

Chapter 4

Addressing the productivity gap

The United Kingdom has recorded strong productivity growth over the past decade, surpassing the performance of many continental European countries and thereby narrowing the productivity gap. However, despite narrowing substantially in the early 1990s, the productivity gap with the United States has remained unchanged more recently. While overall the United Kingdom has some of the least restrictive product and labour market regulations, it needs to guard against increasing red tape and tax complexities which can raise the costs of doing business. Restrictive planning regulations make entry of new firms in retailing difficult and inefficient land use raises property prices. Poor transport infrastructure is another potential factor reducing productivity growth, while R&D spending and adult training are relatively low.

The United Kingdom has enjoyed strong productivity growth over the past decade. With its relatively free product and labour markets, the country has been in a good position to benefit from the opportunities offered by globalisation. In general, globalisation is seen as an opportunity to promote productivity growth through greater competition and by permitting firms to specialise in areas where they have a comparative advantage. However, despite the UK's recent good performance, it must go further in a number of areas to ensure it continues to reap the benefits from globalisation. First, restrictive planning and land usage regulations may be holding back entry of new firms, thus hindering adjustment that can promote productivity growth; second, the increasing regulatory burdens on businesses from increasing tax complexities and red tape can raise the costs of doing business; third, there is evidence of underinvestment by both government and business in a number of areas including investment in research and development and transport infrastructure, as well as investment in the skills of the labour force. Research and development may be insufficient for moving up the value-added chain while poor transport infrastructure may be slowing productivity growth by raising transportation costs and by making the labour market less flexible. The relatively low skill level of the workforce could hamper the re-location of labour from declining to expanding sectors and hinder the workforce from fully absorbing new technologies and making the most of knowledge spillovers. Finally, there is also some evidence that lower management skills in the United Kingdom may be hampering faster improvements in productivity. This chapter first highlights recent trends in productivity performance and then discusses potential improvements to policies in these areas.

Labour productivity growth has slowed down slightly

The UK's average labour productivity growth, as measured by the OECD and calculated on a per hour basis, slowed slightly during 2000-05 compared to the previous five-year period (Table 4.1) although cyclical factors may have played a role.¹ Even so productivity grew faster than in many continental European economies, narrowing the gap in productivity levels with the leading European countries. On the other hand, productivity growth accelerated in the United States. Since 2000, the UK's average growth in output per hour is estimated to have been 0.6 percentage points lower than that in the United States (Figure 4.1).

Table 4.1 also illustrates that most labour productivity growth in the United Kingdom since the mid-1980s has been generated by multifactor productivity (MFP) growth and that the most significant explanation for the recent shortfall in the UK's average labour productivity growth relative to that in the United States is a deficit in MFP growth. Similar conclusions are drawn by Escolano (2003). Nonetheless, in comparison with most other G7 economies the UK's MFP growth was fast.

Table 4.1. **Output and productivity growth and the components of output growth**

	Per cent						
	United Kingdom	United States	Canada	France	Germany ¹	Italy	Japan
GDP growth							
1985-90	3.2	3.2	2.8	3.2	..	3.1	4.7
1990-95	1.6	2.4	1.7	1.2	1.5	1.3	1.5
1995-00	3.1	4.1	4.0	2.8	2.0	1.9	1.0
2000-05	2.4	2.4	2.5	1.5	0.6	0.7	1.3
Labour productivity per hour worked (A + B)							
1985-90	1.4	1.3	0.4	2.7	..	2.1	4.2
1990-95	2.8	1.2	1.4	2.0	2.4	2.4	2.3
1995-00	2.3	2.2	2.3	2.1	2.0	0.9	2.1
2000-05	1.9	2.5	1.1	1.5	1.3	0.0	2.2
Multifactor productivity growth (A)							
1985-90	0.8	0.8	-0.4	1.9	..	1.4	3.2
1990-95	1.6	0.7	0.6	1.1	1.4	1.5	1.0
1995-00	1.5	1.3	1.5	1.4	1.3	0.3	0.8
2000-05	1.3	1.8	0.4	0.8	0.7	-0.7	1.4
Contribution of factor inputs to labour productivity growth (B)²							
1985-90	0.6	0.5	0.8	0.8	..	0.8	1.0
1990-95	1.2	0.5	0.9	0.9	0.9	0.9	1.3
1995-00	0.8	0.8	0.7	0.7	0.7	0.6	1.2
2000-05	0.6	0.7	0.6	0.7	0.6	0.7	0.8

1. 1991-95 instead of 1990-95.

2. The factor shares are the share of labour and capital in total factor costs measured at current prices. Compensation of labour corresponds to the compensation of employees and the compensation of capital input is the value of capital services (measured by the user cost of capital services times the quantity of capital services).

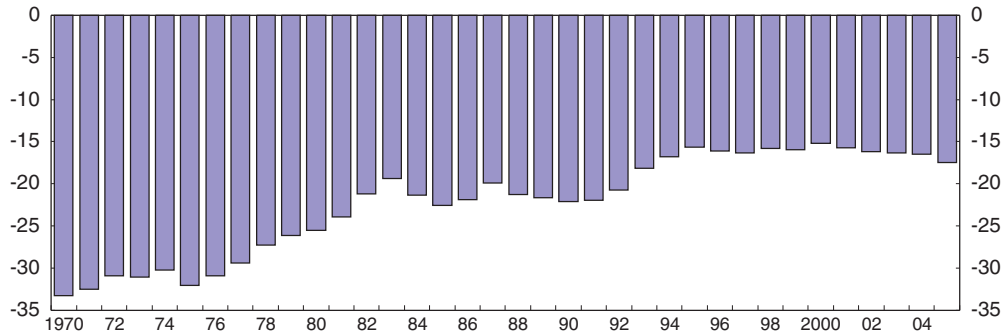
Source: OECD (2007), *Productivity database*, April, www.oecd.org/statistics/productivity.

There is a productivity gap in most industries, but it is largest in the service sectors

The sizeable productivity gap relative to the United States is due largely to poor performance in a few service sectors, notably wholesale and retail trade, business services, and to a lesser extent financial intermediation (Figure 4.2, upper panel).² Together they account for almost 60% of the total productivity gap. While the service sectors account for the majority of the productivity gap, manufacturing also accounts for around 20% of the total gap. Other studies have similarly emphasised the importance of the service sectors in this regard; Griffith *et al.* (2003) found that about one-third of the total productivity gap in 2001 relative to the United States was accounted for by wholesale and retail trade and financial intermediation, and Basu *et al.* (2003) found that wholesale and retail trade accounted for about three quarters of the acceleration in US MFP growth in the late 1990s and one-third of the UK's deceleration. Moreover, despite the lower level of productivity in these sectors the evidence below suggests that they have not been catching up. Indeed, labour productivity growth per employee has lagged behind that of the United States in most industries during the past decade (Figure 4.2, lower panel), particularly in manufacturing and in low-skilled services such as wholesale and retail.

