



ETUI-REHS

Innovation and Competitiveness: Comparing the UK, Germany and the US

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'The problems associated with investing in Germany have been too politicised. In high tech there are many factors in its advantage, including well trained staff, high quality research facilities and good infrastructure' (CEO of Advanced Micro Devices, in Financial Times)

Introduction

In current European policy discussions, especially in the context of the review of the Lisbon Strategy to make Europe the most competitive economy in the world, two themes are recurring:

- the belief that the European economy is losing competitiveness, especially vis-à-vis the US, because of inadequate innovation, scientific progress and R&D.
- the assertion that one of the main causes for this is the rigidity of labour markets which prevents the European economy from taking up innovation strategies to the same extent as in the US. More recently, regulation of product markets and other barriers to competition have also increasingly been put forward as innovation barriers.

Overall, the European economy is indeed confronted with the major challenge of improving its R&D and innovation. Despite all the rhetoric, gross R&D expenditure in the EU (15) has remained virtually unchanged at 1.9% of GDP since the early 1990s. In the US, by contrast, R&D spending rose from 2.5 to 2.76% and in Japan from 2.6 to 3.1% (1993-2003, Eurostat structural indicators). With newly industrialising countries in Asia investing heavily in R&D and increasingly producing sophisticated products, the first concern seems entirely appropriate. Many conclude from the

comparison of labour market and product market regulation between the EU and the US that the second concern is equally valid.

However there are big differences in innovation performance between the European countries. A number of them perform even better than the US on measures of innovation. For instance Sweden and Finland do better on the gross R&D measure, with rates in excess of 4 and 3% respectively. In the light of this, it is important to consider whether the evidence supports or contradicts the idea that 'liberal' market economies are 'good' for innovation.

This note compares two European economies that are often considered as the two extremes in terms of labour market and also product market regulation: the UK and Germany. Whereas the former economy is withstanding the growth slowdown since 2000 extremely well, Germany's growth performance has been extremely weak, leading to much hand-wringing in the country and critique from outside about its lack of competitiveness and supposedly hostile conditions for innovation.

The next section briefly reviews the evidence on the degree of regulation in the two economies, before turning to a comparison of different innovation indicators between them with respect to the US and EU15 averages.

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The ETUI-REHS was formed on 1 April 2005 from the merger of three existing trade union institutes to provide the European trade union movement with the scientific and technical support to reinforce its input into the EU's social and economic policy making and also with the knowledge and skills for capacity-building and policy implementation. For further information, please visit: <http://www.etui-rehs.org/>

Labour market and product market regulation in the UK and Germany

The comparison draws on the widely used OECD indicators of labour and product market regulation¹.

The main indicators of labour market institutions used relate to employment protection (dismissal) legislation (EPL), the generosity of unemployment benefits (replacement rate and duration), features of the wage-determination system (union density and collective bargaining coverage) and the 'burden' of taxation on labour (tax wedge). These indicators are summarised for the two countries in the table. In each case they are expressed as differences from the OECD average for that indicator. Positive values indicate high regulation or protection, negative ones below-average levels.

	DE	UK
NRR ST	4,19	-17,06
NRR LT	16,87	5,62
TW 100	9,94	-8,46
TW 67	13,97	-6,51
EPL reg	0,48	-1,08
EPL temp	0,29	-1,37
coll bar	10,24	-27,76
un den	-10,86	-4,64

Note: The variables are the net replacement rate of unemployment benefit for short and long-term unemployed, the tax wedge for workers earning the average production wage and two-thirds of that wage, employment protection legislation for regular and temporary workers, collective bargaining coverage and union density.

