



making business sense

Challenges for the Coalition Government - Encouraging private investment in R&D and ensuring there is a sufficient flow of credit to consumers and businesses

Report undertaken by cebr for the Society of Motor Manufacturers and Traders

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I Executive summary

The Society of Motor Manufacturers and Traders (SMMT) commissioned the Centre for Economic and Business Research (CEBR) to review the evidence on the importance of access to finance and public support for research and development in sustaining economic growth and re-balancing the UK economy. SMMT sees these as the key challenges the economy faces as it emerges from the deepest peacetime recession since the Great Depression.

The UK is going through the largest fiscal consolidation on record in order to eradicate the public sector deficit. In conjunction with this, the UK economy must rebalance away from reliance on growth in domestic demand. In this context, the SMMT understands that the government is looking to the private sector to drive growth, particularly in investment and exports. The report aims to provide evidence for prioritising measures that support growth and rebalancing the economy ahead of the Autumn Comprehensive Spending Review.

I.1 R&D, its importance and UK performance

1.1.1 The most important determinant of the fundamental level of growth in an advanced economy is growth in productivity. ¹ Economic theory pinpoints **innovation as a key driver of productivity growth** and a wealth of empirical research has shown that a key part of innovation – spending on Research and Development (R&D) – explains differences in productivity growth between the UK and key competitors, as well as explaining a significant part of the variation in economic growth across OECD economies. An extensive body of evidence has clearly illustrated the important role of R&D activity, and innovation more generally, in driving productivity growth and hence economic growth.²

1.1.2 Analysis of recent trends shows that not only is **expenditure on R&D in the United Kingdom low relative to key international rivals** but that it has been broadly stable as a share of GDP in the decade leading up to the credit crunch, when financing conditions were, of course, far healthier. Gross expenditure on R&D was £25.6 billion or 1.8% of UK GDP in 2008, the latest year for which data are available, compared with 1.8% in 1997. On the latest available data, this compares to 2.3% of GDP across the OECD as a whole, 2.9% among the ten highest spenders on R&D in the OECD and 3.5% among the global leaders in this area.

1.1.3 **The Department for Business, Innovation and Skills has been working towards a target for gross expenditure on R&D to reach 2.5% of GDP by 2014.** This faces two major challenges.

¹ The other main determinant of economic growth is an increase in the quantity of labour input in an economy – in advanced economies with relatively slow growing working populations, growth in the volume of labour inputs is assumed not to be a key source of economic growth.

² See section 3.1 of the main report for more details

- 1.1.4 First, **evidence from the ICAEW Business Confidence Monitor survey suggests, unsurprisingly, that private sector R&D budgets took a hit during the credit crunch.** The recession led aggressive cost cutting by businesses; reported growth in R&D budgets fell to 0.3% over the year to the third quarter of 2009 down from 3.2% growth over the 12 months to the first quarter of 2008; the quarter immediately before the technical recession started. In the **manufacturing and engineering sector, businesses reported a 0.4% decline in R&D budgets over the year to the final quarter of 2009.**
- 1.1.5 Second, given that **32% of R&D expenditure is financed by the public sector (e.g. research councils, higher education funding councils), the coming fiscal consolidation will make achieving the 2.5% BIS target even more challenging.** Given this, the onus is absolutely on the private sector to invest in R&D and drive innovation and growth in the UK economy.
- 1.1.6 Indeed, the **global leaders in R&D have successfully unleashed private sector spending; the private sector tends to make up the largest share of R&D expenditure in countries that have the largest R&D spending as a share of national income.** In the UK, business expenditure on R&D as a share of GDP was 1.2% in 2008, substantially lower than key international competitors such as Germany where the share is 1.8% and United States where the figure is 2.0%. Moreover, the trend in the years leading up to the recession saw R&D spending in the UK financed by business fall from 50% as a share of total R&D in 1997 to 45% in 2008. During this period, R&D financed by Higher Education Funding Councils and Research Councils grew at compound annual growth rates of 7.2% and 8.2% respectively.
- 1.1.7 As part of the research, cebr developed a model of R&D expenditure. Using this framework and extrapolating recent trends in R&D spending, it was found that R&D spending as a share of GDP would reach 2.0% of GDP in 2014. As such, there would be shortfall against the BIS target of 2.5% of GDP of some £9.6 billion.
- 1.1.8 However, looking ahead it seems clear that there will be tougher settlements for R&D spending funded by government. Hence, **if we assume that government funded R&D spending only grows in line with the Departmental Expenditure Limits announced in the June 2010 Budget, the R&D shortfall on the BIS target would be even greater at £12.1 billion in 2014 and R&D spending as share of GDP would stay stuck at 1.8% of GDP, 0.7 percentage points below the target and lagging behind international rivals. Compared with the top 10 R&D investors in the OECD, the shortfall by 2014 would be £19.5 billion.** This highlights the scale of the R&D revolution that needs to be unleashed.
- 1.1.9 Economic theory implies that innovation and **R&D is an area in which market failures can occur.** Left to its own devices, the market often tends to allocate fewer resources to R&D than would be socially optimal given its key role in generating

future prosperity through improvements to productivity and hence economic growth. **The social return to innovation is often higher than the private return, which acts as a disincentive to potential investors.**³

1.1.10 In addition, market failure and under provision of R&D may occur in the presence of **significant external financial constraints**. In the aftermath of the financial crisis, financing conditions have indeed been tough for the manufacturing sector. Lending to manufacturing business declined by £16 billion in 2009 (over 1% of annual UK GDP) against a £53 billion decline in lending across the whole economy.⁴ In other words the **manufacturing sector made up three tenths of the decline in lending yet it accounts for only 12% of UK economic activity.**⁵

1.1.11 Hence, the government has a key role to play in correcting market failure, in turn driving productivity gains and economic growth. It can do so by creating appropriate incentives that help to offset these market failures and encourage private sector investment in R&D.

I.2 Policy options

1.2.1 Appropriate **incentives need to be in place in what is still a difficult, cash constrained environment for many businesses.**⁶ **Tax credits for R&D** have been shown to have a **generally positive effect** and have been widely used by businesses in the United Kingdom but in a competitive global economy with high capital mobility, **tax competition is also a key consideration**. In this context, the roadmap to reduce corporation tax announced in the June 2010 Budget is a positive step. However, the legacy of the credit crunch makes the market failure in relation to R&D more acute by imposing external financing constraints on private sector businesses. In such conditions, the government may need to look for even more innovative, pro-active solutions.

1.2.2 The coalition has made a **high level commitment to reforming tax credits but as yet there has been relatively little detail on this and how the government will drive forward greater business investment in R&D and innovation**. The theory and evidence generally support tax credits as a mechanism for solving market failure, but they need to work to incentivise business investment in R&D. This requires active engagement with businesses to understand how they can work better.

³ See main report section 3.3; figure 3.5 in particular

⁴ Bank of England trends in lending and cebr analysis

⁵ Office for National Statistics and cebr analysis

⁶ See Chapter 4 of the report for details on the lasting effects of the credit crunch

- 1.2.3 Given the scale of the UK's R&D shortfall, the government could look at more innovative, alternative financing arrangements, such as setting up an 'R&D Investment Bank'. This could work in a similar way to, for example the European Bank for Reconstruction and Development at a European level or the KfW banking group in Germany.
- 1.2.4 The Technology Strategy Board has been a success, supporting R&D projects and encouraging private sector investment. Given its short lifespan, it is difficult to offer a full evaluation of its work but its success at partnering with the private sector is very positive. However, questions remain over its funding settlements beyond 2011, given that BIS is its sponsor and itself faces real term spending cuts likely to be of the order 25%.
- 1.2.5 While the government's commitment to reducing the public sector deficit is laudable, it must ensure the private sector can grow robustly to deliver productivity growth and a stronger contribution to economic growth from net trade. Growth in investment and exports will help to achieve the rebalancing that the UK economy must undergo – but it must be private sector driven. Attracting businesses in the rapidly innovating automotive sector is an example of this.

1.3 The automotive sector – a unique opportunity?

- 1.3.1 The automotive sector is one of the 'big five' sectors in UK R&D and made up around 8% of all business expenditure in R&D with £1.3 billion in 2008. This compares with 9% in the post and telecommunications sector, 9% in computer related activities, 11% in aerospace and the largest of all (28%) in pharmaceuticals. Together these big five make up almost two thirds (65%) of all UK business expenditure on R&D.
- 1.3.2 In recent years, growth in automotive R&D expenditure has generally been weaker than the other big five R&D sectors. However, the automotive sector is now in a period of **great transition** that could be likened to a **Schumpeterian wave of innovation**. The transition to low and ultra-low carbon vehicles requires substantial investment in current and future technologies.⁷
- 1.3.3 As this technological shift moves on, there is a **window of opportunity for the United Kingdom to attract private sector investment in R&D activity. Within the next five to ten years, the automotive sector could easily become the UK's second largest sector for R&D expenditure.**

⁷ See for example, the Vauxhall Ampera project; The Times, 23 March 2010 available here: http://business.timesonline.co.uk/tol/business/industry_sectors/engineering/article7071882.ece.

The low carbon vehicle roll-out <http://www.innovateuk.org/content/news/low-carbon-vehicles-rollout-gathers-pace.ashx>

- 1.3.4 The circa 25% depreciation of sterling and exceptionally loose monetary policy are factors which should be conducive to encouraging R&D expenditure, as has been shown by previous studies. However, we live in a highly competitive global economy so an appropriate policy framework needs to be in place to incentivise private sector investment in R&D.

I.4 Constraints to credit flows are holding back the recovery

- 1.4.1 The financial crisis and deterioration in credit conditions led to the deepest recession since the Great Depression and the first contraction in the global economy since the Second World War. **Lending conditions in the United Kingdom became extremely strained towards the end of 2008. Since then, there have been some improvements in credit availability but these have varied across different parts of the economy,** linked to the policy stimulus undertaken by the Bank of England.
- 1.4.2 The flow of credit to households and businesses is still constrained. Both the availability of credit remains far lower and the cost of credit relative to wholesale financing costs far higher compared to before the credit crunch, although there have been improvements since early 2009.
- 1.4.3 **Quantitative easing and improved confidence in financial markets saw financing conditions for larger corporations ameliorate, with large issuance of corporate debt and equity since, broadly, the first quarter of 2009.** This has weakened in recent months. However, **households and many businesses more reliant on bank lending have not seen as significant an improvement.**
- 1.4.4 Large corporations have been able to raise finance in corporate debt and equity markets – one of the likely knock-on effects of quantitative easing. However, credit availability and lending to small businesses and households has increased far more steadily. Over the year to April 2010, lending to households was just a fifth of the long term average in real terms or less than two fifths of the average if the heady expansion in lending through the 2000s is excluded. **The current flow of credit remains far lower than even a conservative estimate of the ordinary lending levels.**
- 1.4.5 For the **economic recovery to gather momentum credit conditions will need to improve far further;** the government must scrutinise whether competition in the banking sector is keeping the cost of finance as low as possible and encourage banks to increase lending volumes when prudent.
- 1.4.6 Given the £40 billion extra fiscal consolidation announced in the June Budget, it is crucial for **monetary policy to stay looser for longer** – the Bank of England should be open to keeping interest rates on hold until as far away as 2012 to ensure the private sector recovery can gather momentum.

- 1.4.7 The spreads on new loans against wholesale financing costs remain elevated – so the relative cost of borrowing from banks is still high for consumers and businesses. In addition, evidence from interviews with key SMMT stakeholders points to the lengthy approval process for new loans compared to previous years; weeks and months rather than days. This slows down business decision-making and hence the overall level of economic activity.
- 1.4.8 In order for the economic recovery to become more robust and broad-based, **lending flows to households and small businesses will need to increase considerably**. The UK needs a competitive banking sector that is willing to provide funding to sound businesses and households. This remains a critical challenge and key priority for policymakers.