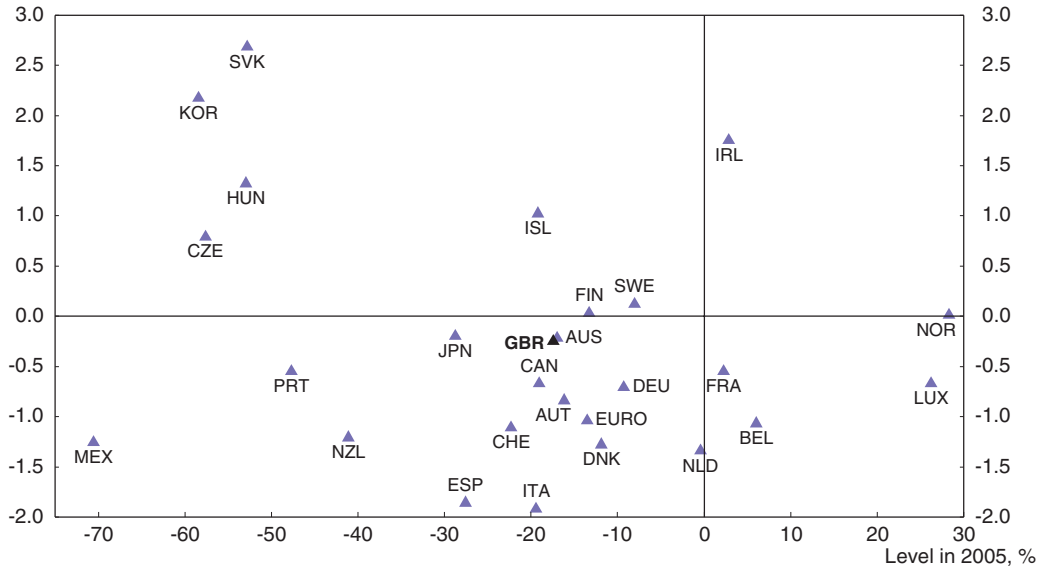
Figure 4.1. Labour productivity
 Measured by the gap in GDP per hour worked relative to the United States¹

Evolution of the United Kingdom gap
 Per cent



International comparison

Average % growth,²
 1995-2005



1. GDP in volume converted to US dollars using constant purchasing power parities.
2. Compound annual rate.

Source: OECD (2007), *Productivity database*, March, www.oecd.org/statistics/productivity.

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Restrictive planning regulations hinder productivity growth by limiting new firm entry

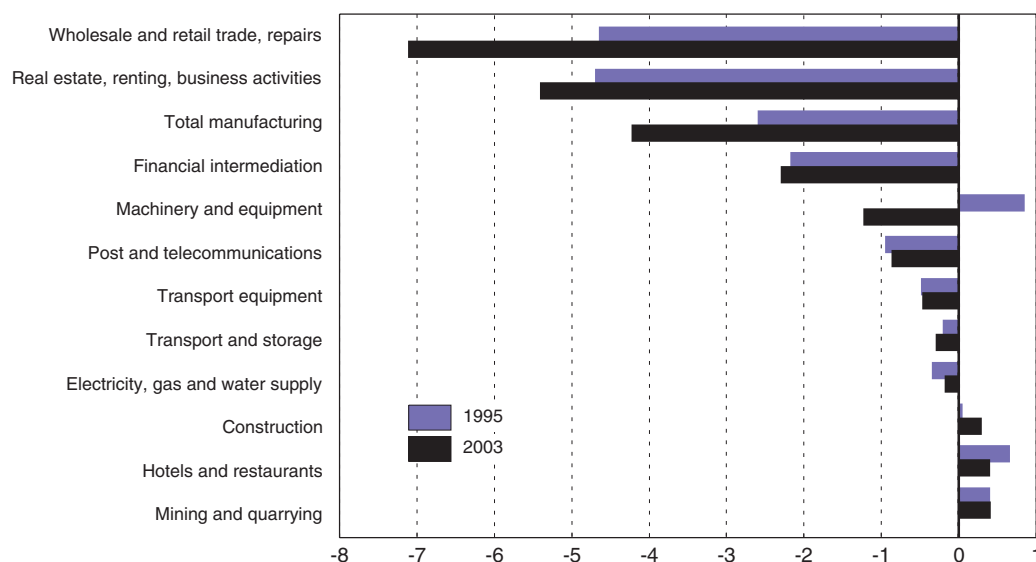
There is evidence that a large fraction of labour productivity and total factor productivity growth at the industry level is accounted for by the reallocation of outputs and inputs from less productive to more productive firms (Disney *et al.*, 2003) (Figure 4.3, upper panel).³ Indeed, firm turnover, which is a good proxy for the reallocation of resources, is higher in most UK sectors than in the majority of European countries (Figure 4.3, middle panel). However, within the United Kingdom, firm turnover in retail and wholesale trade is low compared with other sectors (Figure 4.3, lower panel).⁴ Foster *et al.* (2002) found that productivity growth in US retailing has been largely due to the entry and exit of new stores,

Figure 4.2. **Productivity gap relative to the United States**

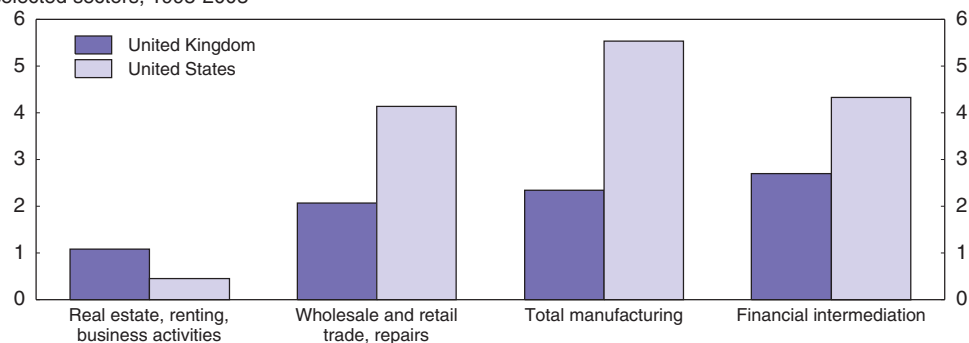
Per cent

Contribution to the overall productivity gap¹

In selected industries


**Labour productivity growth per employee²**

In selected sectors, 1995-2003



1. Productivity measured as value added per employee, converted to US dollars using 2000 purchasing power parities and weighted by employment share.
2. Using current purchasing power parities.

Source: Calculations based on the OECD (2006), *Structural Analysis (STAN) database*, www.oecd.org/sti/stan.

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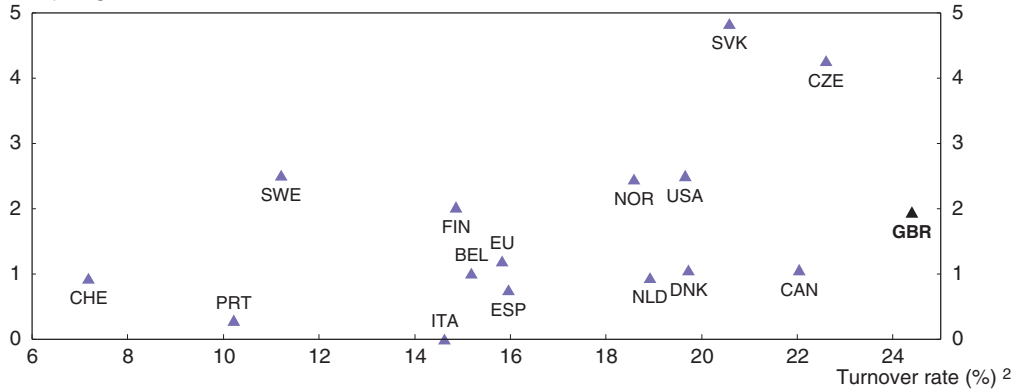
rather than productivity growth in incumbent stores, suggesting that low turnover in retail could be a factor explaining low productivity in this sector in the United Kingdom.

Previous *Economic Surveys* have identified restrictive planning regulations as a key factor curtailing the entry of new businesses, particularly large-format operators, in the wholesale and retail sector. For example, the World Bank *Doing Business* database ranks the United Kingdom 24th in the OECD in terms of the number of procedures required for a construction business to build a standard warehouse (Figure 4.4). These procedures include those required to obtain all necessary licenses and permits, receive all required inspections, complete all required notifications and submit the relevant documents (for example, building plans and site maps) to the authorities.