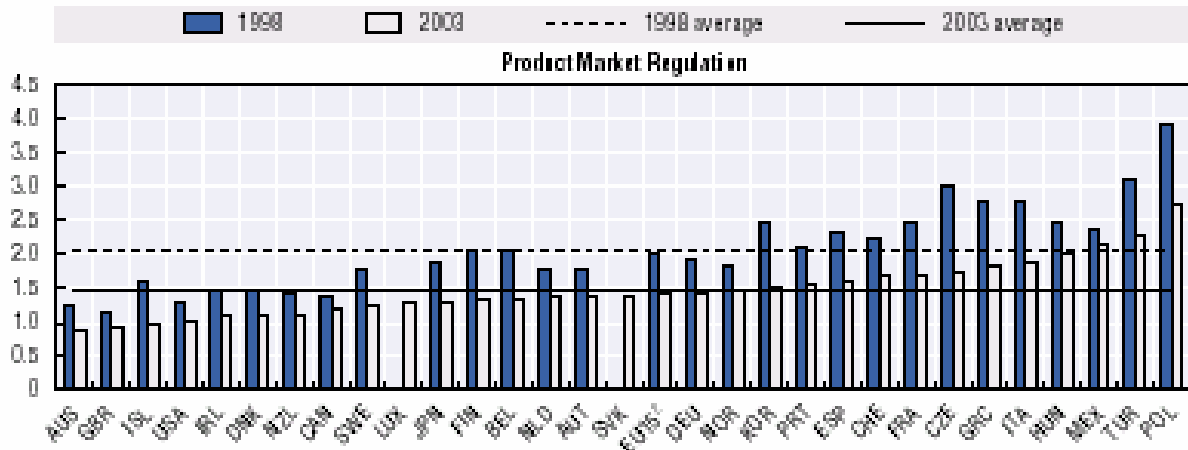
It is evident that, with just two exceptions, the UK is below the OECD average on all these labour-market related indicators, whereas

Germany is above. And even where the UK is also above average – the net replacement rate of unemployment benefit in the longer run – the figure for Germany is much higher. On union density Germany is actually even further below average than the UK. However, this pales into insignificance besides the huge differential in terms of the coverage of collective agreements.

It can be seen that the UK is a less institutionalised economy than Germany on all these indicators, in some cases by a considerable margin. The one exception is union density, but this is more than offset by the much higher coverage of collective agreements in Germany.

A similar picture emerges with regard to product market regulation. Although there is some variation regarding the different dimensions of product market regulation, overall the UK is extremely lightly regulated, much less so than Germany, although that country was less regulated than the (unweighted) OECD average (and broadly in line with the EU15 as a whole). Against the background of an overall decline in regulation between 1998 and 2003, the UK has dropped back from 'first' to second place, whereas Germany has slightly improved its position in the rankings (see Graph, OECD 'Going for Growth', p. 134).

¹ The OECD has been developing and refining these indicators for many years now. While far from above criticism (cf. Howell 2005), they have virtual monopoly status in research into these areas. See OECD Employment Outlook 2004 and 'Going for Growth', OECD 2005.

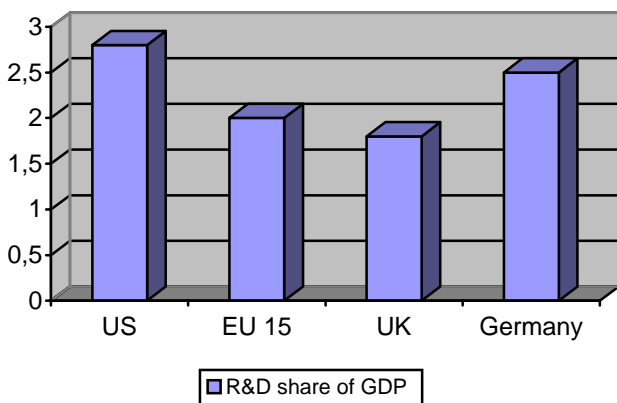


Comparing the innovative performance of the two economies

We consider the innovation performance of the two economies using indicators developed by the European Commission. Unless otherwise indicated, the following statistics are taken from *Key figures 2003 – 2004: Science, technology and innovation*, published by DG Research.

Investing in R&D

Total R&D expenditure as a share of GDP is probably the most widely used indicator of the extent to which an economy is devoting resources to innovation; it is thus an ‘input indicator’. The figures show that Germany is actually very close to the level of the US and Germany’s share is much higher than the EU15 average. The UK on the other hand is clearly underperforming, being below the EU average and devoting around three-quarters of a percentage point less of GDP to research than Germany.



Moreover, the gap between the two countries in terms of R&D would appear to be widening: over the most recent years, growth in R&D expenditure also has been more dynamic in Germany compared to the UK, although both are below the US and the EU average.

