date picture possible these panel regressions were supplemented by regressions using only our latest year (2001) – this was done only for productivity levels.

The characteristics of the sample were as in Tables 8A and 8B.

**Table 8A. Whole sample: Gender, Age, Educational Status (in %)**

	Male	15-24	25-54	55-64	Over 65	Lower secondary	Upper secondary	Third level
Britain	57	16	67	14	3	30	36	21
France	57	14	73	12	1	34	43	23
Germany	54	14	66	17	3	18	44	24
Sweden	53	14	66	19	1	26	49	25

**Table 8B. Whole sample: Employment Status, Employment Duration, Working Time**

	Employee	Self-employed	Permanent	Temporary	Contract	Full-time	Part-time
Britain	85	14	74	9	n.a.	73	26
France	81	15	63	35	2	63	19
Germany	74	14	63	27	2	54	18
Sweden	84	15	67	30	1	57	24

Although what is shown in Table 8 characterises the samples rather than the workforces, we can notice the usual difference in 'flexibility' variables across countries: temporary contracts are not much used in Britain but Britain (together with Sweden) makes great use of part-time workers.

Two sectors displayed much faster productivity growth than any of the others in all four countries: Office Equipment and Electronic Equipment (Table 9). Of course, these two cases confirm the well-known 'New Economy' result that the sectors producing ICT exhibit enormous productivity gains (Pilat, 2001).

**Table 9. Two Outliers: Average Percentage Growth Rates 1979-2001 Contrasted With Other Sectors**

	Office Equipment	Electronic Equipment	Range in Other Sectors
Britain	35.4	25.3	-3.5 to 10.9
France	31.3	24.6	-4.1 to 6.5
Germany	37.9	22.5	-2.1 to 8.8
Sweden	36.3	12.9	-1.6 to 6.6

The employment characteristics for Office Equipment are given in Tables 10A and 10B.

**Table 10A. Office equipment: gender, age, educational status %**

	Male	15-24	25-54	55-64	Over 65	Lower secondary	Upper secondary	Third level
Britain	70	15	77	7	1	8	47	35
France	67	10	80	10	0	18	33	49
Germany	59	19	71	10	0	19	51	30
Sweden	48	9	79	12	0	15	70	15

**Table 10B. Office equipment: employment status, employment duration, working time**

	Employee	Self-employed	Permanent	Temporary	Contract	Full-time	Part-time
Britain	98	1	88	9	n.a.	93	4
France	100	0	85	14	1	89	11
Germany	99	0	78	17	3	82	11
Sweden	94	6	88	6	6	94	6

We see that the sector characterised by the fastest productivity growth conforms to the general pattern of capital-intensive manufacturing (use of male workers, absence of 'flexibility' in terms of part-time or temporary workers, higher educational status, and concentration on prime-age workers). The one interesting exception is that in Sweden the Office Equipment sector is more feminised than is the economy as a whole.

Given the possibility of results being determined only by the employment characteristics of these two sectors, regressions for productivity growth rates were re-run without them. In a small number of cases this had a substantive effect on the results and this has been mentioned below.

The Groningen data offer what seems to be a very useful control – employment in the sector concerned (measured by total hours worked). Rapid labour-shedding seems almost bound to increase productivity since it is the oldest plants and the least efficient enterprises which will be most affected. Therefore the percentage change in employment by year and sector was used as an additional independent variable. As expected, the coefficients were negative and extremely significant. The coefficients on employment variables were often changed, and they are probably more accurate, when this control is used.

For example, the relationship between masculine gender and productivity tends to weaken somewhat, presumably because men often predominated in labour-shedding sectors and thus male gender is spuriously associated with productivity gains.

The overall part of productivity variation which could be attributed to employment characteristics was usually very small. Below, this is reported by the difference between R-squared in the full model and R-squared in a regression with year dummies only.

### *Results for France*

Table 11 shows the overall contribution of the employment characteristics to the variation in productivity.

**Table 11. R-squared in the panel regressions for France**

	With year dummies only	With year dummies and employment variables	With year dummies, employment variables and employment change	Observations
Level Regression	0.336	0.369	0.380	231,559
Growth Rate Regression	0.087	0.089	0.161	204,463

The coefficients on employment characteristics are reported in Tables 12 and 13.

**Table 12. Coefficients and t-ratios for France: panel regression for productivity level**

	Variable	Coefficient	t-ratio
Gender (base female)	Male	1.07	5.51
Age (base 15-24)	25-54	6.72	28.75
	55-64	7.76	23.06
	65 and over	10.32	11.86
Education (base lower secondary)	Upper secondary	1.38	6.54
	Third-level	3.23	12.87
Employment Status (base self-employed/family worker)	Employee	24.08	96.86
Working Hours (base full-time)	Part-time	-5.24	-19.73
Employment Duration (base permanent)	Temporary	1.10	4.90
	Contract	-2.25	-3.05

The following characteristics tend to raise the sectoral productivity level of the workers concerned: that the workers are male; that they are prime-age or even older; that they are educated to upper secondary or (an even stronger effect) to third-level. Part-time working is associated with lower sectoral flexibility. There is a positive association between temporary work and a high sectoral productivity level; however, the use of contract workers indicates a lower productivity level. Family workers and the self-employed appear to be concentrated in low productivity sectors, but this is hardly surprising as they are highly concentrated in such sectors as agriculture and hotels.