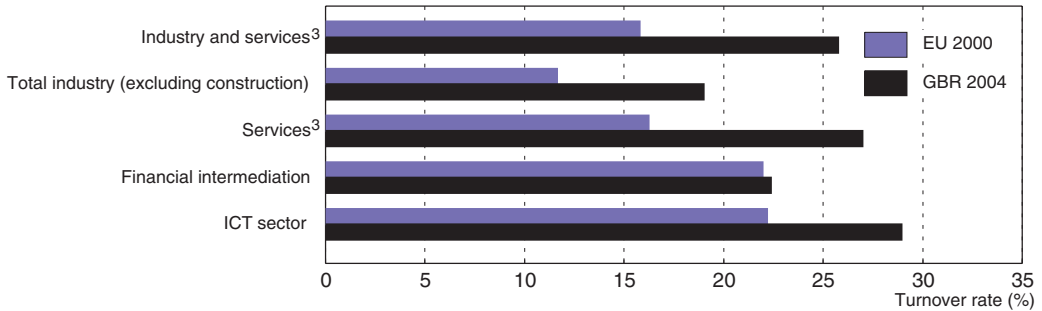
Figure 4.3. Firm turnover and labour productivity¹

Firm turnover and average labour productivity

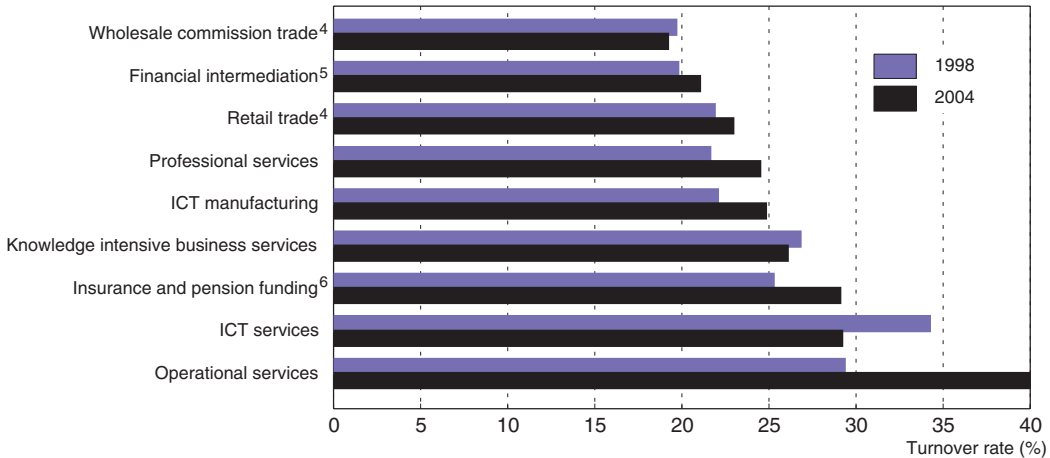
Average labour productivity (per hour), % growth 2000-05



Comparison of turnover: United Kingdom and EU



Turnover in the United Kingdom

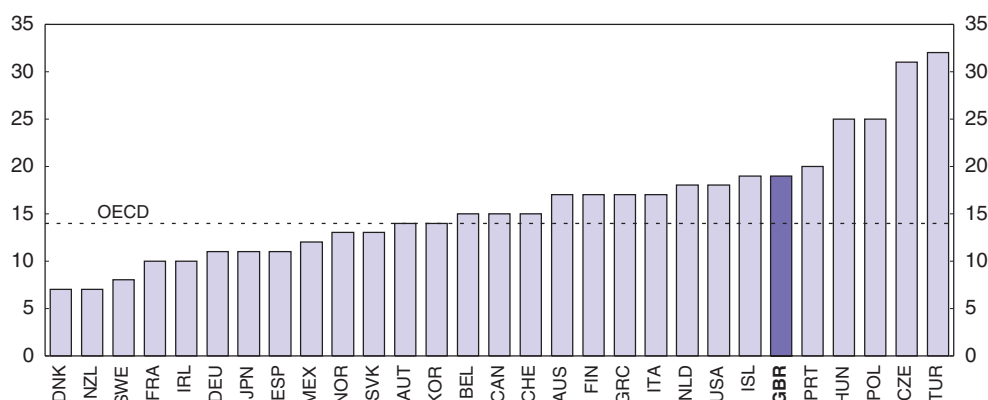


1. The turnover rate is calculated as the sum of births and deaths of firms over the total number of active firms.
2. 2003 or latest year available: United States 1996; Canada 1997; Belgium 1998; Denmark, EU and Norway 2000; Netherlands and Portugal 2002.
3. Excluding public administration and management activities of holding companies.
4. Excluding motor vehicles and motorcycles. Retail trade also excludes repair of personal and household goods.
5. Excluding insurance and pension funding.
6. Excluding compulsory social security.

Source: Eurostat database, Structural Business Statistics, September 2007; OECD Firm-Level Data Project, www.oecd.org/eco/firmleveldataport; OECD (2007), Productivity database, March, www.oecd.org/statistics/productivity.


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Figure 4.4. **Procedures for a business in the construction industry**
Number of procedures for building a warehouse, 2006¹



1. All procedures required to build a standardised warehouse as an example of dealing with licenses. No data is available for Luxembourg.

Source: World Bank and International Finance Corporation (2007), *Doing Business* – online database, www.doingbusiness.org.

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Firm entry in the retail and wholesale sector is also impeded by the “town-centre first” policy which is intended to protect the vitality and viability of town centres by giving planning preference to town centre sites. Since the introduction of this policy in 1996 the percentage of retail floorspace constructed in town centres has steadily increased; the percentage of small shops has increased by 8 percentage points; and the median size of stores belonging to a large supermarket chain fell from 75 employees in 1997/98 to 56 employees in 2002/03 (Haskel and Sadun, 2007). By contrast, large store formats and edge-of-town or out-of-town developments, which tend to be lower cost, have suffered (Griffith and Harmgart, 2005; Haskel and Sadun, 2007).

Within the “town centre first” policy, applications for retail outside the town centre that have not been previously anticipated in local plans are subject to both a “needs test” and a “sequential test”. The needs test assesses the future market demand for additional retail floor space based on population levels, forecast expenditure on specific goods and retail space productivity growth. The sequential approach implies that preference should first be given to town centre sites, followed by edge-of-centre and then out-of-centre sites. In addition, in the 2005 government guidance for planning (*Planning for Town Centres*), local authorities are instructed to include in their development plans policies on maximum gross floorspace for different types of centres. All of these policies are likely to have reduced outlet size, adversely affecting productivity. Indeed, there is evidence showing that larger retailers have higher labour productivity in the United Kingdom (Haskel and Khawaja, 2003) and a recent study by Haskel and Sadun (2007) suggests that the fall in within-chain shop size in UK retailing was associated with a lowering of total factor productivity (TFP) growth by about 0.4% (corresponding to about 40% of the post-1995 slowdown in UK retail TFP growth of about 1%). Since firm turnover appears to be relatively low in UK retailing, restrictive regulation may also have hindered the opening of new stores and the closing of older less productive stores.

The Barker Review of Land Use Planning (Barker, 2006) (Box 4.1) recommended that planning should give more weight to economic issues in its decision making and that a

Box 4.1. **The Barker Review of Land Use Planning**

The Barker Review was an independent review of the land use planning system of England, focusing on the link between planning and economic growth. The review looked into how, in the context of globalisation, planning policy and procedures can better deliver economic growth and prosperity alongside other sustainable development goals. In particular it assessed ways of further improving the efficiency and speed of the system and ways of increasing the flexibility, transparency and predictability that businesses require. Another goal was to assess the relationship between planning and productivity and the relationship between economic and other sustainable development goals in the delivery of sustainable communities.

The recommendations targeting flexibility and responsiveness aim to ensure that regional and local plan documents are as timely as possible and that they take full account of the requirements of economic growth alongside social and environmental needs. The second set of recommendations focuses on the efficiency of the process with the aim of achieving an improved framework for the delivery of major infrastructure projects, a simpler national policy framework and decision-making processes focused on outcomes. The final set of recommendations deals with the more efficient use of land. Two important suggestions are for changes to encourage business property to be kept in use and to provide incentives for the use of vacant previously developed land, and for a review of green belt boundaries to ensure that they remain appropriate given sustainable development needs, including regeneration.

more positive approach to development should be taken in cases where local plans were indeterminate or out-of-date. In relation to retail development, it also concludes that the needs test has most likely limited retail choice and resulted in higher prices while restricting the expansion of stores beyond the town centre that could enter the market without harming the town centre itself. Thus it recommended removing the needs test for market demand, which can add up to £50 000 to planning fees, from the town-centre-first policy.