	US	EU15	UK	Germany
Average annual growth 1997-2001	4.8	4.5	2.8	3.3

Source: EU innovation scoreboard.

Investment of businesses in R&D

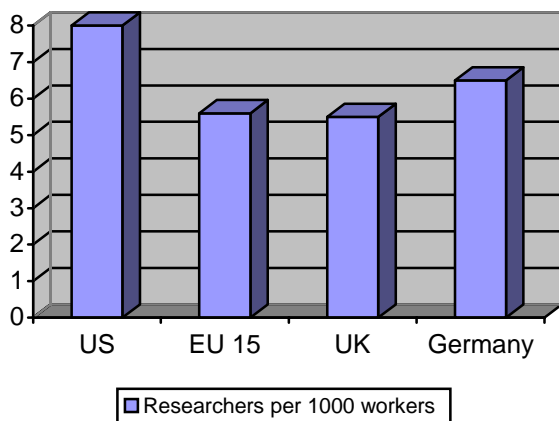
Contrary to what might be thought, this gap in overall R&D performance does not largely reflect the influence of the public sector. Given the prevailing views about the ‘dynamism’ of the UK private sector, it is striking to see that the UK business sector is not performing well in generating R&D, and is even doing slightly worse than the EU15 average (see third and fourth column in table). The performance of German business on the other hand is very similar to US levels and is consistently above the EU average. Apparently, the environment of ‘free’ markets does not translate itself substantially higher private R&D investments in the UK, whereas higher levels of regulation are in practice no signifi-

cant obstacle to high levels of private investment in Germany. This is all the more surprising in view of the faster economic growth in the UK than in Germany, an issue to which we return below.

	US	EU15	UK	Germany
Business investment in R&D as % of GDP, 2001	2.1	1.3	1.2	1.75
Annual growth rates, average over 1997-2001	5.5	5.6	1.8	5.9
Business-financed R&D as % of value added of industry	2.55	1.6	1.28	2.34

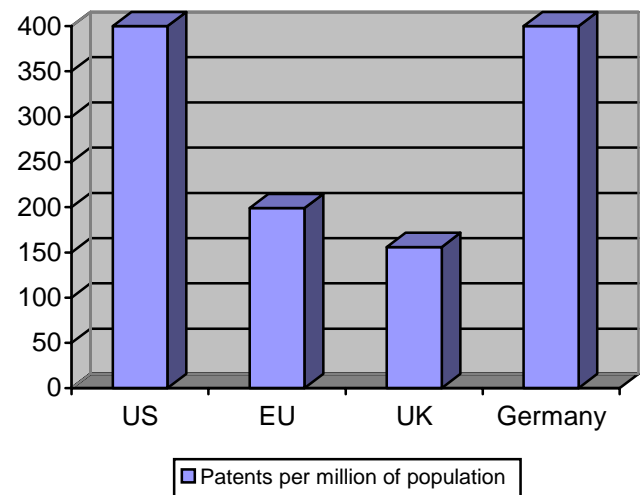
Number of researchers

In line with the performance on R&D expenditure, the number of researchers (per 1000 workers) is substantially higher in Germany than in the UK, although the US record is still better. R&D expenditure per researcher is quite high in Germany (200.000 euro), compared with the UK (145.000) and even higher than in the US (182.000). To some extent this reflects high wages for science graduates working in industry in Germany. It is a feature of the UK labour market that many highly qualified engineers and science graduates are attracted away by higher wages in the financial sector.



Patent applications

The above indicators focus on the ‘input’ side of innovation. Ultimately, however, we are concerned about the ‘output’ of innovation generated by an economy. This is not easy to measure, though. One – imperfect – way to do so is to consider patent applications. As imperfect as it may be as an output measure, the evidence is extremely clear: The sum of patent applications at the European and the US patent office indicates that Germany has as many patents as the US (per million of population), whereas the UK is lagging far behind and indeed is considerably below the EU average.