**Table 13. Coefficients and t-ratios for France: panel regression for productivity growth rates**

	Variable	Coefficient	t-ratio
Gender (base female)	Male	0.13	3.7
Age (base 15-24)	25-54	0.20	3.83
	55-64	-0.13	-1.92
	65 and over	-0.07	-0.43
Education (base lower secondary)	Upper secondary	0.25	6.36
	Third-level	0.40	8.94
Employment Status (base self-employed/family worker)	Employee	2.53	46.32
Working Hours (base full-time)	Part-time	-0.87	-18.52
Employment Duration (base permanent)	Temporary	-0.03	-0.66
	Contract	-0.82	-6.27

The result for the panel model of productivity growth rates are only slightly different (Table 13). Gender effects are still in favour of male workers. The different age pattern may relate to the French practice of using early retirements to cushion unemployment in when there is labour-shedding. In any case, high productivity-growth sectors have a clearer preference for prime age workers. Educational status again has a positive effect. Employee status (as against self-employed or family worker status) is again negatively associated with productivity. Part-time work has the same negative sign. The results for both temporary work and contract work are now both negative, but only the latter significantly so.

When the productivity growth regression was run omitting the two outlying industries, Office Equipment and Electronic Goods, the coefficient on third-level education ceased to be significant, indicating that it was the use of highly educated workers by these two sectors which was responsible for the effect reported in Table 13. There was no substantial change to the other coefficients.

### *Results for Germany*

As with the French data, employment characteristics contribute little to the variation in productivity levels or growth rates (Table 14).

**Table 14. R-squared in the panel regressions for Germany**

	With year dummies only	With year dummies and employment variables	With year dummies, employment variables and employment change	Observations
Level Regression	0.312	0.327	0.328	224,666
Growth Rate Regression	0.101	0.105	0.177	189,489

An unusual feature of the German regression for productivity levels is that the percentage change in hours worked does not have the expected negative sign; recent labour shedding is associated with lower productivity levels. This suggests that rationalisations, down-sizing and so on have recently taken place in sectors which in level terms had relatively low productivity.

The actual role of employment characteristics is similar to the French case, with three exceptions:

- Firstly, high productivity levels are associated very slightly more with upper secondary than with third-level education. However, the educational structure is very different in the two countries with many workers who would have degrees in France taking the vocational route in Germany and so this result may largely reflect definitional differences.
- Secondly, in Germany, prime-age workers are more associated with high productivity levels than are older workers. As in France, however, there is a negative association between young (16-24) workers and high sectoral productivity levels.
- Thirdly, there is no positive association between temporary worker status and sectoral productivity levels. All three 'flexibility' indicators – part-time work, temporary work and contract work have negative signs. As in France, self-employment/family work is associated with lower productivity.

**Table 15. Coefficients and t-ratios for Germany: panel regression for productivity levels**

	Variable	Coefficient	t-ratio
Gender (base female)	Male	3.59	15.13
Age (base 15-24)	25-54	5.27	16.75
	55-64	3.91	9.83
	65 and over	4.58	5.04
Education (base lower secondary)	Upper secondary	2.36	8.13
	Third-level	1.99	5.91
Employment Status (base self-employed/family worker)	Employee	19.67	43.91
Working Hours (base full-time)	Part-time	-3.18	-11.37
Employment Duration (base permanent)	Temporary	-3.87	-12.66
	Contract	-3.75	-4.57

The results for productivity *growth* in Germany (Table 16) are different in that now younger (15-24) workers have nearly the same association with productivity as prime-age workers, with the coefficients for older workers both being negative. General commentary on the German economy suggests that preservation of young workers' jobs and their entry into working life has been a very high priority in labour-shedding situations and that early-retirement and similar devices have been used just as intensively as in France.

As opposed to the results for levels, educational effects seem to be more linear, in that third-level has a higher coefficient than upper secondary education. This may suggest that Germany is becoming less exceptional in the way qualifications are related to employment.

As for 'flexibility', there are significant negative associations between both part-time working and the use of temporary labour and productivity growth. The coefficient on contract labour is positive, but not significantly so (there are very few such workers in Germany).

As in the French case, the robustness of these results was checked by running the same regression without the two very high productivity growth sectors. There were no substantial changes except that the part-time coefficient became positive although not significantly so. Thus the negative association in the

reported regression is to be attributed to the absence of part-time workers in these two sectors and not to a general pattern across the economy.