1.5 Key conclusions

- 1.5.1 Innovation, much of which comes through investment in R&D is a key driver of productivity growth and, therefore, economic growth.
- 1.5.2 The UK already lags behind key rivals in terms of R&D spending and fiscal retrenchment will put downward pressure on the UK's overall R&D budget. Hence, the government needs to make sure the incentives are there for the private sector to invest and grow the UK's innovative capacity.
- 1.5.3 Innovation and R&D is an area in which market failure occurs. Therefore, tax credits, funding such as that through the Technology Strategy Board, special financing arrangements and a highly competitive tax regime to attract international investors are all vital.
- 1.5.4 The constraint of credit choked the economy through 2008 and 2009. Conditions have improved but are still difficult for households and businesses.
- 1.5.5 The government needs to ensure there is sufficient competition in the banking sector and a healthy flow of credit to households and businesses for the private sector-led recovery to gather momentum.

2 Introduction

2.1 About cebr

2.1.1 The Centre for Economics and Business Research (cebr) was established in 1993. It is a specialist economics consultancy with expertise in macroeconomic forecasting, local and regional forecasting and economic development, transport forecasting and economic impact analysis.

2.2 Objectives

2.2.1 This report aims to assess the economic issues around two key areas: private investment in Research and Development (R&D) and credit flows to consumers and businesses.

2.2.2 With reference to private investment in Research and Development across the economy and in the automotive sector specifically the study aims to:

- Assess the importance of business investment and, in particular, investment in R&D; what is the economic impact of R&D expenditure and does it have any relationship with key real economic variables?
- Analyse medium term trends in R&D expenditure in the United Kingdom and benchmark against comparator economies
- Consider the effect of the recession on private sector investment in R&D and what could be done to encourage private investment in R&D, paying attention to any sector specific points for the automotive sector.
- Provide an assessment of the key factors that determine business R&D expenditure; is there any evidence that public policy can play a role?

2.2.3 With reference to credit flows, this paper aims to:

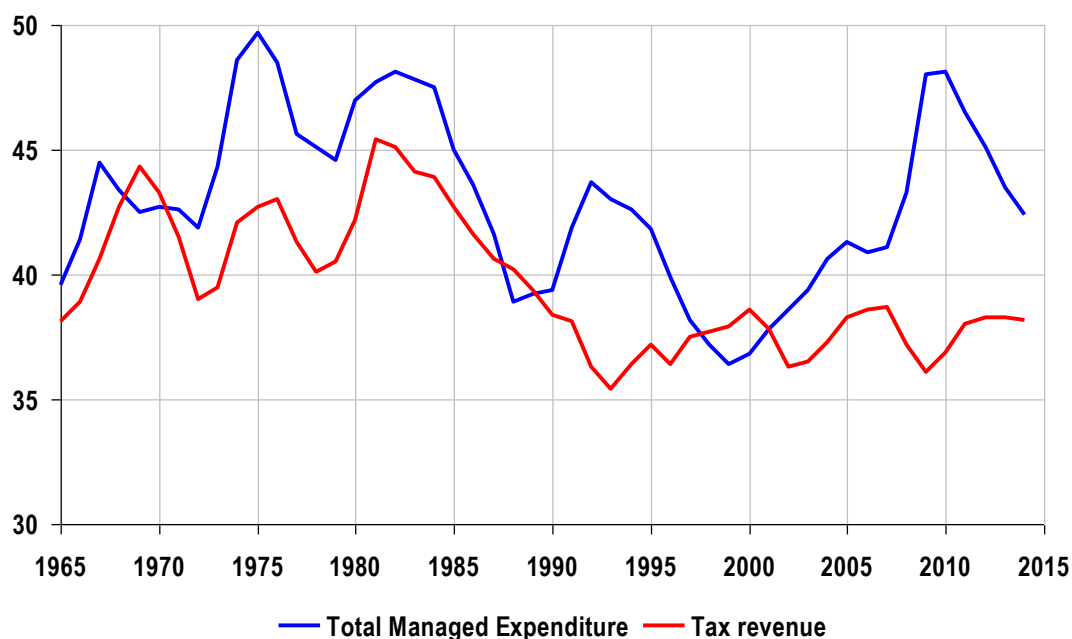
- Summarise how credit flows have affected the economy through the credit crunch and recession; considering the specific effects on the automotive sector.
- Consider how the improvements in access to finance since the worse stages of the credit crunch have varied across different parts of the economy.
- Assess what public policy options there are to improve the flow of credit and what impact this could have on the automotive sector and wider economy.

2.3 The macroeconomic backdrop

2.3.1 The United Kingdom has emerged from the deepest recession since the Second World War after six quarters of output declines and a 6% peak to trough fall in economic activity. The economy is faced with several major challenges.

2.3.2 First, the government faces the largest public sector deficit on record in cash terms at £156 billion or 11% of national income and spiralling national debt, with genuine concerns of a sovereign debt crisis. As well as carefully considering all aspects of public expenditure, the government needs private sector growth to provide the tax revenues that can contribute to bringing down the deficit. The imbalance between public spending and tax revenues is illustrated in Figure 2.1. In part, this study aims to add to debate on factors that could help to drive private sector growth over the next few years.

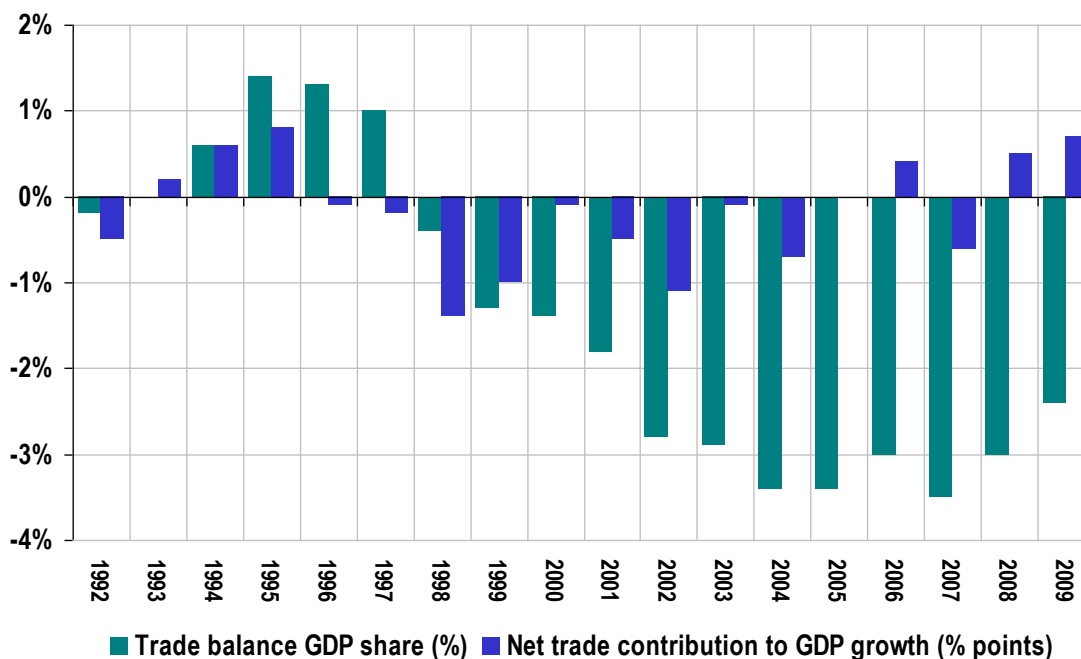
Figure 2.1 United Kingdom government expenditure and tax revenue, share of GDP



Source: HM Treasury April Public Finances Databank

2.3.3 Second, the United Kingdom has run a trade deficit for each of the last twelve years, peaking at £46 billion in 2007 or 3.5% of national income. With domestic demand expected to be relatively weak as the country undergoes the necessary fiscal consolidation, net trade (i.e. exports growing faster than imports) will need to contribute to economic growth far more than they have done in recent years. In the words of Bank of England Governor Mervyn King: *'[we] will need to see a slowing of domestic demand and an expansion of net exports. That's the rebalancing the United Kingdom economy requires in the next few years.'*⁸ Figure 2.2 illustrates the size of the trade deficit the United Kingdom economy has experienced over the last decade. In addition, the graph shows how during that period net trade was in general a drain rather a boost to economic activity; making negative net contributions to growth in economic output as the United Kingdom effectively borrowed from the rest of the world before suffering its deepest recession since the Great Depression.

Figure 2.2 United Kingdom trade balance on goods and services (percentage share of GDP) and contribution of net trade to GDP growth (percentage points)



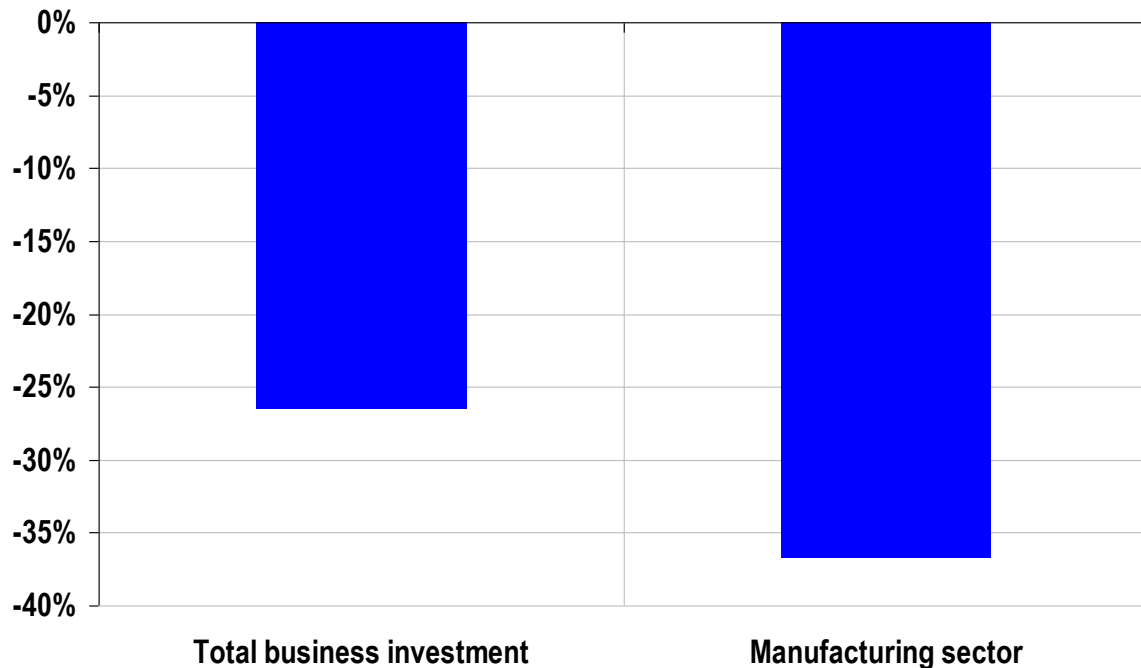
Source: Office for National Statistics and cebr analysis

2.3.4 Third, the recession has seen a severe collapse in private sector investment, which, since the accumulation of physical capital is a key driver of future growth, will potentially limit the United Kingdom's capacity to grow in future years. The scale of collapse is illustrated in figure 2.3 – there has been a 26% peak to trough decline in business investment. In the manufacturing sector, investment fell by 37% from

⁸ Bank of England, Quarterly Inflation Report Q&A, 12 May 2010; p. 22
<http://www.bankofengland.co.uk/publications/inflationreport/conf120510.pdf>

peak to trough. According to the International Monetary Fund, investment (gross fixed capital formation) fell to its lowest level as a share of GDP since their data series began in 1980. Importantly, investment in the United Kingdom as a share of GDP is lower than the United States, Japan, Germany, Canada, Italy and France.

Figure 2.3 Peak to trough decline in business investment through the 2008-2009 recession, percentage change



Source: Office for National Statistics, cebr analysis

2.3.5 The recession has been almost synonymous with the ‘credit crunch’ – a term that drifted into parlance in 2007 and soon became pervasive as bank runs, bankruptcies, financial market atrophy and collapse in lending flows elapsed over the next two years. Financial markets have improved from the severe strains of late 2008 and early 2009, but the availability and cost of credit remains a major issue and binding constraint on growth for many businesses. The volume of lending although up from extreme lows, is still far below long run average levels. For the economy to return to capacity levels it will be necessary for lending to businesses to return to something close to normality; this is a major challenge for policymakers.