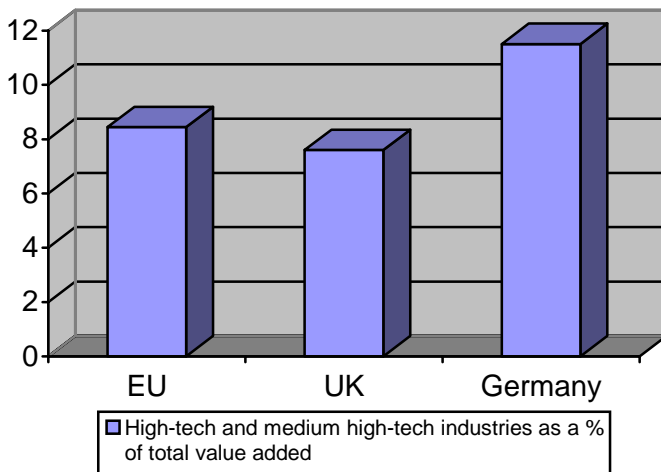


Importance of high-tech and medium high-tech industry

Another set of indicators of innovation relates to the structure of companies and sectors in an economy. An innovative economy will have more firms and a greater share of activity in innovative, high- and medium-tech areas of industry and services, leading to expectations that a greater proportion of firms will be involved in innovative activity. (Comparative figures for the US are not available for these indicators.)

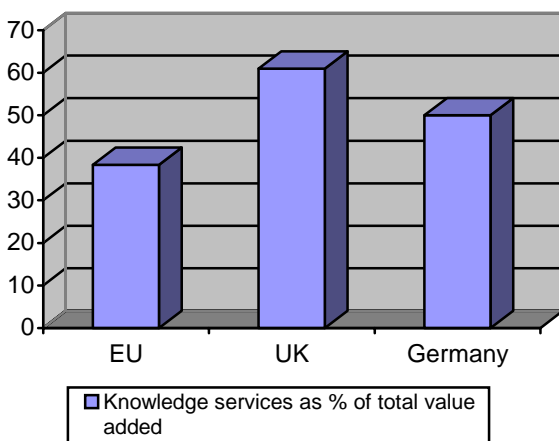
Looking first at industry we see that 11.5% of total value added in Germany (2001) is located in high-tech or medium high-tech indus-

try, a share that is 4 percentage points higher than in the UK. Correspondingly, 10% of German workers are situated in these industries, as opposed to 5% in the UK. Moreover, over the 1997-2001 period the average annual growth rate of the value added of these industries was 1.88% in Germany, whereas it actually fell in the UK by 2.79%.



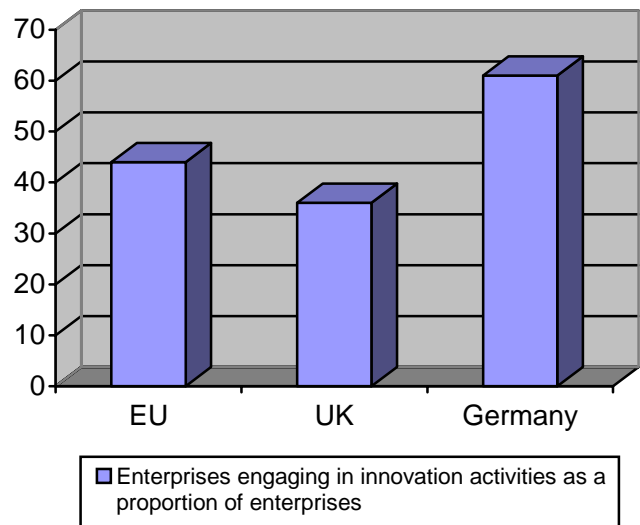
Knowledge-intensive services

In knowledge-intensive services, in line with the traditional specialisation of the German and the UK economy, the position is reversed. The UK's performance is ahead of Germany's, but nevertheless Germany remains among the leading European countries, far above the EU15 average. In terms of growth rates over the 1997-2001 period, this type of service industry has grown on average in the UK (+17.6%) whereas it has been falling in Germany (-0.3%).