**Table 16. Coefficients and t-ratios for Germany: panel regression for productivity growth rates**

	Variable	Coefficient	t-ratio
Gender (base female)	Male	0.20	4.17
Age (base 15-24)	25-54	0.04	0.64
	55-64	-0.35	-4.17
	65 and over	-0.95	-5.21
Education (base lower secondary)	Upper secondary	0.30	5.14
	Third-level	0.52	7.49
Employment Status (base self-employed/family worker)	Employee	0.81	4.93
Working Hours (base full-time)	Part-time	-0.48	-8.57
Employment Duration (base permanent)	Temporary	-0.56	-9.04
	Contract	0.11	0.72

### *Results for Sweden*

The Swedish sample is much smaller than those for France and Germany, both because comparable data were only produced by Eurostat following Sweden's accession to the EU in 1995 and because fewer workers are involved. In spite of this, employment characteristics account for rather more of the variation in productivity (Table 17).

**Table 17. R-squared in the panel regressions for Sweden**

	With year dummies only	With year dummies and employment variables	With year dummies, employment variables and employment change	Observations
Level Regression	0.394	0.435	0.443	48,937
Growth Rate Regression	0.122	0.134	0.304	48,937

In the productivity *level* regression for Sweden the results are similar to those for Germany. Male gender is positively associated with productivity, as is age (note that only three age groups are distinguished in this data). Educational status has a very non-linear effect: upper secondary education goes with higher productivity; third-level education is associated with less productivity than the base group. Employee status has the usual strong positive effect; two of the 'flexibility' variables, part-time and temporary work have significantly negative associations with productivity while contract working has no significant effect.

**Table 18. Coefficients and t-ratios for Sweden: panel regression for productivity level**

	Variable	Coefficient	t-ratio
Gender (base female)	Male	51.21	16.00
Age (base 15-24)	25-54	37.36	8.18
	55 and over	41.94	7.72
Education (base lower secondary)	Upper secondary	7.72	2.07
	Third-level	-17.10	-3.96
Employment Status (base self-employed/family worker)	Employee	221.00	32.40
Working Hours (base full-time)	Part-time	-51.50	-13.24
Employment Duration (base permanent)	Temporary	-28.51	-6.89
	Contract	1.15	0.08

The most striking feature of the Swedish results concerns gender: when we look at productivity *growth rates*, then women are very significantly associated with higher sectoral productivity. (In fact, a similar result is obtained for productivity levels in some of the regressions without year dummies, but the sign is reversed when the dummies are included.)

Results for the educational variables are similar to those for Germany: when levels are considered, educational status seems to work in a non-linear way, with a higher coefficient on upper secondary than on third-level education. However, just as in Germany, this non-linearity is not found in the growth rate regression.

As for France, self-employed and family workers are much more likely to be found in low-productivity (level and growth) sectors. The evidence on part-time, temporary and contract workers is somewhat conflicting. In the levels equation, the first two have negative coefficients but the contract worker effect, while positive, is not significant. In the growth rate equation on the other hand, part-time and temporary workers have positive, although not significant, coefficients while the contract worker effect is now, very significantly, negative (Tables 18 and 19).

**Table 19. Coefficients and t-ratios for Sweden: panel regression for productivity growth rates**

	Variable	Coefficient	t-ratio
Gender (base female)	Male	-0.43	-6.45
Age (base 15-24)	25-54	0.24	2.51
	55 and over	0.73	0.64
Education (base lower secondary)	Upper secondary	0.34	4.31
	Third-level	0.74	8.21
Employment Status (base self-employed/family worker)	Employee	2.81	19.63
Working Hours (base full-time)	Part-time	0.12	1.49
Employment Duration (base permanent)	Temporary	0.08	0.98
	Contract	-1.05	-3.67

However, as before, the growth regression was re-run without the outliers, Office Equipment and Electronic Equipment. This had the interesting consequence of making the positive coefficients on part-time work and

temporary work strongly significant, while leaving the other results unaffected. It appears then that there is a general association of part-time work and temporary work with higher productivity growth across the Swedish economy, although not in the two very exceptional sectors.

Overall, the results for France and Germany are rather banal. High productivity sectors tend to employ prime age males on permanent contracts (although in Germany younger workers are not significantly less associated with productivity growth than prime age workers). Educational level is positively associated with productivity (although this effect is sometimes non-linear).

For Sweden, results are more interesting: the gender bias is not found and both part-time and temporary work are positively associated with productivity growth.

### *Results for Britain*

As with the comparator countries, the available employment variables make a very small contribution to explaining sectoral productivity (Table 20). Partly this must be because productivity is measured on a sectoral basis, rather than at enterprise or establishment level, partly because technological factors are so important.