3 Private investment in new technology and R&D

3.1 The importance of R&D expenditure

- 3.1.1 In the long term, it is only increases in productivity that can raise wages, profits and ultimately overall prosperity.⁹ The underlying level of productivity determines the quantity of goods and services that can be produced for a given quantity of inputs. For the United Kingdom to return to robust economic growth, stronger productivity growth is vital. Through the recession, UK productivity growth has declined – and there remains a significant gap with key international competitors. With a higher productivity level, total economic output is higher which drives higher prosperity and living standards in an economy.
- 3.1.2 There are a variety of factors driving productivity growth, including the education and skills of the labour force, the quantity of capital available, quality of infrastructure, macroeconomic policymaking and crucially, innovation and technological change. Productivity growth relies on a continual stream of innovative technologies, new products and processes, as well as novel services and means of delivery.¹⁰ Differences in innovation performance or technological progress account for significant variations in productivity across economies but how can this be measured? R&D can be defined as any project to resolve scientific or technological uncertainty aimed at achieving an advance in science or technology.¹¹ As such, investment in research and development (R&D) is generally considered to be a good proxy of technological innovation and hence a key driver of productivity performance.
- 3.1.3 Growth accounting studies that pinpoint the differences in productivity performance across economies find that innovation performance, using investment in R&D as a proxy, explain a quarter of the United Kingdom's productivity gap with the United States and a sixth of the gap with France.¹² Furthermore, recent panel data (looking across countries over time) analysis of growth performance among countries in the Organisation for Economic Cooperation and Development uses a broad set of potential determinants of economic growth to find a large and statistically significant impact of business expenditure in R&D on economic growth.¹³ Moreover, the study finds business R&D is more important than technological specialisation in explaining economic

⁹ HM Treasury (2004) Benchmarking UK productivity performance

¹⁰ HM Treasury (2004) Productivity in the UK 5: Benchmarking UK productivity performance

¹¹ Department for Business Innovation & Skills website, accessed 26/5/2010:

<http://www.bis.gov.uk/policies/innovation/business-support/research-and-development/what>

¹² Crafts and O'Mahony (2001) A perspective on UK productivity performance, *Fiscal Studies* vol. 22, no. 3, pp. 271-306

¹³ Aiginger and Falk (2005) 'Explaining Differences in Economic Growth among OECD Countries', *Empirica* Volume 32, Number 1 / March, 2005

growth. A wide range of other empirical research suggests that innovation activity measured by relative changes in R&D spending is one of the most significant factors affecting differences in GDP and productivity growth.¹⁴ Notably, an OECD study found that a 1% rise in the stock of business R&D created a 0.13% rise in multi-factor productivity growth.¹⁵

3.1.4 So, not only does innovation and R&D expenditure explain a significant proportion of the United Kingdom's productivity gap but a substantial amount of cross country variation in productivity and growth. HM Treasury and the Department for Business and Innovation (and its former guises) have consistently acknowledged this.¹⁶ The Labour administration set the objective of raising the level of knowledge-intensity in the United Kingdom – as measured by the ratio of R&D expenditure across the whole economy to GDP. Specifically, the Department for Business Innovation and Skills is aiming for a step-change in R&D levels in the British economy; rising to 2.5% by 2014.¹⁷ As the next sections highlight, achieving this remains a huge challenge; the latest data show R&D expenditure as a share of GDP at just 1.8%, measured *before* the recession hit.

3.2 Medium term trends in R&D expenditure in the United Kingdom

3.2.1 A key measure of investment in innovation is gross expenditure in R&D: the total spending on R&D across the whole economy by government and business. As shown in figure 3.1 the United Kingdom has lagged behind international competitors on the gross expenditure in R&D (GERD) measure. According to OECD data, GERD amounted to 1.8% of GDP in 2007, the same level as in 2001. Across the OECD as a whole, GERD was 2.3% of GDP in 2007, having edged up marginally since 2001. So, the United Kingdom is below average among the world's leading economies. Moreover, in Japan the ratio of GERD to GDP is almost double that in the United Kingdom at 3.4% of GDP in 2007, and in the world's largest economy the United States it is 2.7%.

¹⁴ Coe and Helpman (1995), Bassanini et al. (2001), Bassanini and Scarpetta (2002) and Guellec and Van Pottelsberghe (2004)

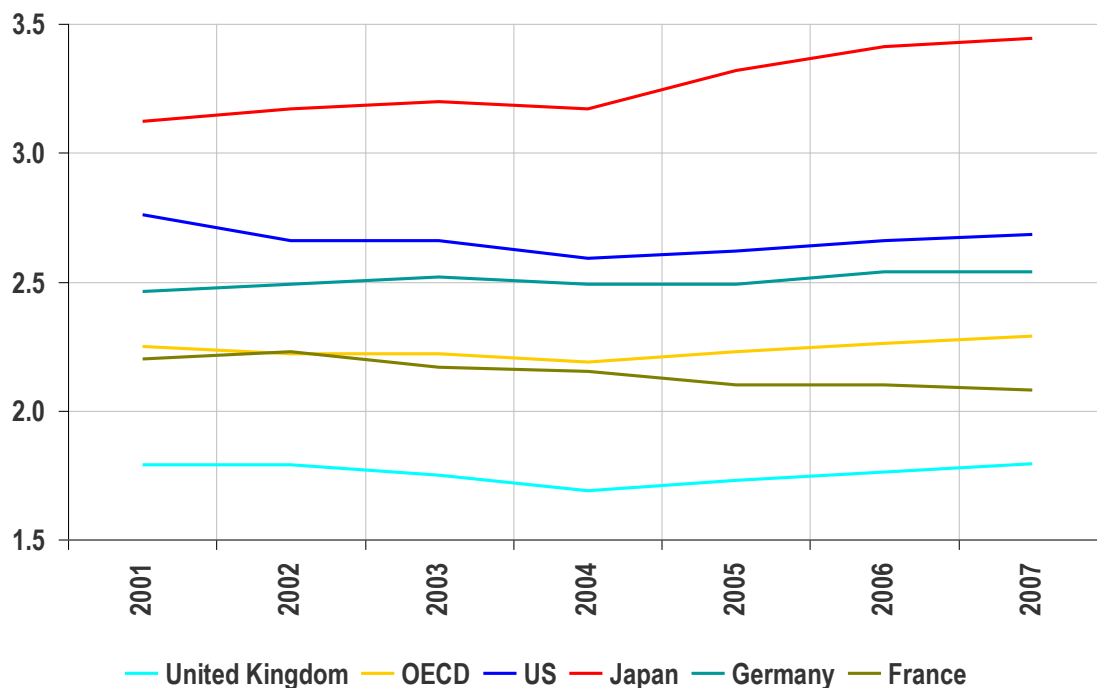
¹⁵ Guellec and van Pottelsberghe (2001) "R&D and productivity growth: panel data analysis of 16 OECD countries", OECD Economic Studies, 33 (II), pp. 103-127.

¹⁶ HM Treasury (2004) 'Long-term global economic challenges for the UK: HM Treasury Pre-Budget Report December 2004'; DTI (2005) R&D Intensive Business in the UK, DTI Economics Paper No. 11, HM Treasury (2004) Productivity in the UK

¹⁷ Department for Business Innovation & Skills website, accessed 26/5/2010:

<http://www.bis.gov.uk/policies/innovation/business-support/research-and-development/what>

Figure 3.1: Gross expenditure in R&D share of GDP across selected OECD countries



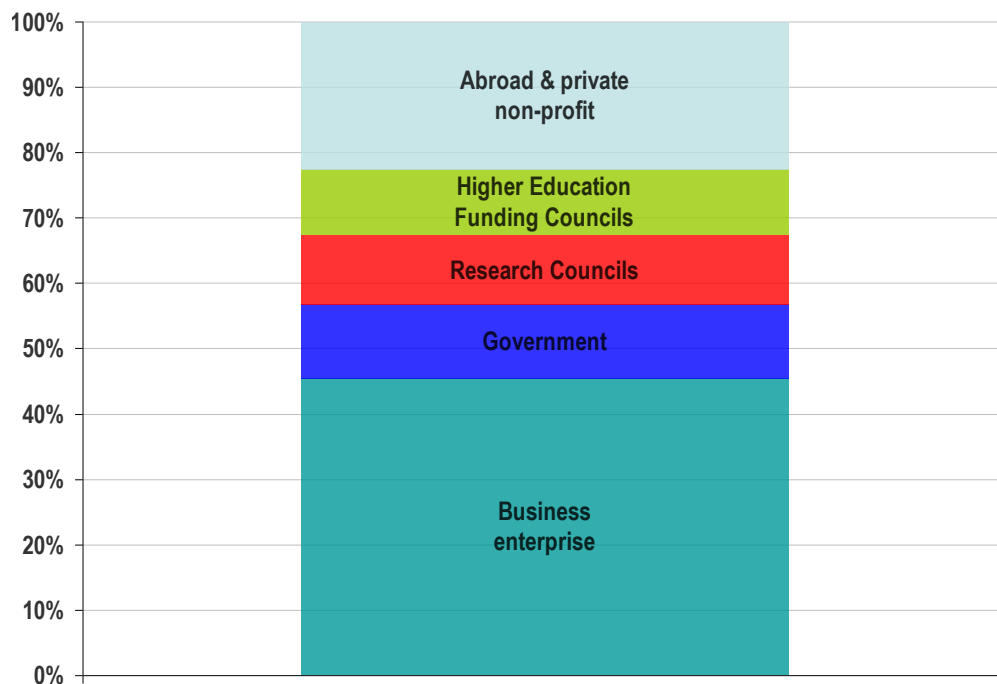
Source: OECD

3.2.2 Hence, according to the latest data, the United Kingdom still has significant way to go to bring R&D expenditure as a share of GDP to the 2.5% target and in line with competitor economies.

3.2.3 Gross expenditure on R&D is made up of contributions from private sector business, government, higher education funding councils, non-profit private sources and funding from abroad. In the United Kingdom, business funding makes up 45% of total expenditure on R&D according to the latest data.¹⁸ This is illustrated in figure 3.2 below.

¹⁸ Office for National Statistics, Expenditure on Research and development in the UK by sector of funding

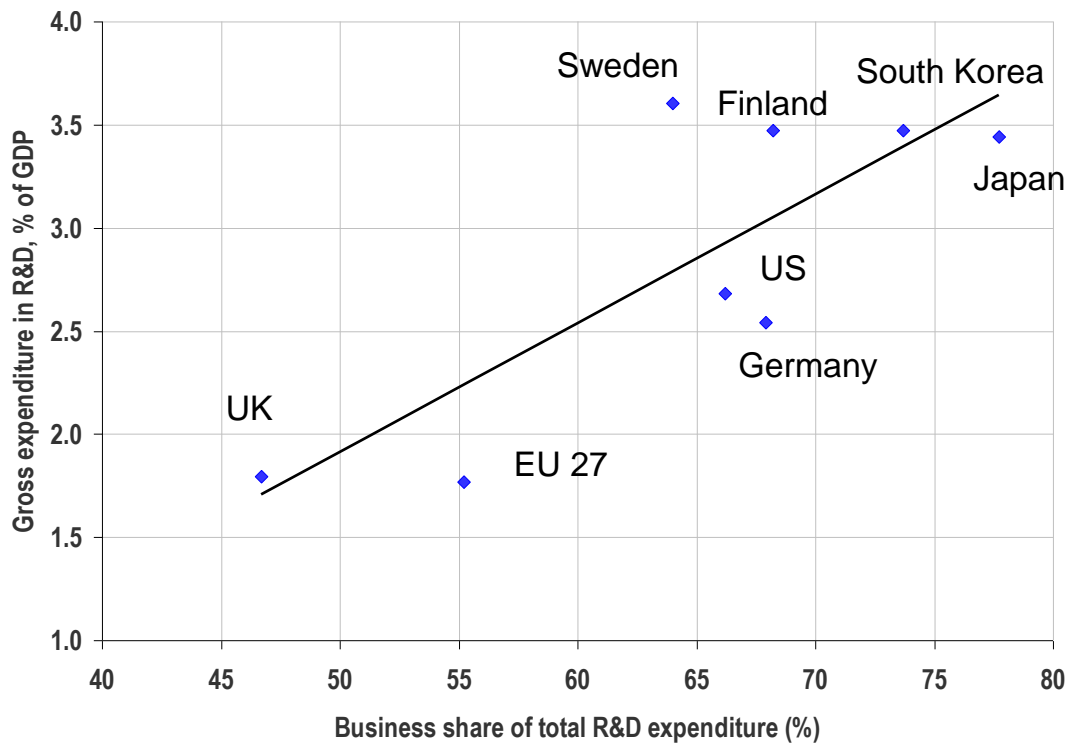
Figure 3.2: UK expenditure in R&D by source of funding, percentage of total R&D



Source: Office for National Statistics, cebr analysis

3.2.4 Notably the business share of investment in R&D is lower than the eurozone or European Union averages. Moreover, in countries with the largest share of gross investment in R&D as a proportion of GDP – Japan and the United States were mentioned earlier but Finland, Korea and Sweden are other important examples – the business share of total expenditure on R&D is much higher than in the United Kingdom. This is illustrated in figure 3.3. Where investment in R&D is high, it is the private sector that drives it. This would imply that in order to push on towards a higher R&D share of GDP and match international competitors, the government needs to encourage private sector businesses into undertaking increased R&D activity.