Number of enterprises involved in innovation activities

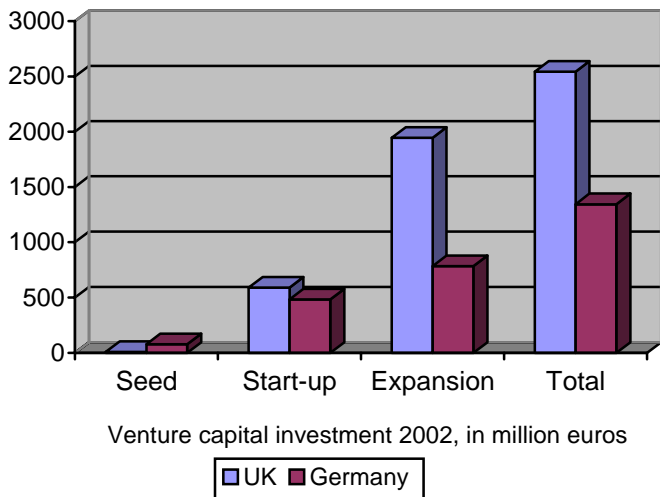
Finally in this indicator type, Germany is, along with Ireland, the European champion in the proportion of enterprises that have engaged in innovation activity over the period 1998-2000. 61% of German firms have done so, as opposed to 36% of firms in the UK. In fact the UK, along with Greece and Italy, scores the *lowest* on this indicator.



Source: Eurostat news report on innovation in the EU, 2004.

Venture capital investment

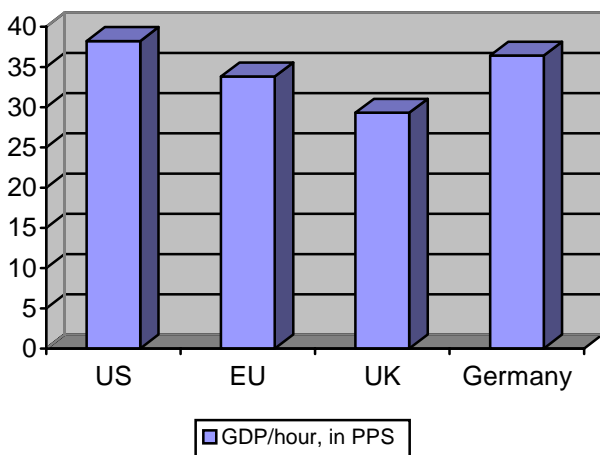
Liberal market economies are often held to be superior to those of Continental Europe in generating new enterprises and business start-ups. And indeed, venture capital investment is one area where Germany's performance is lagging behind the UK's. In absolute terms, the gap is mainly situated in venture capital investment that is destined for financing expansion of activities. In the light of the above statistics, however, it seems that these venture-capital driven projects are not particularly innovative. Germany appears able to generate a better innovation performance out of its existing stock of companies and/or by means of alternative sources of finance.



Labour productivity (GDP per hour worked)

At the end of the day, innovation is not an end in itself. Its purpose is to raise the productivity of labour and thus permit higher living standards (and/or shorter working hours) to be achieved. Labour productivity, while subject to various influence, is thus the key litmus test of an innovative economy.

The figures show that the overall level of labour productivity in Germany is close to the US level and higher than the EU average. Here, the UK's performance is very weak and about 20% below the German productivity level.



Why labour market regulation and well-developed collective bargaining systems can be a 'red carpet' for innovation

The above comparisons cast huge doubts on the conventional wisdom that the UK economy is dynamic and innovative, whereas that of Germany is static and inflexible. More fundamentally, comparing the UK and Germany (and this is supported by what we know about other European economies) suggests that 'co-ordinated market economies' (Hall and Soskice 2001), with high levels of social cohesion and social dialogue, perform better in terms of 'high quality' competitiveness indicators.

Although it goes against conventional wisdom, this empirical fact should not come as a complete surprise. Indeed, the positive relationship between high levels of welfare state provision and social dialogue, with a strong role for trade unions, on the one hand, and innovation, on the other, can be easily explained (see also Rutherford 2001).

The idea that labour and product market regulations lead to inefficiencies and poor performance is based on the assumption that markets and competition are 'perfect' and thus that any market outcome will be the most efficient one. Once allowance is made for the fact that, in the real world, important market failures arise and markets may remain stuck in a 'low' and unsatisfactory equilibrium, it is easy to see why regulations and institutions can be good for innovation and productivity. Without going into details here (see also Janssen 2004; Watt 2004) we can note a number of concrete examples of ways in which institutions lead to better outcomes:

- Employment protection legislation promotes trustful long-term employment relationships which are a prerequisite for skill upgrading and quality production. Stable employment relations provide an environment in which investments in (firm-specific)

training and lifelong learning receive some protection. Workers that engage in training will not do so when they know that they may find themselves on the streets the following day. Firms for their part will not invest in the (general) skills level of their workers when these workers may leave the company at any time. When left to operate freely, markets will fail in this area, and individual firms will be victims of the 'prisoner's dilemma'. They will often refrain from investing in worker's training, hoping to 'poach' qualified workers by overbidding wages in order to attract them from other employers. One way to break out of this vicious circle is through collective negotiations on the sectoral/inter-sectoral level. In a number of European countries (Belgium, the Netherlands and others) social partners negotiate sectoral collective agreements that oblige all employers to pay into a sectoral fund that provides training for all sectoral workers, but also for lower skilled unemployed. Meanwhile trade union involvement and expertise in drawing up training and investment programmes can raise their effectiveness.

- Competition between the unemployed may also result in excessive flexibility in the form of a typical labour contract. It is generally assumed that part-time, fixed-term and temporary agency work not only provide firms with flexibility but also disadvantaged worker groups with a 'spring board' to better working conditions. In practice, however, upwards mobility is not that general. To an important extent, these contracts may also constitute 'low productivity' or 'inactivity' traps and productivity and innovation may indeed be enhanced by avoiding a situation whereby workers are locked into a 'bad jobs' trap.

- Unemployment benefits allow time for efficient job search and thus improve job matching on the labour market, and avoid downward pressure on labour productivity that occurs when workers are forced to take the next best job.
- Good social welfare systems (and some product market regulations) improve workers' health and thus also their labour productivity (and may serve to raise employment rates among the elderly).
- Collective bargaining coordination at regional-sectoral level avoids bailing out low-productivity firms. A perverse disincentive for innovation arises when firms, instead of investing in higher labour productivity, may transfer the problem to workers: by cutting wages they seek to compensate for the competitive disadvantage they experience in comparison with firms that are innovating. (Uncoordinated) enterprise-level bargaining may be very vulnerable to such perverse incentives for innovation.
- Trade unions and structural social concertation provide workers with an 'active voice'. This promotes a positive attitude to change and is crucial for avoiding a situation whereby workers 'vote by their feet' and exit those enterprises where working conditions and relations are poor.
- The same instruments will also lead to greater income equality, which, because of a general availability of purchasing power throughout the different layers of the population, spurs the diffusion of new product innovations.
- Innovation benefits from trade unionism may also extend beyond the work place. Trade union activity and frequent dialogue with employers on all levels build social capital, thus delivering the capability of regions/countries to react and adapt to global shocks in a cooperative and timely manner.

Conclusion: what does the economic performance of Germany and the UK tell us?

Clearly, the above analysis has to be seen in the light of the recent superior performance of the US and UK, in terms of economic growth and employment, compared with (many, but not all) Continental economies. While this cannot be discussed in full here (see Morley/Ward/Watt 2004), what this analysis suggests is that the reasons for the recent success of the UK and the US (and the poor performance of Germany) in terms of economic growth must be sought elsewhere than in terms of innovation. In this context, one must not forget the relatively recent nature of the relative success of the UK and the US and the relative decline of Germany. This calls into question the conventional wisdom that 'structural features' of these economies are to blame. The potentially dangerous imbalances that the former economies have built up (current account, housing market, household debt) also need to be considered, as they place a question mark over the sustainability of their rapid growth. In contrast, Germany has been notably successful on export markets, running a very substantial current account surplus, whereas its domestic demand has been weak (see also the analysis by Gustav Horn in EEEPB 3/2005).

One obvious suspect here is the relatively passive stance of aggregate demand policies in the face of major economic shocks in the euro area. Together with the way that the Stability and Growth Pact has curtailed the use of fiscal policy, the common interest rate set by the ECB has confronted Germany, still coping with the burden and repercussions of Unification and with below-average inflation, with a much more restrictive macroeconomic policy stance than is appropriate to its situation. The above analysis clearly suggests that Germany's supply side performance is far better than claimed by the conventional wisdom. This, in turn, reflects a simplistic confusion of market/centred economic theory with the more complex nature of real-world econo-

mies. All the indications are that, were it to be supported by a more receptive demand-side policy, the German economy, with its strong innovation potential, would be more than able to hold its own in global competition.

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