**Table 20. R-squared in the panel regressions for Britain**

	With year dummies only	With year dummies, employment variables and employment change	Observations
Level Regression	0.256	0.285	335,348
Growth Rate Regression	0.111	0.133	296,096

The British data available so far are less informative in that no information is available on contract workers. This is unfortunate because of the important role they play in Britain.

**Table 21. Coefficients and t-ratios for Britain: panel regression for productivity levels**

	Variable	Coefficient	t-ratio
Gender (base female)	Male	7.23	54.70
Age (base 15-24)	25-54	7.57	49.37
	55-64	6.66	31.15
	65 or over	7.01	16.97
Education (base lower secondary)	Upper secondary	0.44	2.92
	Third-level	-0.91	-5.25
Employment Status (base self-employed)	Employee	4.76	31.21
Working Hours (base full-time)	Part-time	-3.62	-22.95
Employment Duration (base permanent)	Temporary	-1.29	-5.62

In terms of productivity levels, all three older groups (25-54, 55-64, and over 64) have strong positive effects relative to younger workers. There is a strong male gender association with high productivity. Educational status has a strongly non-linear effect as in Sweden, with third-level education relative to lower secondary, being negatively associated with productivity. Employee status, relative to self-employment, is very significantly associated with productivity.

The two 'flexibility' variables available, part-time and temporary work, both have significantly negative coefficients.

**Table 22. Coefficients and t-ratios for Britain: panel regression for productivity growth rates**

	Variable	Coefficient	t-ratio
Gender (base female)	Male	1.04	23.69
Age (base 15-24)	25-54	0.63	11.18
	55-64	0.20	2.78
	65 or over	0.16	1.17
Education (base lower secondary)	Upper secondary	-0.03	-0.65
	Third-level	-0.39	-6.93
Employment Status (base self-employed)	Employee	0.18	3.12
Working Hours (base full-time)	Part-time	-1.09	-21.19
Employment Duration (base permanent)	Temporary	-0.44	-6.14

When productivity growth rates are considered: the gender effect remains; the age effects are now non-linear in that, relative to younger workers, the strongest association with productivity is shown by prime-age workers. The educational status results are anomalous: while Sweden, France and Germany all display a relatively linear relationship between educational status and productivity *growth*, the British data display no significant productivity effect of upper secondary education (relative to lower secondary) and the impact of third-level education is significantly negative. Employee status is as usual positively associated with productivity growth. The 'flexibility' indicators, part-time and temporary work, retain significantly negative effects.

As with the other countries, the productivity growth regression was run without Electronic Equipment and Office Equipment. This led to one substantial change in the results: *employee status now has a negative coefficient*, indicating that self-employment is generally associated with higher productivity growth but that this effect was masked by the two special cases where there are few self-employed. Although the construction industry alone, where rapid productivity growth was noted, certainly contributes to this result, it does not on its own explain it – there are some 20 sectors in Britain where self-employment exceeds 10 per cent of the workforce.

The British data so far used are a little less informative than the continental data. Most of the results are very similar to those for France and Germany, except for the striking absence of any clear relationship between educational status and sectoral productivity.

However, if outliers are excluded, Britain shows the only negative association between employee status and productivity growth.

# Summary of results

In the results as a whole, there are usually negative associations between productivity on the one hand and self-employment, part-time work, temporary work and contract work. The exceptions with significant coefficients are:

- Temporary work and productivity level (France);
- Part-time work and productivity growth (Sweden, excluding outliers);
- Temporary work and productivity growth (Sweden, excluding outliers);
- Self-employment and productivity growth (Britain, excluding outliers).

In addition, other departures from the usual patterns involve:

- Gender effects different in Sweden from those in the other three countries;
- Anomalous results for education in Britain;
- Absence of usual strong 'prime-age' effect in Germany.

## *Issues and debates*

We can begin by looking at the general pattern of productivity growth in Britain and the three comparator countries (Table 23A and B).

**Table 23A. Average annual labour productivity growth, historical**

	1961-73	1974-85	1986-90	1991-95	1995-2000
France	4.7	2.2	2.4	1.5	1.5
Germany	4.0*	2.0**	1.5	2.1	1.1
Sweden	3.5	1.0	1.5	2.9	2.5
UK	2.9	1.5	1.4	2.7	1.7

\*1961-70 \*\* 1971-85 German data for West Germany prior to 1990

**Table 23B. Annual labour productivity growth and forecasts, 1998-2006**

	1998	1999	2000	2001	2002	2003	2004	2005f	2006f
France	2.1	1.3	1.0	0.2	0.2	0.4	2.7	1.6	1.5
Germany	0.9	0.8	1.1	0.4	0.7	0.9	1.8	0.7	0.9
Sweden	2.1	2.4	1.9	-1.0	1.9	1.8	4.3	2.8	1.9
UK	1.9	1.3	2.5	1.6	1.6	1.3	2.6	2.4	2.4

European Economy, Statistical Annexe, Autumn 2004

These data suggest: that the historical superiority of French and German productivity performance was lost by the mid-to-late 80s (that is, *before* German unification) and that since then Germany's performance has been the weakest; that French relative performance has deteriorated in a similar way but not to such a marked extent; and that the time pattern of performance in Sweden and Britain contrasts with that in France and Germany in a similar way – a relatively poor performance right through from the mid-70s to 1990 but

subsequently a substantial improvement, although of course within very different socio-economic models.