The government has recently released a White Paper in response to the Barker Review (HM Government, 2007). Like the Barker Review, the White Paper makes explicit reference to the desirability that planning policy be formulated with a view to its potential to promote productivity. The major recommendation of the White Paper is the implementation of a new single planning regime for major infrastructure projects with the view to streamlining the planning approval process. Additionally, while supporting a town centre first policy, the White Paper foreshadows the removal of the requirement for applications to meet a town centre “impact test” and a “needs test” which inhibit competition and consumer choice.

Policies to encourage a more efficient use of land

Inefficient land use has probably contributed much to the long-term upward trend in real house and property prices, exacerbating problems of affordability. In 2004, the cost of living in London (based on prices and/or rents of inner-city apartments typically bought or rented) was the highest among the major large cities in the OECD, reducing London’s strong position as an attractive business location (OECD, 2006a).⁵ The Barker Review suggested that the re-development of low-productivity agricultural land would have the

least environmental or wider social impact. While this land is often located close to cities and towns, much of it is currently classified as part of the green belt, leading to the recommendation that regional and local planning bodies should review their green belt boundaries. This recommendation makes a lot of sense, although strong political leadership and a change in public perception may be required to confront opposition from environmental lobbyists and from rural residents, especially in light of a widespread misconception of the scale of current development. Although only 17% of respondents in a survey conducted for the review think that it is important to protect low-productivity agricultural land from development, about half the population thinks that at least half of all land in England is developed, even though it actually is only 13%, the same size as the green belts (EUI, 2007; Barker, 2006). However the government's White Paper response to the Barker Review explicitly rules out a change to the government's current "green belt" policy.

In the 2007 Budget the government announced steps to reform tax exemptions on vacant and unused commercial land by shortening the exemption period and by applying the shortened exemption period more uniformly across different types of properties. The government has also signalled its intention to examine whether other rates and charges should apply to vacant and derelict land.⁶ These changes should go some way towards increasing the productive utilisation of land and reducing speculative behaviour. While good early progress has been made in tackling these issues, the government needs to formulate an explicit strategy outlining how it plans to implement the balance of the Barker Review's recommendations particularly with regard to freeing up land for active commercial use, as well as for housing.

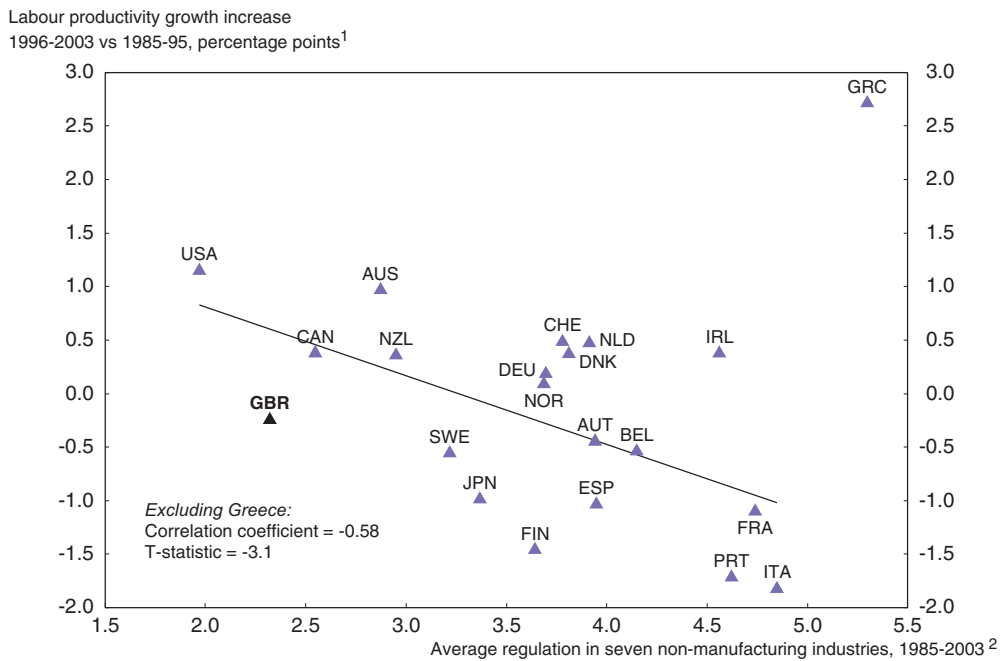
Low overall product market restrictions but growing tax complexities and red tape

Since the mid-1990s, business sector labour productivity growth seems to have increased by less in countries where the regulatory stance was more restrictive (Figure 4.5). A recent OECD study suggests that this is largely because competition-restraining regulations slow the rate of catch-up with the technological frontier (Conway et al., 2006). In the United Kingdom, product market regulation is among the least restrictive in the OECD. However, the United Kingdom must be vigilant against increasing complexities in the tax system (see Chapter 5) and more red tape. While these factors add to the regulatory burden of businesses, they are not captured by the OECD indicator of product market regulation.

Tax complexities and "red tape" may hinder productivity


Tax administration and compliance can be a significant cost to businesses. While the statutory corporate tax rate is the lowest among the G7 economies, many European countries have cut the tax rate in recent years, so that the United Kingdom has lost tax competitiveness. Chapter 5 discusses tax competition issues, including the rising complexity of the UK corporate tax system.

Although a large proportion of business legislation now has its origins in Brussels,⁷ businesses have voiced their concern that the UK government has "over-implemented" or "gold-plated" EU directives by adding unnecessary burdens, when EU-wide legislation is implemented in the United Kingdom.⁸ While there is some debate about the prevalence of such over-implementation, it is agreed that it may have had an adverse impact upon

Figure 4.5. **Product market regulation and labour productivity**

1. Labour productivity is defined as output per hour worked.
2. The scale of the indicators is 0-6 from least to most restrictive of competition.

Source: Conway, P. et al. (2006), "Regulation, Competition and Productivity Convergence", OECD Economics Department Working Papers, No. 509.

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competitiveness and growth. In response to these concerns, the Davidson Review (Davidson, 2006) looked at this issue and concluded that it was not as widespread in the United Kingdom as is sometimes claimed. Nonetheless, the Review recommended legislative simplification in a number of areas (*e.g.* consumer sales, financial services, transport, food hygiene and waste legislation) and it made a number of additional recommendations to help spread best practice in the implementation of European legislation across departments and regulators.

With respect to domestic regulations, the Legislative and Regulatory Reform Act 2006 introduced a number of measures to improve the quality and effectiveness of the regulatory system. The government also committed all departments and major regulators to publish rolling programmes of simplification of regulation as a key part of making progress on the better regulation agenda.

Is investment in R&D and adult learning too low?

The United Kingdom has a low level of business investment but ICT investment is high

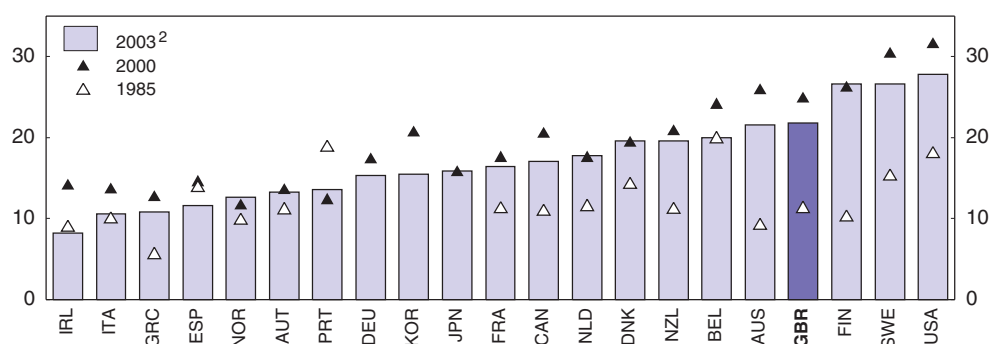
Business investment is an important driver of labour productivity growth, both through capital deepening and through embodying technical progress. The OECD growth study found a robust cross-country correlation between physical capital and productivity (OECD, 2003). Past OECD *Economic Surveys* have pointed to the relatively low level of business investment per worker in the United Kingdom (OECD, 2004). For example, growth in real business investment fell from an average rate of 7% per annum over 1995-99 to an

average 2% per annum over 2000-05. However, there is some debate about whether or not this is holding back productivity. Escolano (2003) finds that higher productivity could be achieved without a higher capital-output ratio and Koeva (2003) argues that it is investment in machinery and equipment which matters most for productivity growth and this component of UK investment is comparable to that in other OECD countries. Another encouraging sign is that the share of information and communication technology (ICT) investment in business fixed investment doubled to more than 20% between 1985 and 2003. The United Kingdom now has one of the highest shares of ICT investment in the OECD (Figure 4.6, upper panel). Among OECD countries there appears to be a positive correlation between ICT investment and MFP growth (Figure 4.6, lower panel) and there is