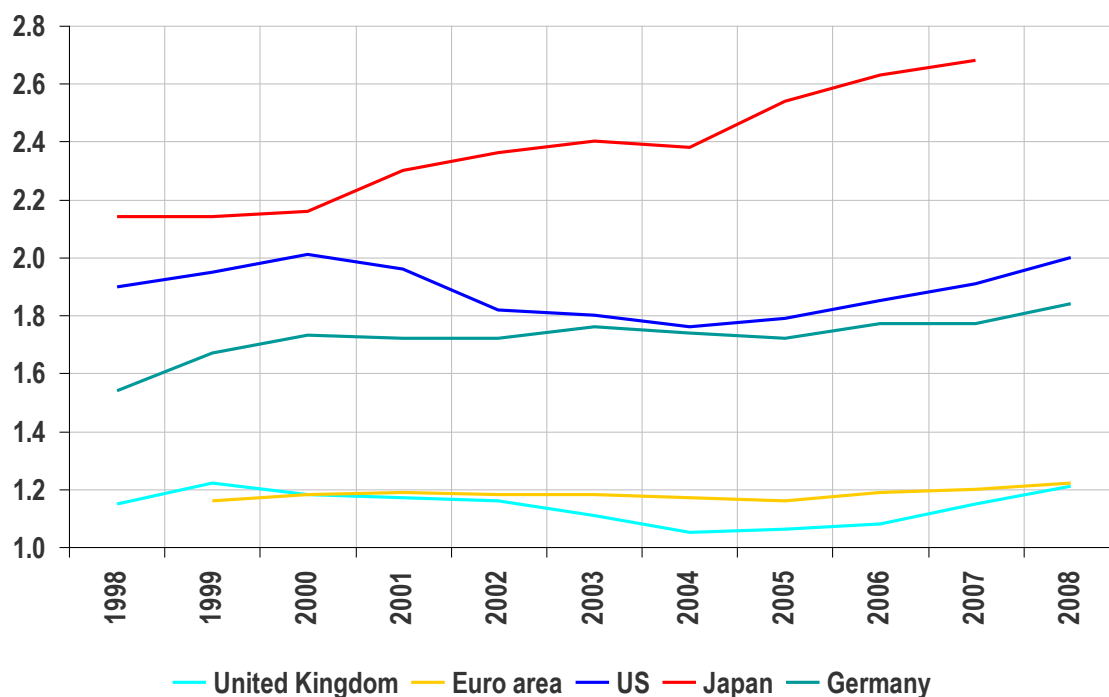
Figure 3.3: Graph showing relationship between gross expenditure in R&D as a share of GDP and the share of R&D expenditure funded by private sector businesses



Sources: OECD, Eurostat

3.2.5 Trends in business expenditure in R&D over time show that R&D spending has been broadly stable as a share of GDP over the period from 1998 to 2008 in the United Kingdom, fluctuating below and then falling in line with the trend in the eurozone countries (see figure 3.4). While business expenditure on R&D in the United Kingdom is stable around the 1.2% of GDP mark, in Germany it rises from below 1.6% to above 1.8% of GDP and by 2008 it is 2.0% in the United States.

Figure 3.4: Business expenditure in R&D share of GDP across selected countries



Source: Eurostat

3.2.6 Given the trends in the flow of R&D expenditure outlined above, it is no surprise that the United Kingdom ranks relatively low in terms of the total stock of R&D capital. Research from the European Investment Bank shows the R&D capital stock in the United Kingdom was around 7% of real value added in 2005, below the European Union average of 9% and the United States at 11% and Finland, Japan, Austria and Sweden all above 15%. Looking over the period from 1995 to 2006, R&D capital stocks expanded by 20 to 30 percent in the EU's largest economies, with the pace of expansion falling slightly short of the EU average in France and Germany and *staying more significantly behind* in Italy and the UK.¹⁹

3.2.7 These recent trends are in the context of the European Union Lisbon summit of 2000 having set an ambitious strategy for growth and jobs, aiming to close the productivity gap with the United States and make the EU the most competitive and productive economy in the world. Indeed, one of the targets of the 'Lisbon Agenda' that came out of this summit was that total R&D expenditure as a share of GDP would be raised to 3% with 2% from business expenditure by 2010. The evidence above combined with the global financial crisis and recession implies that this goal is highly unlikely to be met. Furthermore, the United Kingdom has failed to gain ground in its R&D intensity even compared with trading partners within the eurozone.

¹⁹ Helmerts, C, Schulte, C. & Strauss, H. (European Investment Bank) (2009) 'R&D and the financing of innovation in Europe' : Business R&D expenditure and capital in Europe; p. 46 EIB Papers Volume 14 No.1 2009

- 3.2.8 Using a model of R&D expenditure that takes account of the source of finance, cebr modelled two main scenarios. First, a continuation of the recent trend growth in gross expenditure in R&D was considered. Assuming this and that the economy grows in line with the Office for Budget Responsibility's June forecast, R&D expenditure would fall short of the BIS 2.5% of GDP target by £9.6 billion in 2014.²⁰ This accounts for neither the effects of the impending public sector spending squeeze nor any modelling of the impact of the recession on private sector R&D expenditure.
- 3.2.9 Second, the model was calibrated to take into account the impact of the fiscal tightening announced in the June 2010 Budget. Those parts of R&D expenditure financed by government (e.g. Higher Education Funding Councils) were assumed to grow in line with growth in the Annual Departmental Expenditure Limits.²¹ Private sector R&D spending was assumed to grow in line with recent trends. When the assumed fiscal retrenchment is modelled, the R&D shortfall against the BIS target in 2014 is £12.1 billion.

3.3 Theory and evidence on the drivers of R&D investment

- 3.3.1 This section assesses how the trends in business expenditure on R&D can be explained and looks to the question of which key drivers determine the overall level of R&D expenditure in the economy. Existing literature on the determinants of R&D expenditure can be grouped into five broad categories.²²
- 3.3.2 First, the characteristics of the firm or industry are likely to be a key determinant of R&D expenditure. Two key features within this are internal finance and sales. Firm-level studies have shown cash-flow matters on the basis that capital markets fail to provide sufficient external finances for business R&D. A range of studies have looked at financial constraints and find support for this as a key factor determining R&D flows.
- 3.3.3 Second, product market competition may play a role in shaping business decisions on R&D. For incumbent businesses with market power, increased competition might reduce the incentive to innovate as the return on investment in R&D is reduced. In contrast, R&D expenditure may be used as a strategy to counter competitors and increase market share. On balance, the existing evidence suggests that increased competition has a positive effect on R&D, consistent with the theory that greater competition spurs R&D activity to 'stay ahead of the game'.

²⁰ Office for Budget Responsibility, available here: <http://budgetresponsibility.independent.gov.uk/publications.html>

²¹ OBR June forecast,

²² This classification comes from Becker and Pain (2003) 'What determines industrial R&D expenditure in the UK?' NIESR Discussion Papers No. 211. Accessed on 13/5/2010 at <http://www.niesr.ac.uk/pubs/dps/dp211.pdf>

3.3.1 Third, a key proposition is the extent to which R&D expenditure encompasses a market failure; that is, due to flaws in the operation of free markets, expenditure in R&D would be below the socially optimal level if markets were left to themselves. Underlying this is the notion that the private rate of return on investment in R&D is below the social rate of return. This would arise if firms are unable to fully appropriate the gains from increased investment in R&D since knowledge (which arises from R&D and innovation) may be considered as a public good where it is impossible to exclude others from its consumption. Figure 3.5 below, taken from the former Department for Trade Industry shows a range of estimates of the social versus private return on R&D from a raft of academic studies:

Figure 3.5: Private and social returns to R&D

Author (Year)	Estimated Rates of Return (%)	
	Private	Social
Nadiri (1993)	20-30	50
Mansfield (1977)	25	56
Terleckyj (1974)	29	48-78
Sveikauskas (1981)	10-25	50
Goto-Suzuki (1989)	26	80
Bernstein & Nadiri (1988)	9-27	10-160
Scherer (1984)	29-43	64-147
Bernstein & Nadiri (1991)	14-28	20-110

Source: Table adapted from Griliches (1992)³³ and Nadiri (1993)³⁴

Source: DTI prosperity for all²³

3.3.2 Similarly, if firms experience major external financial constraints, R&D expenditure would be lower than optimal. These ‘market failure’ arguments are used to justify two public policy interventions, which often take the form of favourable tax treatment for firms undertaking R&D activities or direct subsidisation of R&D projects. In general the literature finds that these public policies can have significant effects in determining R&D expenditure levels. For example, Hall and van Reenen pull together a large amount of firm level studies and conclude that tax credits have a significant positive effect on R&D spending.²⁴ In Becker and Pain’s review of the literature, they conclude that: ‘Whilst the evidence regarding the effectiveness of public policies on R&D remains mixed, on balance it would seem to indicate that public policies can have important effects.’²⁵

²³ Available here: <http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file12628.pdf>

²⁴ Hall and van Reenen (2000) ‘How effective are fiscal incentives for R&D? A Review of the evidence.’ *Research Policy*, 29 pp. 449-469

²⁵ from Becker and Pain (2003) ‘What determines industrial R&D expenditure in the UK?’ NIESR Discussion Papers No. 211. Accessed on 13/5/2010 at <http://www.niesr.ac.uk/pubs/dps/dp211.pdf>

- 3.3.3 Fourth, another key factor from the evidence implies that the endowment of a firm can affect the pattern of R&D. Things like the existence of highly qualified human capital, location near research centres or universities can promote great R&D activity among businesses. Most of the evidence for this comes from the United States, but shows positive effects from endowment and location on business R&D.
- 3.3.4 A fifth area of studies has looked at whether there are positive or negative externality effects in relation to R&D expenditure. One side of the argument in relation to these studies is that increased competition from foreign-owned multinationals may spur R&D activity and knowledge spillovers from foreign firms' expertise may help to spur R&D activity. However, competition from foreign firms could also reduce profitability and hence the amount of resources available for R&D spending. Some empirical evidence points to negative effects from foreign competition but the findings in this area are not wholly conclusive
- 3.3.5 Finally, wider macroeconomic variables are likely to be very important. For instance, OECD research on trends in R&D expenditure in the early 1990s found that the economic downturn of the early to mid 1990s along with high real interest rates and a shift in the make up of the economy played major roles in reducing business expenditure in R&D. One obvious negative effect of economic downturns is on businesses' cash flow; cash flow is often an important pre-requisite for R&D expenditure. Real interest rates take effect since R&D must be financed through lending of some sort; if the cost of external funds is higher then R&D expenditure is less likely. Changes in industrial structure are important since R&D is skewed across sectors: for example, aerospace and drugs are research intensive whereas hospitality and retail are not so much. Finally, the real exchange rate is also likely to affect R&D expenditure. Foreign-owned firms that use the United Kingdom as an export base may delay expenditure when the real exchange rate is higher. In addition, the real exchange rate may also reflect financial pressure on companies; for example a high exchange rate squeezes profit margins for exporters, giving them less spare cash to invest in R&D expenditure.
- 3.3.6 The most comprehensive recent study of the determinants of R&D expenditure in the United Kingdom was performed by economist at the National Institute of Economic and Social Research using panel data for eleven manufacturing industry groups over the period from 1993 to 2000. This study finds support for a range of the factors mentioned above, with a particularly key role for real macroeconomic variables.²⁶ The overall picture this study paints is as follows: in the 1990s, weak output growth, declining levels of government funding for private industry and the appreciation of the real exchange rate were all factors putting downward pressure on R&D expenditure by private sector businesses. In the other direction, the decline in long-term interest rates, the growing share of R&D undertaken by

²⁶ Ibid.

foreign-owned firms, increased competition in product markets and the increase in skilled labour acted as stimuli to R&D expenditure.