Note, however, that some doubt attaches to the reliability of recent statistics. It has been suggested that GDP-based comparisons between Britain, France and Germany neglect high rates of depreciation in Britain and therefore flatter the British figures (Metz, Riley and Weale, 2004).

### *Issues in France*

During the 1990s virtually every annual study by the OECD of France drew a negative picture of French performance, criticising strongly the slow rate of deregulation, the size of public sector employment and the strength of the French welfare state. Other observers disagreed with this assessment. Thus Hancké (2002) disputed this pessimistic view of French performance, detailing instead what he suggests has been an exceptional turnaround: he emphasises in particular, the strong export performance and the fact that in terms of value added per employee, French manufacturing outperformed the other G7 countries throughout the 90s.

Hancké's explanation for this performance is a semi-institutional account. He believes it derives from the 'cumulative effect of micro-economic and organizational changes', led internally by large French firms. Jefferys (2003) also pointed to the significant profitability of French firms in the early 21<sup>st</sup> century. He suggested that successful French business performance may be largely explained by the protection afforded by intra-elite networks that link big business and senior politicians in a context of weak workplace-level trade unionism. These networks, he argued, were attempting to secure still greater levels of profitability and workplace control through their influence within the major French employers' association (the Medef), and were likely to exert greater influence over central government following the election of a conservative president and a right-wing government in 2002.

### *Over-regulation?*

Since then a plethora of French studies has appeared reinforcing the thesis of the decline of France, almost all arguing that the cause is one of over-regulation. The book that hit the headlines was by Nicolas Baverez (2003), but several others have trawled the same territory: critiquing the political economy conducted under the Mitterrand-Jospin years, which are charged with a variety of sins ranging from state centralisation, over-regulation to elite arrogance (Duhamel, 2003; Rouart, 2003; Gubert and Saint-Martin, 2003). The debate about this alleged French economic decline has even become a subject of that specially French phenomenon, the intellectual debate (Baverez, 2004; Saint-Paul, 2004).

A more recent manifestation of this desire to provide a more critical account of French achievements to 'soften up' public opinion for significant liberalisation of labour markets and welfare regimes, was the October 19th 2004 publication of the Camdessus (2004) report. The former director of the International Monetary Fund and honorary Governor of the Bank of France, had been asked in May 2004, by the then Finance Minister, now Interior Minister and aspirant presidential candidate, Nicolas Sarkozy, to chair a working party on the slow growth rate of the French economy. Its one page Annex 3 (Camdessus, 2004: 175) was devoted to presenting the difficult question of French productivity. This is difficult for those arguing for a radical change in attitudes to work and

working practices because one 'certainty' for Camdessus is that 'in terms of labour productivity per hour, France is among the highest'. Thus Camdessus has to immediately present another certainty, that 'this is not very significant because, and not by accident, it is accompanied by a low level of working time and a low level of employment'. Camdessus argues that it is 'certain' that if the French worked as long as the Americans and had as high a level of labour force participation, the productivity advantage would be reversed. A more helpful 'certainty' for Camdessus is the result provided by another measure, GNP per head. Under this, Europe, which had been catching up the US, stopped doing so during the 1990s. Indeed in the 'Quantitative facts' Annex 4 (Camdessus, 2004: 178-195), this is the only productivity data displayed. From this it is but one step to draw an equally 'certain' conclusion. The report includes a section 'Quantity of work' with a table showing the rate of growth in GDP between 1980 and 2003, France +59 per cent and total worked hours falling by 6 per cent. This is compared with US GDP +101 per cent with worked hours rising 39 per cent, and the UK with GDP +75 per cent and worked hours rising by 8 per cent. Camdessus (2004: 180) then boldly asserts that 'the accumulated gap in growth in French GDP and that of the US or UK is almost wholly explained by the gap in growth in the numbers of hours worked'.