Figure 4.6. **ICT investment in OECD countries**¹

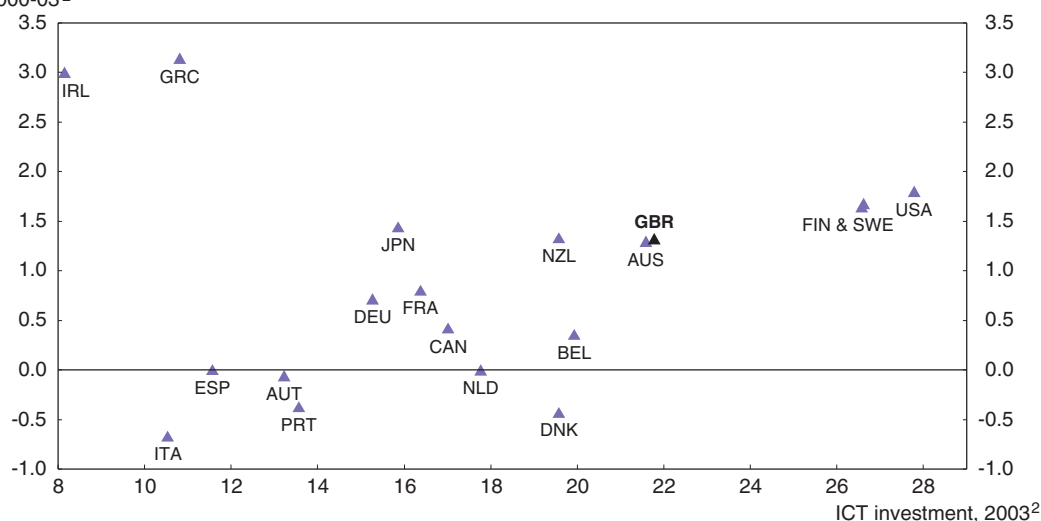
Per cent

Evolution




ICT investment and growth in MFP³

MFP average growth
2000-03²



1. Information and communication technology (ICT) investment as a per cent of non-residential gross fixed capital formation for the total economy.
2. Or latest year available: 2005 for Canada, France, Germany, Italy and the United States; 2004 for Australia, Japan, Korea and Spain; 2002 for New Zealand and Norway.
3. Multifactor productivity. The correlation excluding Greece and Ireland is 0.77.

Source: OECD (2007), *Productivity database*, April, www.oecd.org/statistics/productivity.

StatLink  <http://dx.doi.org/10.1787/116476034147>

evidence of a positive productivity effect of ICT investment in computers and software by firms and of internet use by employees in the United Kingdom (Clayton, 2005; Basu et al. 2003).⁹ Moreover, recent work by Marrano et al. (2007) suggests that investment in intangibles is important in the United Kingdom, reflecting its industrial structure, and that its inclusion in the measure of aggregate investment improves the UK's record of investment growth.

Some of the productivity benefits from the high ICT share may be yet to come. For example, Basu et al. (2003) stress the role of ICT as a "general purpose technology" which may require reorganisation and learning and so only raises MFP in ICT-using sectors with a time lag. Thus, the finding that MFP growth has not yet picked up despite strong increases in ICT investment may reflect such lags. In turn, this raises questions about whether the UK's complementary investment in human capital is sufficient to realise these productivity gains (Keep et al., 2006). For instance, if a firm undertaking significant computer investment fails to complement this with sufficient organisational change, it may fail to realise productivity gains. At the same time, productivity growth may temporarily slow during the process of organisation change as these investments divert resources from current production (Crespi et al., 2006).

The 2007 Budget included a package of reforms intended to enhance productivity. These changes included the introduction of an annual investment allowance and changes to remove distortions in the tax treatment of business investment. In addition, the corporate tax rate is to be lowered from 30% to 28% from April 2008. These changes should improve incentives for businesses to invest.

Innovation performance

Research and development (R&D) is another important driver of productivity growth. The previous *Economic Survey* reported that on traditional measures of innovation performance, such as spending on R&D and patenting activity, the United Kingdom ranks close to the OECD average, but poorly relative to the G7. However, also as discussed in the previous *Economic Survey*, one possible explanation is that the industrial mix of the UK economy is concentrated in sectors that are not traditionally R&D intensive.

In addition to industry structure, there are several further possible explanations for the UK's mediocre performance on traditional R&D measures. First, it can be argued that a large share of innovation activities in the UK service sectors are changes in process, organisation and marketing, which are not recorded as R&D spending (OECD, 2006a; OECD, 2005). According to the latest *R&D Scoreboard* by the Department of Trade and Industry, spending on R&D rose by £2 billion in 2006 and around two-thirds of the increase was accounted for by service sector companies.

Second, there is some evidence from the Third Community Innovation Survey that although the most innovative firms in the United Kingdom have a comparable R&D intensity to firms in other countries, a relatively smaller proportion of UK firms are innovative in the first place (Abramovsky et al., 2005a).¹⁰ More recent survey data covering the period 2002 to 2004 suggests that there has been an increase in this proportion. The government's 10-year plan for science and innovation aims to raise R&D intensity from around 1.7% of GDP in 2004 to 2.5% by 2014. This appears to be an ambitious target as it involves a reversal of the trend decline in R&D spending as a share of GDP that has been in place since the early 1980s.

The United Kingdom is well-placed to benefit from knowledge spillovers from multinational enterprises and FDI

Foreign multinational enterprises make up an important part of R&D investment. In 2000, multinational enterprises (MNEs) accounted for about a third of all business R&D performed, with that proportion rising to nearly half of all R&D in the mechanical engineering and electrical machinery industry (Table 4.2). Compared with other OECD countries, a particularly large (and rising) share of UK R&D is being financed from abroad – close to one-quarter of all business sector R&D (Figure 4.7). At the same time, UK multinationals are undertaking an increasing amount of R&D abroad (Abramovsky *et al.*, 2005a).

Table 4.2. **Proportion of R&D performed by multinational enterprises**

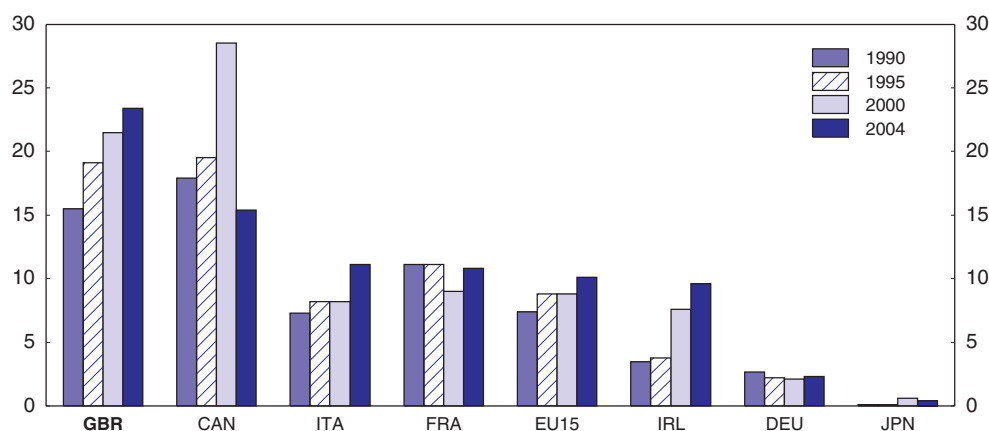
2000

	Total R&D spending (billion £)	Percentage share performed by		
		Domestic firms	UK multinational enterprises	Foreign multinational enterprises
Pharmaceuticals and chemicals	3.42	16	52	32
Mechanical engineering and electrical machinery	2.36	16	36	48
Transport equipment and aerospace	1.85	10	52	38
Other manufacturing	1.08	42	38	21
Services	2.25	39	43	17

Source: Griffith, R., S. Redding and H. Simpson (2004), "Foreign Ownership and Productivity: New Evidence from the Service Sector and the R&D Lab", *IFS Working Papers*, No. W04/22, Institute for Fiscal Studies, London.