3.4 R&D investment through and beyond credit crunch

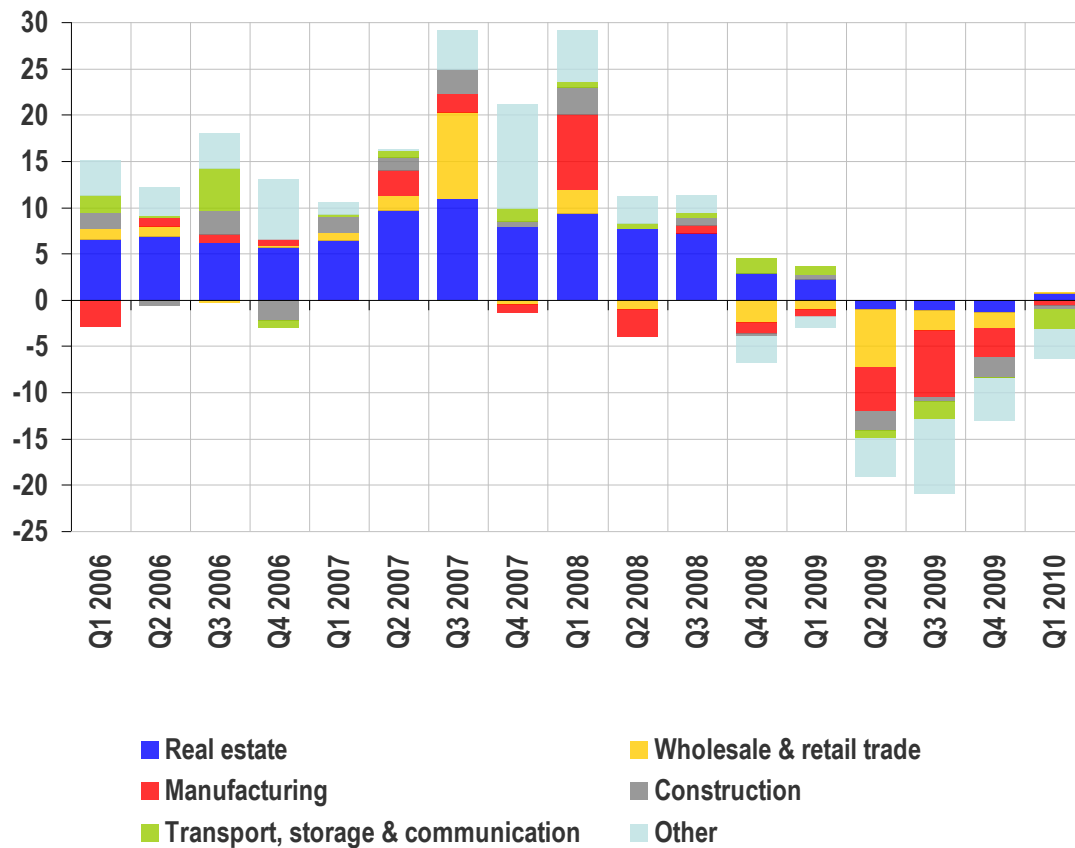
3.4.1 The analysis on the drivers of R&D spending above are important when considering how the recent economic downturn would have affected R&D investment and the overall trends in R&D through the 2000s. The recession saw a 6% peak to trough decline in the level of economic activity and an even steeper decline in business investment. Moreover, the credit crunch saw lending flows dry up with the availability of finance reduced and the cost of finance raised. Related to the decline in economic activity and the more difficult lending conditions, cash flow became a major issue for businesses. On the Institute for Chartered Accountants in England and Wales (ICAEW)'s business confidence monitor survey, some 43% of businesses reported late payment from customers as a greater challenge to business performance in the second quarter of 2009 as cash flow became critical. Given this, the downturn in economic activity, sales and the powerful external finance constraints that accompanied the credit crunch, there are likely to have been major downward forces on business expenditure in R&D in the period 2007 to present – in the light of the drivers identified in section 3.3 above.

3.4.2 The decline in credit availability to businesses has been a major challenge – and given the importance of external financial constraints in determining R&D expenditure – is likely to have put major downward pressure on R&D budgets. Figure 3.6 illustrates the change in lending to businesses by sector over the period from 2006 to 2010, showing how the manufacturing sector was particularly hard hit by the withdrawal of bank lending. Lending to manufacturing business declined by £16 billion in 2009 (over 1% of annual UK GDP) against a £53 billion decline in lending across the whole economy.²⁷ In other words the manufacturing sector made up three tenths of the decline in lending yet it accounts for only 12% of economic activity.²⁸ Given that a R&D spending occurs disproportionately in the manufacturing sector (see figure 3.7), the substantial worsening of availability of finance for the sector will have had major implications for R&D spending.

²⁷ Bank of England trends in lending and cebr analysis

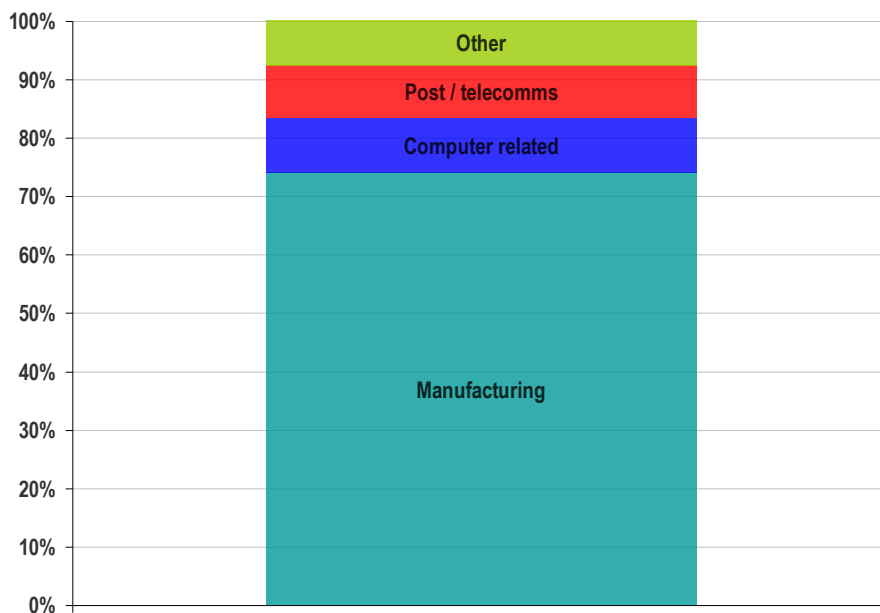
²⁸ Office for National Statistics and cebr analysis

Figure 3.6: Sectoral breakdown of quarterly net lending flows, £ billion current prices



Source: Bank of England, Trends in Lending: Lending to UK businesses

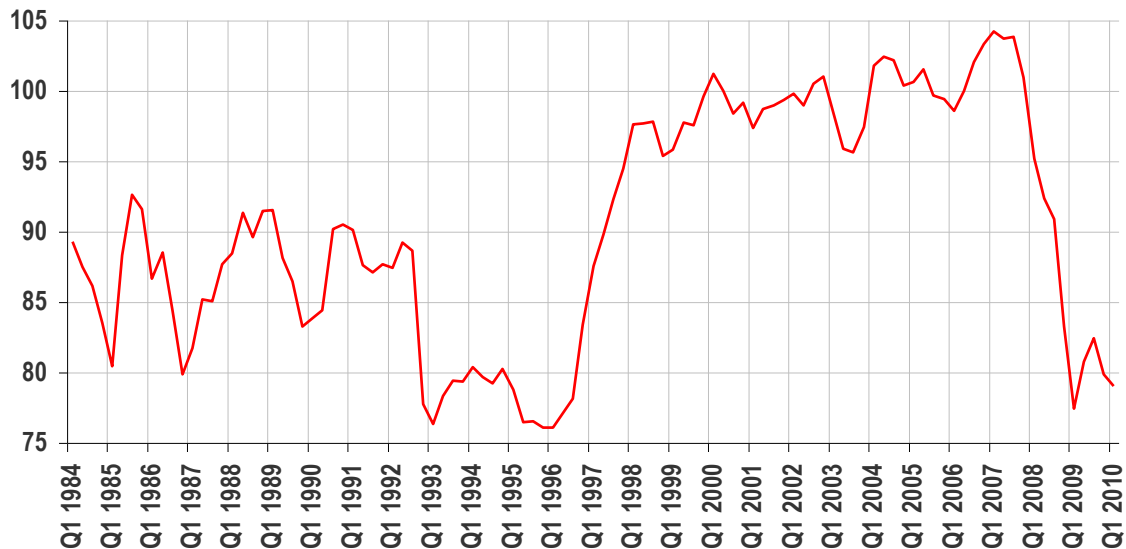
Figure 3.7: Sectoral breakdown of business R&D expenditure, percentage



Source: Office for National Statistics, cebr analysis

3.4.3 In addition, movement in key macroeconomic variables such as real interest and exchange rates were established as important factors. Through the 2000s, sterling remained high against a basket of currencies (see figure 3.8). In the context of the findings of the NIESR study cited earlier, this is likely to have been a downward force on business expenditure in R&D through the 2000s. The substantial depreciation in sterling since 2007 is likely to provide a boost to R&D spending in the United Kingdom, but is unlikely to entirely offset the negative forces arising from the associated effects of the recession.

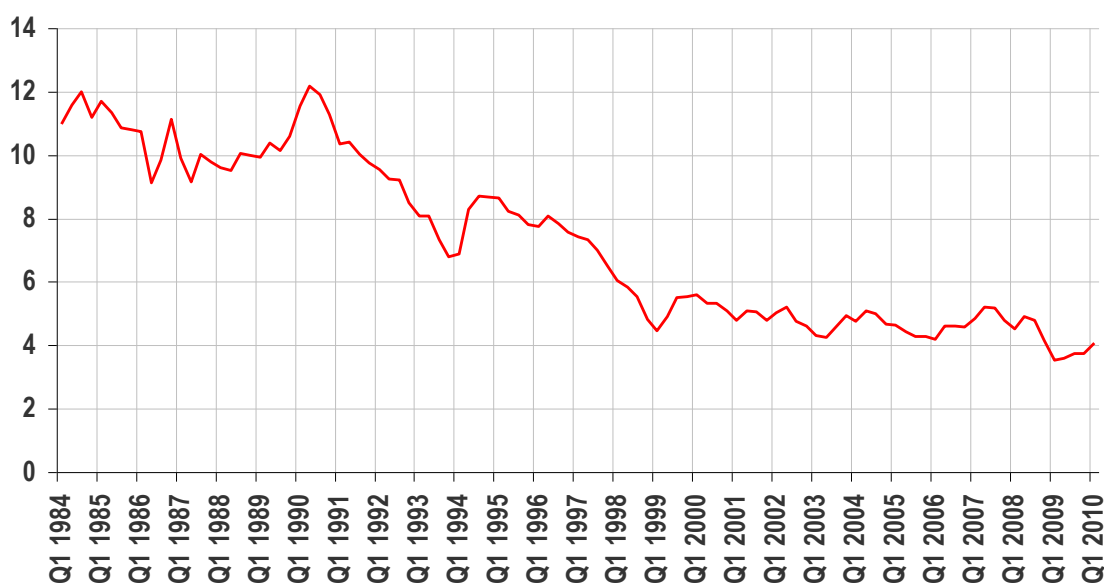
Figure 3.8: Trade weighted exchange sterling exchange rate index; Jan 2005=100



Source: Bank of England

3.4.4 Interest rates (see figure 3.9) too have fallen through the recession as the Bank of England took unprecedented steps to lower the Bank Rate to its lowest level since the Bank was founded in 1694. In theory this should help businesses according, but long term interest rates have remained higher and have been pushed upwards as concerns over the level of public sector debt spread across the global economy in 2010. Moreover, in practical terms constrained access finance is still a major issue for many businesses (see chapter 4 for more detail). So, while in theory lower real interest rates should boost the level of R&D expenditure, on the ground both lending volumes and the cost of finance remains a major challenge for businesses.