#### *The Aubry laws*

The mandatory restrictions on working-time introduced by the Jospin administration in 1998 and 2000 appear at first sight to be an extremely heretical departure from the prevailing orthodoxies in Europe which, as with the Luxembourg agenda of the EU, see Americanising labour market deregulation as the only path back to full employment. This may be too narrow an interpretation; these 'Aubry laws', corresponding to French tradition, actually used the framework of negotiations on working time to carry out comprehensive reforms of the employment relation which in many ways made the use of labour by enterprises much more flexible (Beaujolin-Bellet, 2004). Governments of both left and right have in fact been enthusiastic supporters of the Luxembourg agenda and the European Employment Strategy. It is for this reason that the following government has sought only to revise, not to repeal this legislation. The key issue is perhaps whether the kind of socio-political negotiation which was used to implement the Aubry laws will continue to be possible in France. It may also be the case that changes in employment practice have already made a bargaining framework centred on working time obsolete. According to Veltz (2000) nearly half the French workforce state that their employer does not control their working time, only their performance.

#### *Issues in Germany*

The German economic malaise of recent years certainly involves slow labour productivity growth, as well as weak GDP growth, persistently high unemployment and an imbalance in public finance. On the other hand, very moderate wage growth has kept down the price of exports in spite of lower productivity growth rates and buoyant net exports have been the main component of GDP growth over the last cycle (for an overview, Grahl and Teague, 2004).

### *The Hartz reforms and the service sector*

Although the specific problems of the new Länder are recognised by everyone (Münter and Sturm, 2003), general debate counterposes an essentially Keynesian diagnostic to a structural analysis focused on labour market rigidities. The latter view has prevailed decisively among policy-makers, with the launch of a series of reforms to unemployment benefits and the rules applicable to them ('Hartz Reforms'). These include:

- Reform of the state employment bureaux, in an attempt to improve matching of unemployed workers to vacancies;
- *Ich-AG* (Me-incorporated) – the promotion of self-employment – and of part-time work (*Minijobs* – that is, where hours are too short to qualify normally for social security contributions);
- Cuts to unemployment indemnities and tightening of eligibility conditions: in the past unemployed workers having exhausted their social insurance entitlements (*Arbeitsgeld*) spent some time on slightly reduced benefits (*Arbeitsloshilfe*); they will in future be moved directly to the social minimum (*Sozialhilfe*).
- Big reductions in existing job-creation programmes such as SAM and ABS which are used, particularly in the East, to channel the unemployed onto a 'secondary' labour market.

It is probably too early to measure the impact of these reforms: the winding down of the big make-work schemes can be expected to boost measured productivity while the encouragement of mini-jobs and of self-employment as ways to reduce the unemployment count can be expected to reduce it, at least in the first instance: reservation wages presumably act as a floor to productivity and the thrust of the Hartz reforms is to reduce reservation wages.

However, the long run consequences of such change, which accompanies other reforms, for instance of the pension system, in the same direction may depend on their impact on the general functioning of the economy. Note that sectoral effects are not necessarily the important consideration in the Hartz reforms; the aim is to expand the service sector in such a way that possibly lower productivity is compensated by lower wages. Such a sector would contribute to the economy firstly by absorbing some of the unemployed and thus taking pressure off the government budget, secondly by lowering the prices of consumer services to the rest of the economy. From that point of view, the advantages being sought might well be at the cost of a decline in productivity in the service sectors involved. The relatively small size of the service sector in Germany has been a continuing cause of concern to policymakers, but several factors suggest that this concern is exaggerated: to some extent the smaller than usual size of the service sector simply reflects Germany's successful export performance in manufactures; to some extent it is a statistical illusion, arising from low levels of outsourcing of service functions by industrial companies; finally it reflects relatively low feminisation of the workforce and the unrecorded provision of services in the home (Bosch, 2002).

### *The Mittelstand*

Another issue concerns the differential performance of large and small enterprises. Positive spillovers from large companies to their smaller suppliers. The giant industrial companies of Germany, export-oriented and highly

transnational, have had recently to carry out major reorganisations to respond to various forces in world markets. This has involved reform of their employment relations which are now more focused on the enterprise (Streeck and Höpner, 2003). There is a discussion of how deep and comprehensive these changes are. However, there are few commentators who believe that the big companies are in serious trouble; for one thing, they are concentrated in the fast-growing export sector. Much more serious concern has been expressed about the SMEs of the *Mittelstand*, selling into stagnant domestic markets, under certain forms of financial pressure and perhaps less able than in the past to obtain gains from their relations to the larger firms. The Groningen data set does not let us relate productivity growth directly to export orientation, but there is widespread agreement that the problems of the *Mittelstand*, more centred on the home market, include low rates of productivity growth. (For the general problems of this sector see KfW Bankengruppe, 2004). The impact of the labour market reforms referred to above will certainly change the character of German small business by adding very large numbers of self-employed promoted, with the help of subsidies, from the ranks of the unemployed. These subsidies help to explain a 20 per cent growth in the self-employed over the last decade, almost all without any employees, while the number of self-employed able to employ other workers has in fact declined (Vanselow, 2003; see Table 24).