Figure 4.7. **Share of research and development financed from abroad**

Business sector, per cent



Source: OECD (2007), *Main Science and Technology Indicators*, Vol. 2007/1.

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The increasingly footloose nature of R&D investment and the importance of knowledge spillovers suggest that domestic rates of R&D investment are not the only way of benefiting from innovation. Other important channels include the presence of multinational enterprises and foreign direct investment (FDI), both of which play an important role in the United Kingdom in generating knowledge spillovers to domestic firms within the same industry as well as to upstream or downstream industries. The way in which FDI generates knowledge spillovers is not well understood. One hypothesis is that

it works through pure demonstration effects and via the mobility of skilled workers across production facilities. Another potential mechanism is through MNE demand for higher product quality and better technology from suppliers. There is some empirical evidence of such positive knowledge spillovers from inward FDI benefiting the productivity of British firms. For example, Haskel *et al.* (2002) suggested that a 10 percentage point increase in the foreign presence in a UK industry raises total factor productivity of that industry's domestic plants by about 0.5%.

Tax credits may play a less important role in boosting R&D investment than general framework conditions

A recent OECD study found that tax incentives could help to raise R&D expenditure, but with long time lags and a relatively modest overall impact (Jaumotte and Pain, 2005). However, the increasingly footloose nature of investment suggests that R&D spending in one country is also likely to respond to a change in incentives in other countries (Abramovsky *et al.*, 2005a; Bloom and Griffith, 2001). Thus if tax credits that attract R&D to one country lead other countries to offer similar benefits, the overall tax cost may be pushed up without commensurate benefits in R&D investment itself.

R&D tax incentives were introduced in 2000 for small and medium-sized enterprises (SMEs)¹¹ and extended to larger firms in 2002. For larger companies the tax credits take the form of a tax relief which can reduce a company's tax bill although for some small or medium-sized companies they can provide a direct cash payment.¹² By early 2006 about 23 000 claims had been made, with around 20 000 of these qualifying under the SME scheme. The total amount of support claimed was almost £1.8 billion (HMRC, 2007). The sectoral distribution of the productivity gap, with a large negative contribution from services, may have implications for the effectiveness of the tax credit. Since a large share of formal research and development is undertaken in manufacturing industries, tax credits to raise R&D may have little effect on productivity in service sectors. On the other hand, there is some evidence that R&D is becoming more important in services (Abramovsky *et al.*, 2005b; DTI, 2006).

The previous *Economic Survey* emphasised the importance of general framework conditions. Among other things it pointed to the importance of raising general skills, improving the funding of universities which have a good record of collaboration with business, reducing red tape, and lowering the overall tax burden on business. It also recommended improved monitoring of the number of students studying science and technology, and improved evaluations of fiscal measures to support R&D.¹³ Since the last *Survey* the government has commissioned and released several reviews which aim to improve such framework conditions. However, it is yet to be seen to what extent the recommendations of these reviews will be implemented.

Poor transport infrastructure may hinder productivity

It is often argued that decades of insufficient investment in public transport infrastructure may be holding back productivity growth (OECD, 2005; IoD, 2007). There is a perception of a deficiency in this area with the United Kingdom ranked sixth in the G7 and fifteenth in the OECD on measures of infrastructure according to the Global Competitiveness Report (World Economic Forum, 2006). However, the cross-country evidence on the effects of public infrastructure investment on productivity is mixed. While a survey of the empirical evidence by the European Commission concluded that most studies found a positive impact of public infrastructure investment on output or productivity, in most cases the effect was

weak and in some cases insignificant (European Commission, 2003). Similarly, a more recent study of road investment in western European countries, found that, although an increase in investment in road infrastructure improved productivity growth, the rate of return on investment was not high (Kopp, 2007). UK-specific studies tend to find clearer results. For example, a recent study established that proximity to economic mass has statistically significant productivity effects and estimated that a 10% reduction in all travel times would raise overall productivity by 1.2% (Rice et al., 2006).

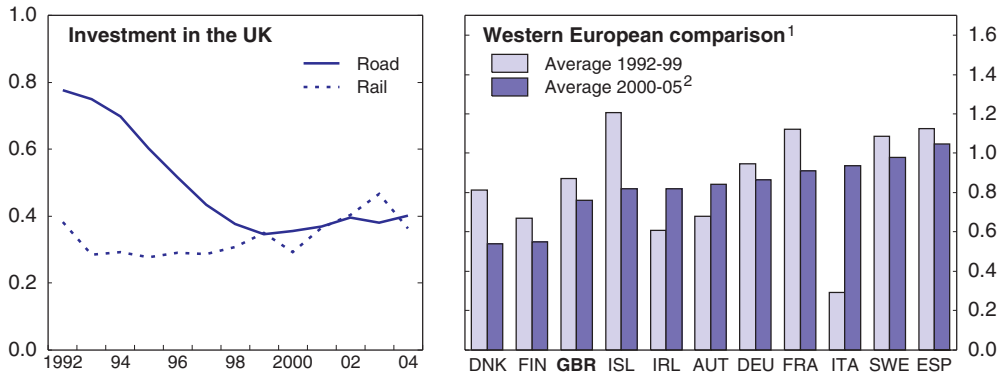
Not only is transport infrastructure important for the efficient movement of both intermediate inputs to production and final goods, it also plays an important role in the labour market, with rail and road networks influencing workers' labour supply, *via* decisions on where to live, as well as the demand for labour, *via* firms' business location decisions. Well-functioning transport systems also support labour market efficiency and flexibility by facilitating the matching of labour supply and demand (Gibbons and Machin, 2006). Good transport links can be important in attracting and retaining business activities. For example, in a survey asking senior European executives what factors were perceived as "absolutely essential" for business location, transport links with other cities and international links were ranked as the third most important factor (Cushman & Wakefield, 2006).

The publication in 2000 of the government's Ten Year Plan for Transport represented a turning point for public spending on transport. It established a long-term investment programme with £180 billion of public and private expenditure over a 10 year period. The plan set out to reduce congestion and pollution, which were identified as the main priorities in the 1998 Integrated Transport White Paper ("A new deal for transport: Better for everyone"). The main focus of the plan was on large scale infrastructure projects with only brief references to policies on transport pricing, car dependence, land use and travel behaviour. Indeed, the plan was subsequently criticised for only being a capital investment programme, for not taking into consideration pricing decisions, for being "built" around inadequate indicators on congestion and pollution and for not setting out any visions for transport beyond 2010 (House of Commons, 2002). The subsequent 2004 White Paper ("The future of transport – A network for 2030") revised the Ten Year Plan and set out the government's transport vision for the next 30 years. It took a more balanced approach between expanding transport capacity and making existing transport networks more efficient. Road pricing was acknowledged as one possible solution.

The Hatfield accident in October 2000 consolidated the view that immediate action needed to be taken to end decades of under-funding in railway infrastructure and coincided with a surge in funding. Total (public and private) investment in railway infrastructure increased from 0.3% of GDP in 2000 to a peak of 0.5% of GDP in 2003 (Figure 4.7). However, while this constituted a notable increase in the level of spending on improving and expanding rail capacity, the United Kingdom was towards the bottom of the ranking on inland transport infrastructure spending over the period 2000-05 despite this period including the spike in railway spending (Figure 4.8).¹⁴ Another notable feature is the dramatic decline in road infrastructure funding, down from around 0.8% of GDP in the early 1990s to around 0.4% of GDP in 2004 which has meant that total spending on inland transport infrastructure has declined as a proportion of nominal GDP since the early 1990s although indications are that public expenditure on roads has risen more recently.¹⁵ Total expenditure on transport infrastructure over the first four years covered by the Ten Year Plan suggests that spending will have to be lifted very considerably if the Plan's expenditure projections are to be met.