Figure 3.9: Long term interest rates; yields on 10 year government bonds



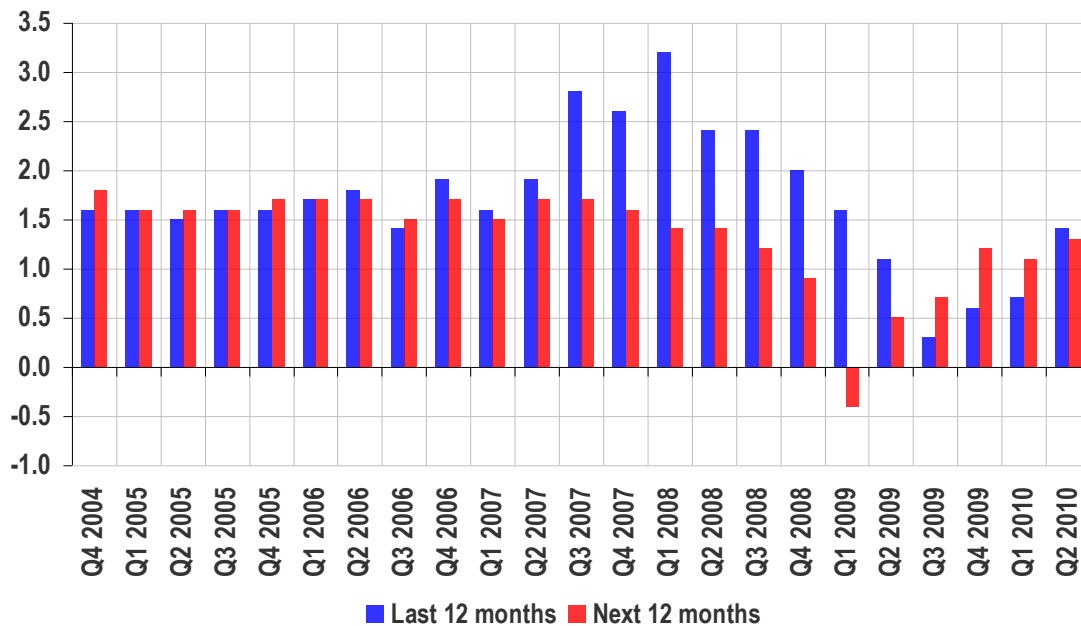
Source: Bank of England

3.4.5 Overall, there are clear reasons to suppose that the recession will have had a serve impact on business R&D expenditure. Firms faced major concerns over cashflow as they had to protect revenue streams and cut costs to stay afloat. Moreover, access to finance needed for major R&D projects has remained constrained through the credit crunch; although conditions are improved from the toughest times in late 2008 and early 2009, lending is still well below long run averages.

3.4.6 So what has the outturn for R&D spending been in reality? Given its fairly complex and specific nature, it takes time for official national and international statistical agencies to produce their analyses of R&D spending. However, short term private sector survey data hep to fill in the gaps. The ICAEW regularly asks businesses about their R&D budget in their quarterly Business Confidence Monitor survey, which has been run since 2003.²⁹ The ICAEW data (see figure 3.10) shows that firms indeed recorded a marked slowdown in reported R&D budget growth from a peak above 3.0% annual growth in Q1 2008 to just 0.3% in Q3 2009; the final quarter of the 2008-9 recession. Reported growth has risen in each quarter since then but at 1.4% over the 12 months to Q2 2010 remains below the 1.9% average growth in the years before the recession. Growth expectations in R&D budgets declined from a peak of 1.7% in Q3 2007 to -0.4% in Q1 2009 and growth expectations in the latest quarter are still below pre-recession norms.

²⁹ A survey of 1000 businesses (mainly senior finance professionals such as Finance Directors, Financial Controllers, and Accountants etc.) are asked: 1) What the percentage change in the level of budget available for research and development (goods and services) in their organisation has been in the last 12 months? and 2) What percentage change they expect to see in the level of budget available for research and development (goods and services) in your organisation in the next 12 months? Answers are aggregated into net percentage changes.

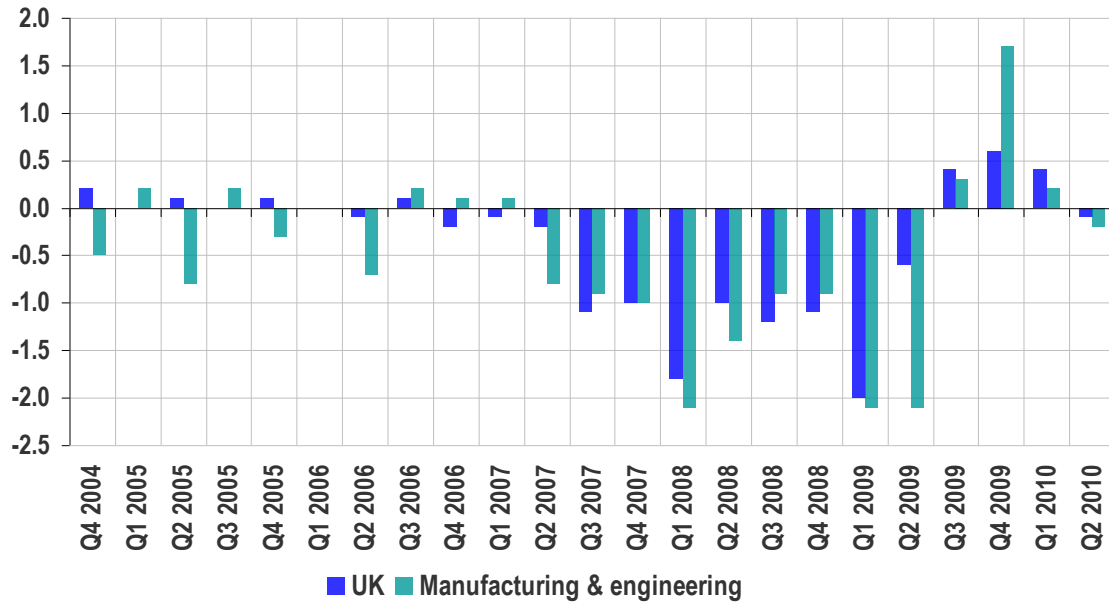
Figure 3.10: Reported and expected change in business spending on R&D, 2004- present



Source: ICAEW Business Confidence Monitor

3.4.7 Comparing the growth expectations over the next 12 months with the reported growth over the previous 12 months gives a clear indication of the direction of travel of business R&D budgets. This 'traction indicator' shows that through the recession businesses had to cut back R&D growth expectations as cash flow and protecting reduced profits became essential. Figure 3.11 illustrates how the gap between expectations and reported growth of R&D budgets turned negative in Q2 2007 and remained so in every quarter until Q3 2009. Moreover, the graph illustrates that in the Manufacturing and Engineering sector the cut backs were more severe than in the economy as a whole. There have been signs of recovery from Q3 2009 through to Q1 2010 but in the latest quarter expectations for R&D budget growth fell below reported growth for the first time in a year.

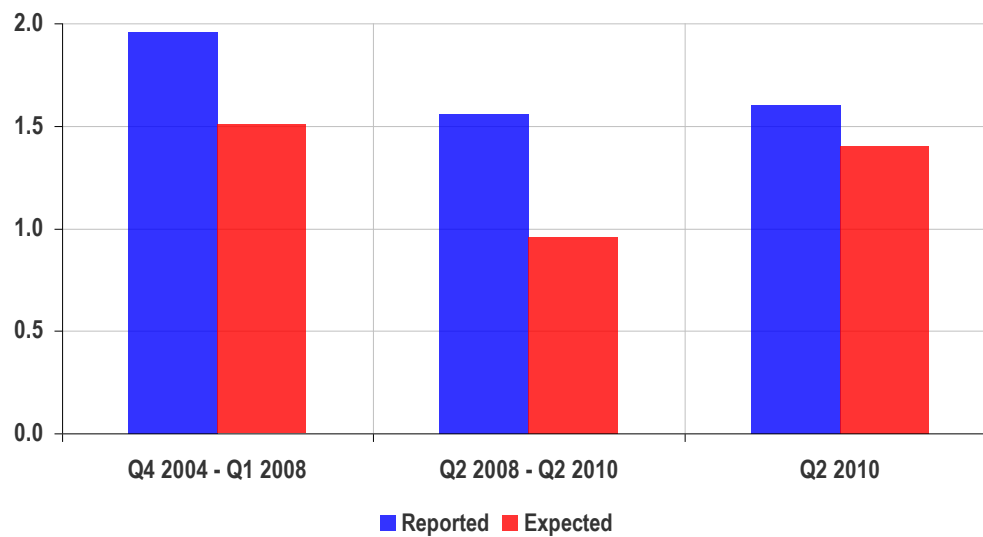
Figure 3.11: Difference between reported and expected change in business R&D budgets, Q4 2004- Q2 2010, UK whole economy and manufacturing & engineering sector



Source: ICAEW Business Confidence Monitor, cebr analysis

3.4.8 Looking at the manufacturing and engineering sector specifically, figure 3.12 shows that reported and expected growth in R&D budgets were substantially lower over the two year since the start of the recession in Q2 2008. Moreover, the latest data for the sector – a major driver of UK R&D spending activity – show reported and expected growth are still substantially lower than prior to the recession.

Figure 3.12: Reported and expected change in Manufacturing & Engineering business spending on R&D: before, during and after the recession



Source: ICAEW Business Confidence Monitor, cebr analysis

3.4.9 In summary, the recession is likely to have hit R&D expenditure growth hard. Progress towards the Department for Business Innovation and Skills' target of R&D expenditure at 2.5% of GDP by 2015 achieved in the lead up to the credit crunch is likely to have been knocked back significantly. While historically low real interest rates and a circa 25% depreciation of the pound point to better conditions for R&D investment, particularly by foreign owned firms, the government has a long way to go to bring R&D expenditure in line with its own targets and, moreover, the levels of major international competitors.

3.5 Impact of public policy

- 3.5.1 One of the key points from section 3.3 above is that there are plausible reasons to suppose the market, left to its own devices, will under-provide R&D activity. Moreover, many studies have pointed to public policy as having a significant role to play in determining the level of business expenditure on R&D across countries and over time. Meanwhile, the evidence presented in section 3.4 above implies R&D spending is likely to have been hard hit by the credit crunch and recession. One of the key arguments for policy intervention in the provision of R&D is that the market may fail to provide sufficient finance for R&D if there are significant external financial constraints. Following the financial crisis, the flow of lending is still constrained and evidence in figures in 3.5 and 3.6 above show how acutely the manufacturing sector has been affected by the decline in availability of capital.
- 3.5.2 A range of studies have pointed to the positive effects of R&D tax credits³⁰ and in the long run the increase in GDP is likely to far outweigh the costs of a credit.³¹ Moreover, private sector surveys paint a reasonably positive picture. The Confederation of Business Industry published a study in 2009 on the impact of the R&D tax credit. It finds that cost savings delivered by the R&D tax credit increased from a 4% reduction in 2005 to an 8% reduction in 2008 and business opinion was 'more positive about all aspects of tax credit'. Some 80% of companies claiming R&D tax credits reported it had an appreciable impact: 37% have increased R&D as a result; 50% said it had directly helped maintain their R&D spend in the United Kingdom and 76% reported other indirect benefits that helped maintain R&D spending.³²
- 3.5.3 However, a range of studies also point to the dangers that subsidies can crowd out private expenditure or have only limited effects.³³ And while tax credits have increased from under £100 million in 2000-01, to more than £600 million in 2006-07, the size of the scheme is still relatively small relative to the £15.9 billion of R&D expenditure by businesses in 2008. Moreover, greater capital mobility means that tax competition continues to become ever more important; it is certainly not clear that R&D tax credit schemes are valued higher than a competitive tax regime.
- 3.5.4 A key part of the recent government strategy on innovation has been the creation of the Technology Strategy Board, established as a non-departmental public body in 2007 and sponsored by the Department for Business, Innovation and Skills. Its goal is to 'stimulate technology-enabled innovation in the areas which offer the greatest scope for boosting UK growth and productivity.' It aims to: 'promote,

³⁰ See Hall and van Reenen (2000), Hægeland and Møen (2007), Czarnitzki and Fier (2001), Guellec and van Pottelsberghe (1997) Mairesse and Mulkay (2004; 2008), Guellec and Ionidis (1997)

³¹ Griffith, van Reenen and Redding (2001)

³² CBI (2009) Impact of the R&D tax credit

³³ See Mamuneas and Nadiri (1996), Busom (2000) and Lokshin and Mohnen (2009)

support and invest in technology research, development and commercialisation.³⁴ In its 'Connect and Catalyse' strategy paper the Technology Strategy Board set out its strategy for business innovation for 2008-2011.³⁵ Over £1 billion was earmarked for investment (alongside other government bodies) in this three year period, to be matched by private sector investment. Of this circa £1 billion budget, £711 million is Technology Strategy Board, while £180 million was from Regional Development Agencies and £120 million from Research Councils.