**Table 24. Change in employment forms in Western Germany (millions)**

	1985	1989	1991	1993	1995	1996	1998
Contract Workers	0.0	0.1	0.1	0.1	0.2	0.2	0.3
'Mini-Jobs'	0.0	0.8	1.4	1.4	1.6	1.8	2.3
Temporary Workers	2.6	2.7	2.5	2.4	2.4	2.5	2.8
Self-Employed	3.1	3.0	3.2	3.2	3.3	3.3	3.4
Normal Contracts*	20.4	20.5	21.8	22.1	21.4	21.3	20.5

\*Permanent, full-time or part-time, subject to social security contributions. From Vanselow 2003

### *Issues in Sweden*

Although many central features of the Swedish employment model, such as centralised wage bargaining, have long disappeared, policies and institutions continue to attach very high priority to certain social outcomes – such as full employment and egalitarian income distribution. In recent years there have been distinct but very measured moves away from strict employment regulation and a very comprehensive and generous social protection regime, for example a cut in the replacement rate for the unemployed from 80 per cent to 75 per cent (Carling, Holmlund and Vejsiu, 2001). Some commentators, including the European Commission and the IMF call for more steps in this direction; others still point to the Nordic exception as a model for other economies.

#### *Temporary work*

One major recent reform relates directly to the results presented above; a relaxation of the previously strict conditions for the employment of workers on temporary contracts. This has been an important aspect of the 'flexibility' agenda in many European countries, although less so in Britain where there have been no restrictions on temporary employment and permanent employment has involved fewer restrictions on dismissals. Thus this type of

employment is cyclical in Britain but shows strong trends in the comparator countries (Table 25).

		1985	1990	1996	1998
<b>France</b>	All Workers	4.7	10.5	12.6	13.9
	Men	4.8	9.4	11.5	13.0
	Women	4.6	12.0	13.9	15.0
<b>Germany</b>	All Workers	10.0	10.5	11.1	12.3
	Men	9.2	9.8	11.0	12.1
	Women	11.1	11.6	11.2	12.5
<b>Sweden</b>	All Workers	10.6	10.1	13.8	15.5
	Men	n.a.	7.4	11.9	12.9
	Women	n.a.	12.8	15.8	18.1
<b>UK</b>	All Workers	7.0	5.2	7.1	7.1
	Men	5.7	3.7	6.0	6.0
	Women	8.8	7.0	8.2	8.3

Booth, Dolado, Frank, 2002

In the Swedish case, reforms took place in 1994 and again in 1997 in the wake of a very sharp rise in unemployment at the start of the decade. Holmlund and Storrie (2002) interpret the big rise in the use of temporary workers as a response to increased product market uncertainties on the part of employers. If those uncertainties affected some of the sectors with rapid productivity growth then this would mean that the positive coefficient on temporary work in the Swedish results derives essentially from macroeconomic factors. In any case, it is perhaps too soon to reach definite conclusions on this effect.

### *Issues in Britain*

It is certainly in Britain that productivity has been given considerable prominence as a policy theme, essentially by the incoming government in 1997. A series of documents from the Treasury (for example, Treasury, 2000) identified low labour productivity levels as a key weakness of the British economy. In terms of the measure used in this report, productivity per hour worked, gaps of approximately 20 per cent were identified with both France and Germany (a little more, around 23 per cent, with the US). Broad themes for redressing the situation were identified:

- Increasing investment in physical capital;
- Developing human capital;
- Promoting innovation and R&D;
- Strengthening competition; and
- Encouraging enterprise and entrepreneurship.

However, the European Commission data reported in Table 23 above suggest that a substantial part of these gaps has already been closed and that they will be further narrowed up to 2006, to the extent that the gaps will then be around 10 per cent or less, and so perhaps this theme has lost some of its urgency.

### *Market restructuring*

Thus the assessment one makes of British performance today depends very much on whether one considers that this relatively recent improvement will be

lasting. Similarly, in interpreting the various studies it is most important to relate them to the particular time period under study; the periods and sectors chosen determine what is being explained. For example, a study of British manufacturing in the 80s concluded that 'external restructuring' (closures, company exits) was driving labour productivity changes (Disney, Haskel and Heden, 2003). Very comparable results are obtained in a study of total factor productivity in manufacturing in the same period (Cameron, 2003) although in this case an important role is also played by R&D. This kind of mechanism can probably be detected also in the rankings discussed above, which show strong productivity gains for certain privatised sectors. Since the data used in the present study exclude industrial relations variables (unionisation, bargaining practices and so on) little can be said about this dimension.

However, it should be remembered that this was a period of sharp contraction in many of these sectors and that the ranking data given above indicate that 'success' or 'failure', at least in sectors whose output is tradable, is likely to show up in the *size* of the sector much more than in its labour productivity. A study of the expanding 'new economy' sectors of the US economy in recent years indicates that internal restructuring and reorganisation plays a very important role (Black and Lynch, 2004).