Figure 4.8. **Transport infrastructure spending**

Road and rail investment in per cent of GDP



1. No data is available for railways for Ireland from 2002 and there are no railways in Iceland.
2. To 2004 instead of 2005 for Austria, Italy and the United Kingdom.

Source: European Conference of Ministers of Transport (ECMT).

StatLink  <http://dx.doi.org/10.1787/116483708207>

The government recognised that improving transport infrastructure remains an important challenge by commissioning the Eddington Review (Eddington, 2006) to look into the long-run links between transport and productivity and growth. The main recommendations from the report are to:

- Improve the capacity and the performance of the existing transport network by focusing investment on easing bottlenecks rather than new large scale projects.
- Identify future strategic economic priorities and target future growth-focused investment on congested and growing city catchments, and the key inter-urban corridors and key international gateways that are showing signs of increasing congestion and unreliability.
- Accelerate progress towards a widespread road pricing scheme.
- Preserve a systematic and transparent approach to policymaking and funding and ensure that the delivery system can support these policies. This should include reform of the planning system to speed up the approval of major infrastructure projects.

The recommendation to focus investment on bottlenecks in the transport system makes a lot of sense. However, the fact that it implies increased spending in London and the affluent South-East at the expense of other areas of the country suggests that it may meet with political resistance.

The proposal for a widespread road pricing scheme is consistent with the recommendation in the previous *Survey*. It would also provide another source of funding for road infrastructure, spending on which had declined substantially over the past decade and a half (Figure 4.8). Current plans suggest that regional pilots on road-pricing could be underway shortly with the possibility of a national scheme being introduced in about a decade.¹⁶ The success of the London congestion charge might provide useful lessons in the design, introduction and operation of a nationwide system.

The government has welcomed the Eddington Review, agreed with the strategic analysis and committed to taking steps to implement its advice. It plans to report on progress sometime in 2007. The Comprehensive Spending Review may include plans to bolster transport infrastructure spending. To date aggregate spending seems to have been below what would be required to achieve the projections outlined in the Ten Year Plan.

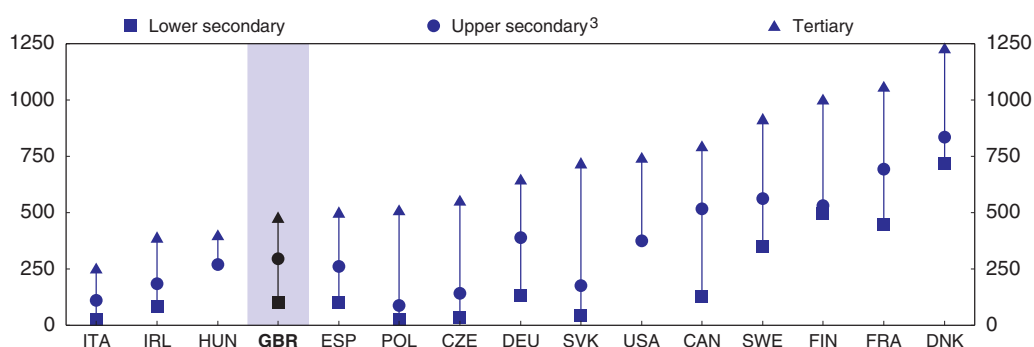
Job-related education and training does little to fill skill gaps

A significant share of the UK population has not completed upper secondary education and a large proportion of adults has relatively low literacy and numeracy skills (Chapter 2). Low investment in the general skills of the workforce is widely cited as a factor holding back productivity growth, by reducing the potential for knowledge spillovers and by slowing the uptake of new technologies.

Not only is initial education important, but changing demand for skills makes non-formal continuing education and training important. In the United Kingdom around 27% (OECD, 2006b) of employees participate in non-formal job-related education and training – well above the OECD average. However, the intensity of participation in non-formal job-related training is comparatively low. The expected number of hours of training per worker is only 315 over the course of a normal working life – considerably below the OECD average. Perhaps most importantly, job-related training and education in the United Kingdom is particularly low among the low-skilled and older workers; for persons who have not reached upper secondary qualifications the intensity of participation is only 103 hours and for older workers it is just 28 hours (Figure 4.9). This suggests that continuing education and training do not succeed in filling in skill gaps.

Figure 4.9. **Time spent on professional training**¹

By level of educational attainment, number of hours, 2003²




1. Expected hours spent in non-formal job-related education and training over a forty-year period for persons aged 25-64.

2. 2002 for Canada.

3. Includes post-secondary non-tertiary education.

Source: OECD (2006), *Education at a Glance*.

StatLink  <http://dx.doi.org/10.1787/116500551877>

In recognition of these weaknesses the government commissioned the Leitch Review which published its report (“Prosperity for All in the Global Economy – World Class Skills”) in December 2006. The Leitch report acknowledged the UK’s poor performance in this area and concluded that even if the existing targets to improve attainment were met, the United Kingdom would continue to fall further behind. In July the government published its response, “World Class Skills” (DIUS, 2007) in which it set out new targets across the range of education levels and made a number of announcements including greater employer involvement in the design and direction of training. Key elements of the plan include:

- Setting an adult literacy target of 95% by 2020, increasing the proportion of adults with level 2 qualifications up to 90% and increasing the numbers with higher education qualifications to 40%.

- Substantially increasing in the *Train to Gain* programme aimed at increasing funding available to employer-directed training schemes.
- Expanding the apprenticeship programme including the introduction of an entitlement for young apprentices.

Even if these targets are met, there are questions about how well these targets reflect the true skill level of the population. As discussed in the previous *Economic Survey*, it is not clear to what extent national vocational qualifications offer a significantly positive return on investment.¹⁷ A better metric than volumes of domestic qualifications may be provided by internationally recognised surveys of adult cognitive skills or by measuring the impacts of acquiring skills in terms of employment and pay progression. Thus, the results of the next adult skills survey (PIAAC), due to be implemented in 2011 will be important, as it will document the extent to which current initiatives are successfully improving adult cognitive skills.

British firms may have a management deficit

One final possible factor contributing to the productivity gap with respect to the United States is that UK firms may be less well managed than US firms. Recent empirical work finds evidence that better managerial practices are associated with higher productivity growth (Bloom and van Reenen, 2006; Bloom *et al.*, 2005). Poor management practices seem to be more prevalent when product market competition is weak and when management of family-owned firms is passed to the eldest son, a practice which is more common in the United Kingdom. These studies conclude that poor management practices could account for one-third of the productivity gap with the United States. Better management practices in the United States are consistent with the fact that foreign affiliates, particularly US affiliates, are more productive than British multinationals. There is also evidence that US-owned firms are more likely to introduce organisational change than British firms (Crespi *et al.*, 2006). Since the skills required of managers are very broad, one somewhat controversial explanation for poor management skills in the United Kingdom is that the current system of A-levels forces specialisation at a too early stage, limiting the breadth of skills of future managers. The Tomlinson Review suggested a new broader diploma for senior high school, although public support for the current system led the government to reject this proposal (Tomlinson, 2002).

Box 4.2. Recommendations on enhancing productivity

- In implementing the Barker recommendations the government should facilitate the entry of new businesses by reforming and simplifying planning regulations, especially in the area of retail trade; abolish the “needs test” for market demand; and put in place strategies that ensure that more weight is given to economic issues in the planning process.
- Free-up more land for development by reconsidering the boundaries of the “green belts” in fast-growing areas.
- Consider further incentives for land development particularly those with the potential to contribute to the funding of local infrastructure.
- Make sure that best practices are followed to avoid “over-implementing” or “gold-plating” EU directives.

Box 4.2. Recommendations on enhancing productivity (cont.)