- 3.5.5 The coalition government has announced that Regional Development Agencies will be replaced by Local Enterprise Partnerships.³⁶ It is far from clear whether this will have implications on funding available for joint TSB projects. In addition, BIS, which sponsors the TSB is a non ring fenced government department. Hence, spending settlements are likely to be tight in the coming years – the June Budget showed the government planned for overall spending to remain flat in nominal terms in 2010/11 compared with 2009/10 – i.e. a real terms decline in spending. Beyond that, with departments facing cuts between 25% and 40% in real terms, there are clear risks around the department most concerned with funding innovation in the UK. As such, there are clear risks around the funding of the TSB's work going forward.
- 3.5.6 As a fairly young organisation, it is difficult to produce a full evaluation of its successes here. There are certainly examples of success such as the Ultra Low Carbon demonstrator programme.³⁷ The fact that in many cases, the TSB has managed to attract matching private sector investment alongside its own commitments is positive.
- 3.5.7 In summary, the market failure that is widely considered due to R&D's public good characteristics is likely to have been exacerbated by the difficult external financing conditions that continue to be a feature of the trading environment in the United Kingdom. Given this and the distance from its R&D intensity targets the United Kingdom still is, it could be time to think of more innovative ways of encouraging private sector investment.

³⁴ Technology Strategy Board; available here: <http://www.innovateuk.org/aboutus.ashx>

³⁵ Technology Strategy Board (2008) 'Connect and Catalyse: A strategy for business innovation 2008-11' Available here: http://www.innovateuk.org/_assets/pdf/corporate-publications/technology%20strategy%20board%20-%20connect%20and%20catalyse.pdf

³⁶ BIS; available here: <http://www.bis.gov.uk/policies/regional-economic-development/englands-regional-development-agencies>

³⁷ Technology Strategy Board; available here: <http://www.innovateuk.org/content/news/low-carbon-vehicles-rollout-gathers-pace.ashx>

3.6 R&D in the automotive sector – a unique opportunity?

- 3.6.1 The coalition agreement highlights that the government ‘will consider the implementation of the Dyson Review to make the UK the leading hi-tech exporter in Europe, and refocus the research and development tax credit on hi-tech companies, small firms and starts-ups.’³⁸ The Dyson Review concludes that the Government should refocus R&D tax credits on hi-tech companies, small businesses and new start-ups. The report finds that the current system is well intentioned but not well targeted. In addition; the Government should improve the ease with which the R&D tax credit can be claimed.³⁹
- 3.6.2 At a European level, there have been commitments to increased R&D expenditure to improve the competitiveness of the economy, notably in the Lisbon agenda. Ultimately, these commitments were not met and – as the evidence outlined above showed – as a whole Europe continued to lag behind leading global competitors. There has however been a renewed commitment to improving R&D in Europe – with the ‘Europe 2020’ strategy aiming for R&D investment to reach 3% of GDP by 2020.⁴⁰
- 3.6.3 The Dyson review does not look at the automotive sector specifically but this sector accounts for around 8% of total business expenditure on R&D in the United Kingdom. Importantly, the sector is at a critical juncture. The rate of innovation in the sector has accelerated to its fastest level since the industry’s inception. It is a time of great change as new low carbon technologies emerge and the full emergence of electric cars come ever closer. This time of transition presents the United Kingdom with an opportunity to attract business investment and be part of the shift in technology. The danger is in a cash constrained environment there may not be the incentives for businesses to invest in the United Kingdom. Tax credits are helpful but will they attract multinational automotive manufacturers that want to capitalise on the shift on technology? There is a window of opportunity as the sector undergoes rapid change for the United Kingdom to establish itself as a leading source of R&D – helping to drive future economic growth and prosperity.
- 3.6.4 A clear strategy is needed to encourage business investment in R&D. The government could look to innovative solutions such as creating a financing arm for Manufacturing R&D investment, just as the idea of a Green Investment Bank has been promulgated. To catch up with international competitors, a step change

³⁸ Cabinet Office (2010); ‘The Coalition: our programme for government’. Available here: http://www.cabinetoffice.gov.uk/media/409088/pfg_coalition.pdf

³⁹ Dyson, James (2010) ‘Ingenious Britain: Making the UK the leading high tech exporter in Europe’. Available here: http://www.conservatives.com/news/news_stories/2010/03/dyson_sets_out_plans_to_boost_high_tech_industry.aspx

⁴⁰ European Commission (2010); ‘Europe 2020: A European strategy for smart, sustainable and inclusive growth’. Available here: <http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>

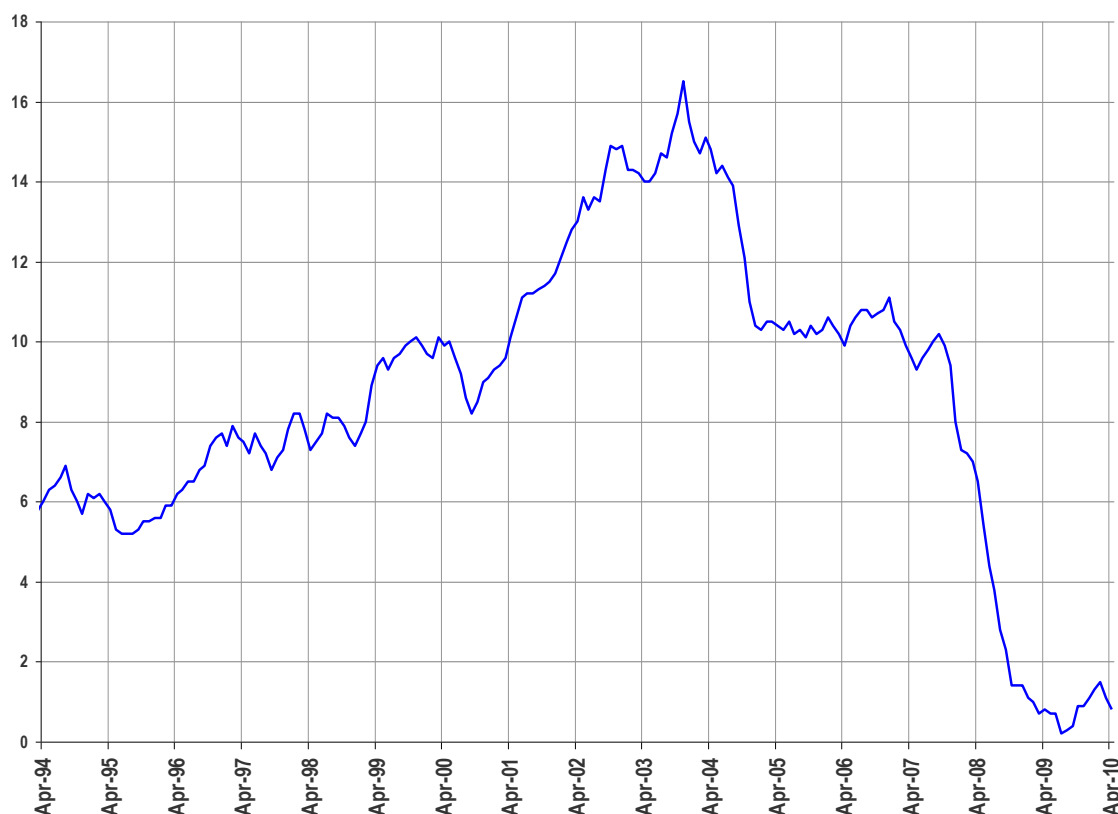
in R&D investment is needed and the government must work to ensure the best possible incentives and financing conditions exist for the private sector to invest in innovation. Hence, an open minded and innovative policy approach is needed.

4 Credit flows to consumers and businesses

4.1 Trends in lending up to and following the recession

4.1.1 The period through the 2000s saw a consistent expansion in lending across the United Kingdom economy as asset prices – most notably property prices – soared, inflation and unemployment remained low and economic growth was consistently strong. Figure 4.1 shows the annualised growth rate in total lending to individuals in the United Kingdom since monthly Bank of England data begins in 1994. Through this period, growth in lending accelerates through the late 1990s, stabilises in 2000 but then accelerates further through the early 2000s. During 2003, lending was growing at an annualised pace of over 16%. Growth fell back slightly through 2004 but remained in double digits from the entire period from 2001 to 2007. Indeed, in the ten years leading up to the year of the recession (2008), annualised growth averaged 11.0%; far stronger growth than had been seen in the recovery period of the mid to late 1990s when the economy expanded strongly.

Figure 4.1: Three month annualised growth in net lending to individuals, percentage change



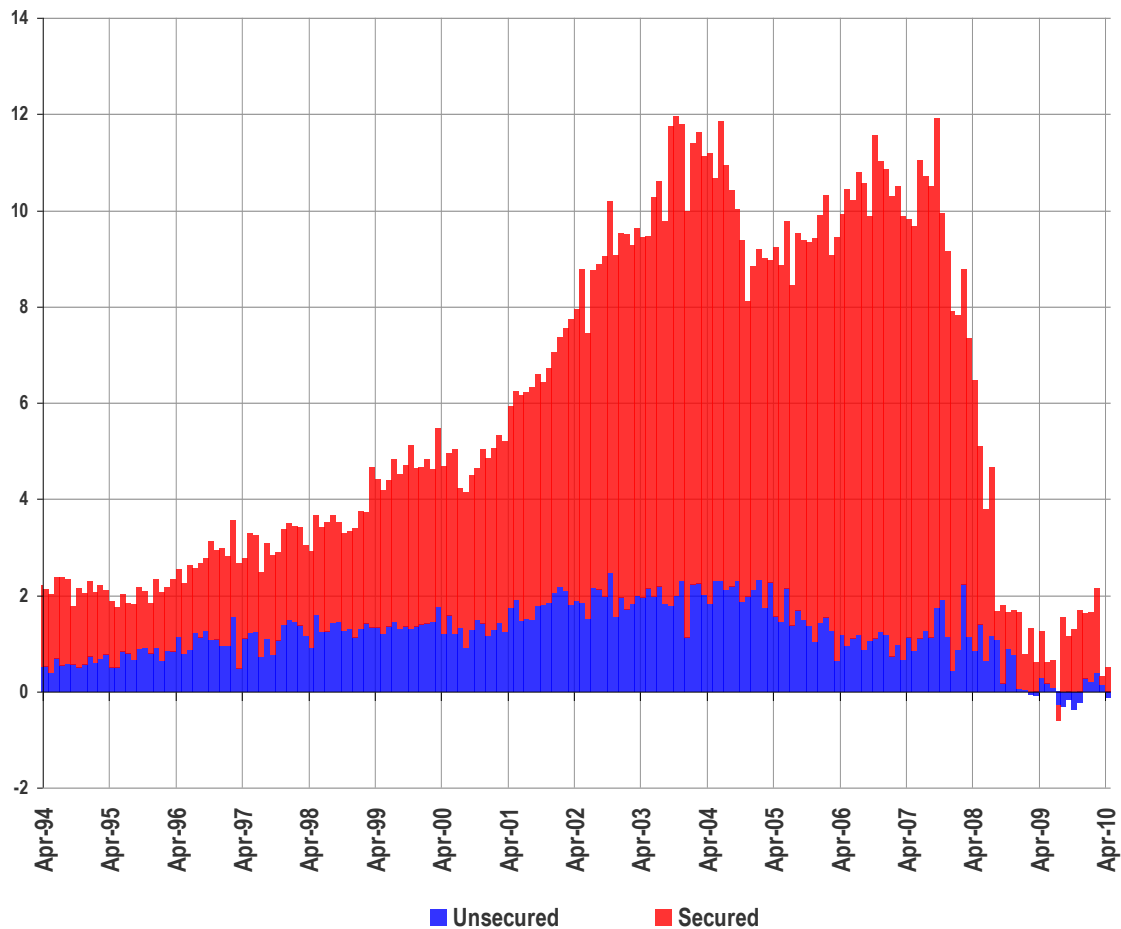
Source: Bank of England

4.1.2 What followed the lengthy period of lending growth was a steep and pronounced downturn in lending growth as wholesale finance markets dried up and many

major financial institutions collapsed in the biggest financial crisis in living memory. Three month annualised lending growth fell from 10.2% in September 2007 (coincidentally the month in which the run on Northern Rock occurred) to just 0.2% in July 2009, including thirteen consecutive declines in the rate of growth of lending to individuals. In the automotive sector, the funding crisis took time to feed through. By the autumn of 2008 financing conditions in the sector had become exceptionally difficult.