#### *Which comparison?*

Another anomaly is that the assessment of British performance may depend on the *comparator*: thus Crafts and O'Mahoney (2001) explain Britain's lag behind France and Germany by educational and human capital factors but the lag behind the US by technology and innovation. The results above lend some support to this in that Britain does not display the same well-defined association between educational status and productivity as is found in France, Germany and Sweden. A long-run study by O'Mahony (2002) emphasises several institutional factors, including education, in an account of Britain's relatively slower pace of productivity catch-up to the US, compared with European countries including France, Germany and Sweden.

As far as manufacturing is concerned, the nature of the comparison is changed by the increasing importance of inward investment. Both Hubert and Pain (2001) and Harris (2002) suggest that productivity in British manufacturing has been boosted by inward foreign direct investment. It seems likely that incomers from both the EU and the US bring certain aspects of their employment relations with them, although the present study cannot do much to capture these effects.

The weight of argument perhaps points to a continuing productivity bonus from the drastic product market and labour market reforms of the 80s, which have led recently to a distinct narrowing of the gaps with European comparators. The sustainability and quality of this outcome will presumably remain open to question for some time.

# Conclusion

The many limitations of the present exercise should be emphasised. It concerns, firstly, only sectoral effects – there may well be interactions between employment characteristics and productivity outcomes that are economy-wide and not reflected by the data used here.

Secondly, the panel regressions have been carried out over limited time periods of either eight or six years. Since it is known that productivity outcomes have been very different in different decades, extrapolation to other periods (including the future) would be extremely dubious.

Thirdly, the unit of observation in the regressions is the worker, not the sector. This means that the larger sectors have more weight in the results. Although this approach can be defended in that it is just these larger sectors which have most impact on overall productivity, further explorations ought to control for sector size in order to make more use of all inter-sectoral differences.

Fourthly, the present study only represents a preliminary investigation: the combination of economic and employment data seems to offer a rich field for further investigations.

Particularly important is that only associations have been explored – there has been no attempt to explain productivity developments, only to look for associations, with some obvious controls in the form of fixed effects for years and labour-shedding. Thus, no claim can be made that certain types of employment characteristic have a given effect on productivity. This is all the more so because *there are no cases where the employment variables used account for more than a very small part of the variation in productivity*. In many cases the reverse of this is more probable – productivity developments (or the technological and investment factors behind these developments) may help to explain the distribution of employment characteristics over sectors.

This seems to be the most plausible interpretation of the gender effects which have been found, that they correspond to a certain crowding of female workers into lower productivity, and hence perhaps lower wage, sectors. (Migration and ethnicity data were not used in the present study but similar results might be expected). In that respect, the positive coefficients on male gender testify to a certain lack of flexibility in the broad sense of a fluid allocation of workers according to their abilities. Sweden then appears as more flexible in this respect, even if the Swedes themselves draw attention to continuing crowding effects (Löfström, 1999).

A similar interpretation might be made of age effects: that what has been found above is not a higher productive contribution from prime-age workers but a certain crowding of younger (and in some cases, older) workers into lower wage sectors. If this interpretation were valid, then the results for Germany might indicate a more effective insertion of younger workers into employment across the economy.

Can the educational status effects be interpreted in a similar way – as a crowding of less qualified workers into low wage sectors which might not be economically efficient? If this were so, the British results would not be anything

to be concerned about. However, in this case, human capital considerations might lead us to interpret the effect as running *from* qualifications *to* productivity. To the extent that this is so, there is something anomalous about the absence of well-defined results for Britain: either qualified workers are distributed across sectors in an inefficient way or qualifications have less impact on performance in Britain than elsewhere. A third interpretation is perhaps more plausible – that these results reflect problems of data and definition.

Turning to the ‘flexibility’ indicators, the same choice of interpretations is open. If effects run from sector performance to employment characteristics, then one has the general, but rather banal, result that self-employed, part-time and temporary posts are not very good jobs – because they are crowded into less performing sectors. With a reverse of causation, one would have a very negative result indeed – that ‘flexible’ forms of employment work against productivity, except in the perhaps surprising case of Sweden. Thus the differentiated use of ‘flexible’ employment forms can be associated with certain types of labour-market segmentation – a frequently advanced criticism of the flexibility agenda (for the French case, Méda, 2004).

British results qualify these conclusions in two important respects. The strongest evidence for flexibility strategies emerges not from the employment variables themselves but from the productivity data considered in isolation – from the presence of privatised sectors such as the Utilities and Inland Transport among the cases where British performance was exceptionally strong. Further, although part-time or temporary employment displays the same negative impacts as in other countries, this is not so for self-employment which has significantly positive associations with sectoral productivity.

However, the general pattern of results indicates that British and European labour markets are still very far from offering open access to high performance employment, and indeed that certain ‘flexible’ forms of employment might be contributing to labour market segmentation. The directly economic consequences of this state of affairs may be rather small, but the same is not necessarily true for its social consequences.

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