- Ensure that infrastructure investment does not fall short of that envisaged in the government's Ten Year Plan for Transport. Follow through with targeted spending in key strategic growth areas.
- Continue to examine the options for addressing road congestion and environmental impacts including the implementation of a road-pricing system on a national scale.
- Raise the general skill level of the workforce by focusing adult training on the most disadvantaged groups. In terms of evaluating progress, focus more on broader measures rather than on simple volumes of qualifications. For example, more focus should be given to international measures of adult cognitive skills as well as assessments of employment outcomes that result from acquiring skills and qualifications.
- Assess the efficiency of fiscal support to R&D, such as the R&D tax credit, over the longer term.

Notes

1. International comparisons of productivity are hampered by measurement difficulties, such as the treatment of government output, the measurement of various inputs and the choice of a common denominator, but the OECD has developed a *Productivity Database*, which overcomes most, though not all comparability issues. These issues are covered in detail in Ahmad et al. (2003).
2. An important limitation when using industry data from the OECD's industrial Structural Analysis Database (STAN) is that productivity is only available per employee instead of per hour. Another limitation is that the conversion to a common currency is done by assuming the same price structure (i.e. by using the overall purchasing power parities) in all industries instead of using sector-specific purchasing power parities.
3. Disney et al. (2003) show that during the 1980-92 period external restructuring accounted for around 50% of plants' labour productivity growth and 80-90% of total factor productivity growth.
4. Turnover is calculated as the sum of the birth and death rate. The birth rate is the number of enterprise births divided by the number of enterprises active over the period. The death rate is number of enterprise deaths divided by the number of active enterprises.
5. The cities included were: Amsterdam, Dublin, Frankfurt, London, Madrid, Milan, New York, Paris, Stockholm, Sydney, Tokyo and Toronto.
6. The changes are set out in the Empty Property Rates Bill.
7. Some estimates suggest that this proportion is close to 80%: Open Europe (2005) estimates that 77% of the major regulations passed in the UK since 1998 were wholly or partly driven by EU legislation. However, more conservative estimates are that some 50% of UK legislation has its origin in EU law.
8. Gold-plating includes extending the scope of EU-directives by including extra pieces of legislation, widening the scope of the EU-directives to cover extra requirements and introducing targets and deadlines.
9. Clayton (2005) finds that an extra 10% of employees using computers in manufacturing firms raises productivity by 2.2%, with this effect rising to 4.4% in newer firms.
10. The response rate in the UK survey was low so that there are concerns about it being representative.
11. A SME is defined as a company with fewer than 250 employees and either turnover not exceeding £50 million or a balance sheet totalling less than £43 million.
12. The 2007 Budget announced increases from April 2008 in some elements of the SME R&D tax credit from 150% to 175% and the large company R&D tax credit from 125% to 130%.
13. HM Treasury has recently commissioned a feasibility study for an econometric assessment of the impact of the R&D tax credit on R&D expenditure (www.hmrc.gov.uk/research – Report 19). The

conclusion was that there is currently insufficient data for any firm conclusions to be drawn. This is consistent with the long lags found in Jaumotte and Pain (2005).

14. The 30 Year Plan White Paper (entitled “The Future of Transport” published in 2004) proposed extra funding for the Department of Transport. This was provided in the 2004 Spending Review which included additional spending of £1.6 billion over 2006/07 and 2007/08 to meet the expenditure set out in the Ten Year Plan combined with an additional permanent annual level increase of £0.5 billion from 2006/07 onwards. Additionally a £1.7 billion transport reform package over 2005/06 and 2006/07 was funded to meet immediate exigencies.
15. Inland transport is road, rail and inland waterways, and excludes airports and sea ports.
16. The Department for Transport is currently examining a number of options to address road congestion. These include assessing the use of road hard shoulders in conjunction with reduced speed limits, offering funding support for regional road-pricing pilots and tendering for proof of concept submissions for nationwide road pricing strategies and technologies.
17. See Box 8.1 in OECD (2005).

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Glossary

A8	Eight countries that joined the EU in 2004 (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia)
ACT	Advanced corporation tax
AEN	Additional educational needs
AETR	Average effective tax rate
AR	Average of relatives
CPI	Consumer price index
CVA	Contextual value added
DEL	Departmental expenditure limit
DfES	Department for Education and Skills
DSG	Dedicated schools grant
DTI	Department of Trade and Industry
DWP	Department for Work and Pensions
EMA	Education maintenance allowance
ESA	Employment and support allowance
EU	European Union
EU15	European Union, first 15 member states
FDI	Foreign direct investment
FSM	Free school meals
G7	Group of 7 countries (Canada, France, Germany, Italy, Japan, United Kingdom and United States)
GCSE	General Certificate of Secondary Education
GDP	Gross domestic product
GM	Geometric mean
HICP	Harmonised index of consumer prices
HMRC	HM Revenue and Customs
IALS	International adult literacy survey
ICT	Information and communication technology
IPS	International passenger survey
LA	Local authorities
LFS	Labour force survey
LHA	Local housing allowance
METR	Marginal effective tax rate
MFG	Minimum funding guarantee
MFP	Multifactor productivity
MNE	Multinational enterprise
NAO	National Audit Office
NHS	National Health Service

NINo	National insurance number
OFSTED	Office for Standards in Education
ONS	Office for National Statistics
PCA	Personal capability assessment
PFI	Private Finance Initiative
PIAAC	Programme for international assessment of adult competences
PIRLS	Progress in international reading literacy study
PISA	Programme for international student assessment
R&D	Research and development
RA	Ratio of averages
RPI	Retail price index
RPIX	Retail price index excluding mortgage interest payments
RSCA	Revealed symmetric comparative advantage
SEN	Special educational needs
SME	Small and medium-sized enterprises
TFP	Total factor productivity
TIMSS	Trends in international mathematics and science study
VAT	Value added tax
UK	United Kingdom
US	United States
WRS	Worker registration scheme

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This Survey is published on the responsibility of the Economic and Development Review Committee of the OECD, which is charged with the examination of the economic situation of member countries.

The economic situation and policies of the United Kingdom were reviewed by the Committee on 5 September 2007. The draft report was then revised in the light of the discussions and given final approval as the agreed report of the whole Committee on 14 September 2007.

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The previous Survey of the United Kingdom was issued in November 2005.

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BASIC STATISTICS OF THE UNITED KINGDOM (2006)

THE LAND

Area (2005, 1 000 km ²)		Major cities (2005, thousand inhabitants)	
Total	242	Greater London	7 518
Agricultural	185	Birmingham	1 001
		Leeds	723
		Glasgow (local government district)	579

THE PEOPLE

Thousands		Total labour force (thousands)	30 630
Population	60 587	Civilian employment (% of total)	
Net increase (annual average 2001-05)	274	Agriculture, forestry and fishing	1.3
Number of inhabitants per km ²	250	Industry and construction	22.0
		Services	76.4

PRODUCTION

Gross domestic product		Gross fixed capital investment	
In £ billion	1 300	In % of GDP	18.1
Per head (\$)	39 519	Per head (\$)	7 138

THE GOVERNMENT

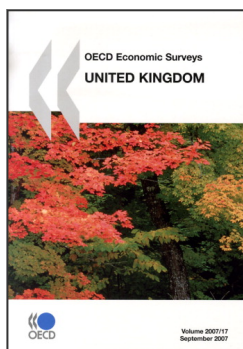
Public consumption (% of GDP)	22.1	Composition of House of Commons (seats)	
General government (% of GDP)		Labour	351
Current and capital expenditure	44.6	Conservatives	195
Current revenue	41.6	Liberal Democrat	63
Net debt	39.5	Other	37
Last general elections: 5 May 2005		Total	646

FOREIGN TRADE

Exports of goods and services (% of GDP)	28.4	Imports of goods and services (% of GDP)	32.6
Main commodity exports (% of total)		Main commodity imports (% of total)	
Electrical machinery	22.7	Manufactured goods and articles	25.2
Manufactured goods and articles	22.0	Electrical machinery	25.0
Chemicals	15.2	Road vehicles	10.0
Mechanical machinery	11.6	Fuels	9.8

THE CURRENCY

Monetary unit: Pound sterling		August 2007, monthly average of spot rate	
		£ per \$	0.497
		£ per €	0.677



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