- 4.1.3 The latest data show that growth in lending remains anaemic. In April 2010, three month annualised growth in lending to individuals fell to 0.8%; the lowest since September 2009, having shown limited signs of recovery towards the end of 2009 and into 2010. Overall, lending conditions still remain tight.
- 4.1.4 To express this in simpler pound terms, figure 4.2 shows the change in net lending to households per month, broken down by unsecured and secured lending. The credit crunch saw a complete collapse in secured lending; the average monthly change in net secured lending through 2009 was 90% lower than in 2007, while unsecured lending in 2009 was, on average, negative. As such, households undertook net repayment of debt through 2009. In July 2009, total lending actually fell for the first time since records began.

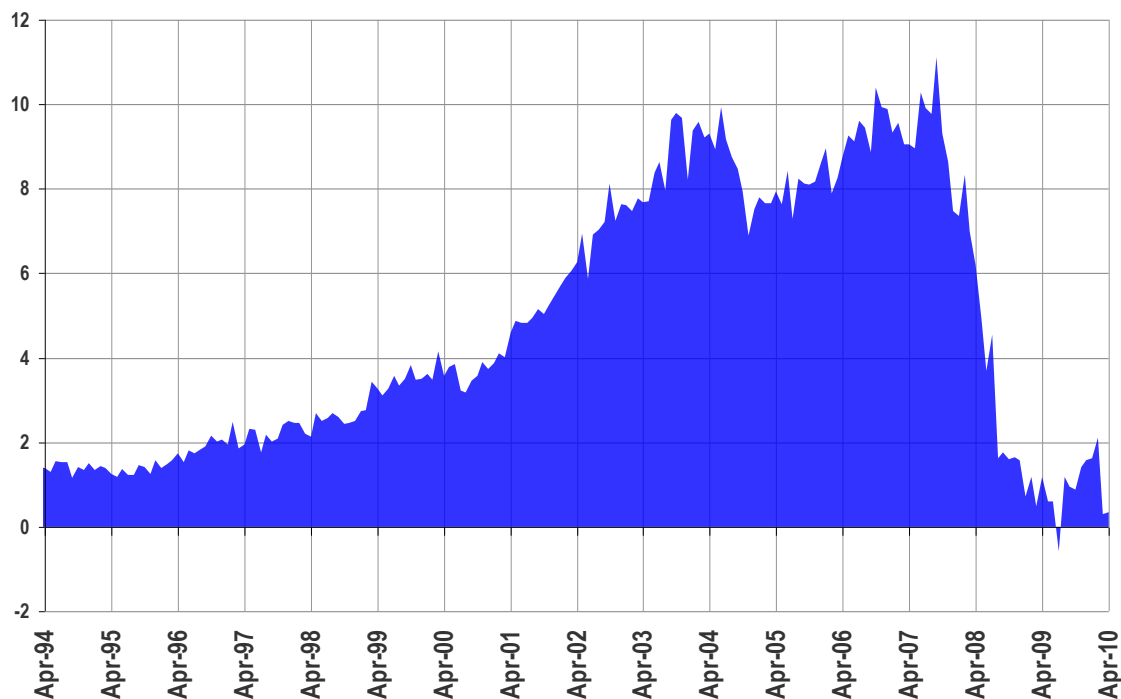
Figure 4.2: Monthly change in net lending to individuals, 1994-present £ billion current prices



Source: Bank of England

4.1.5 If we consider lending to have grown too strongly through the mid to late 2000s, adjusting for real prices and considering long term trends in lending can establish whether the current level of lending is near to norms. Figure 4.3 shows the monthly change in net lending in constant 2010 prices. The average monthly change in net lending over the entire period is £4.5 billion; excluding the ‘credit boom’ years (assumed to run from 2002 to 2007; broadly matching a period of particularly strong growth in house prices), the average monthly rise is £2.5 billion in today’s money. Hence, with the total change in net lending to individuals averaging just over £0.9 billion over the year to April 2010, the change in net lending is trending at just one fifth of long run average lending or less than two fifths, if one excludes the putative credit boom years. As such, lending conditions are a long way from normal and this is a material constraint on household spending growth.

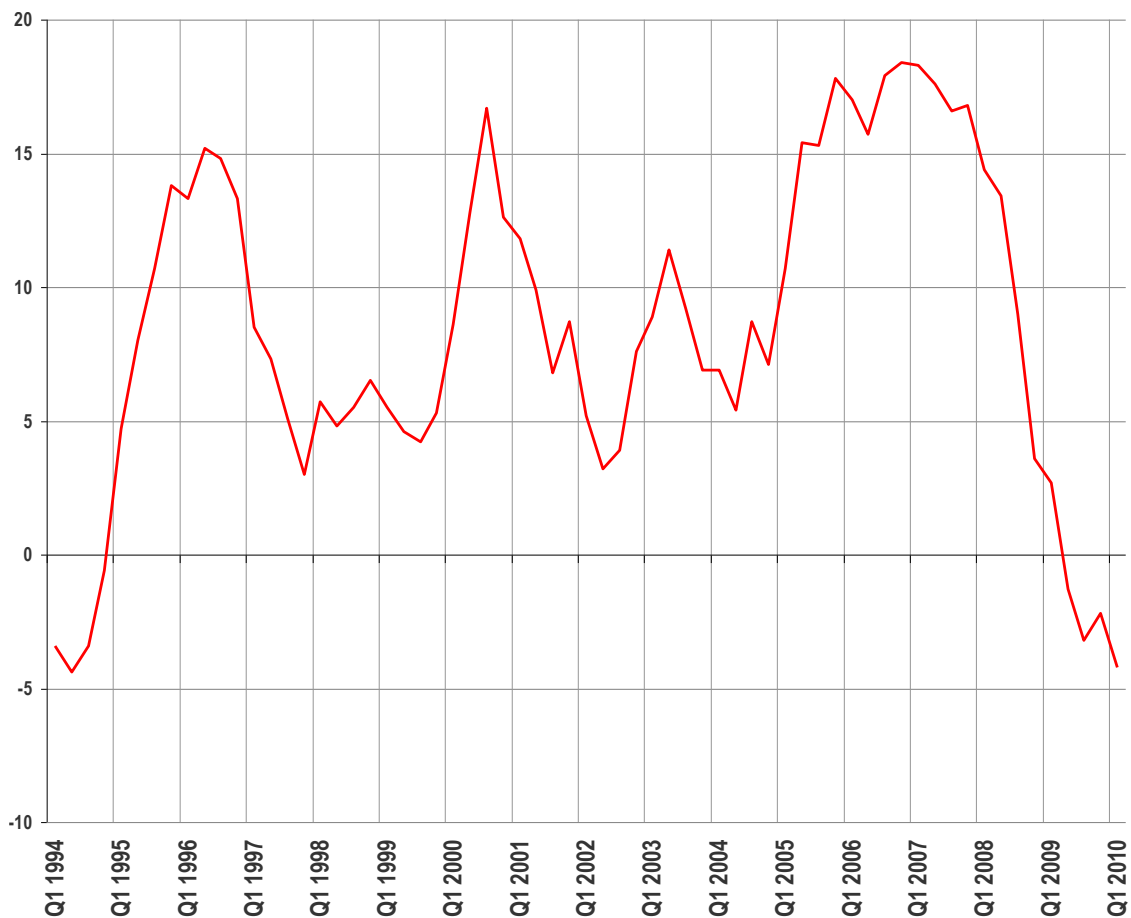
Figure 4.3: Monthly change in total *real* net lending to individuals, 1994-present £ billion constant 2010 prices



Source: Bank of England, Office for National Statistics, cebr analysis

4.1.6 A similar story emerges when looking at lending to businesses. Lending to private non-financial businesses declined from double digit growth to overall declines in the final three quarter of 2009. Figure 4.4 shows the collapse in the growth of lending to businesses quite clearly. While growth in the 2000s leading up to the financial crisis was quite possibly too strong, the collapse in lending growth has hit businesses hard. The latest data shows declines in net lending as the effect of banks' tighter lending conditions continues to feed through. Even if the levels of lending growth in the lead up to the crisis may have been too strong, there is no doubt that the current level of lending growth is exceptionally low when compared with long-run norms. This has acted as a major constraint on UK businesses.

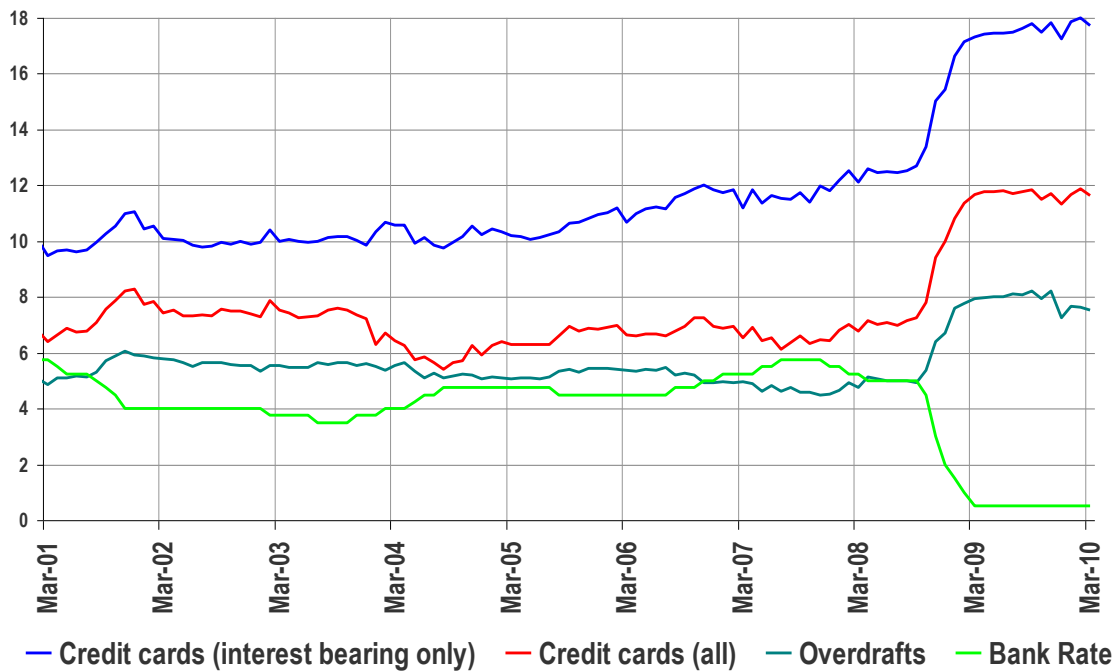
Figure 4.4: Quarterly 12 month growth rate in net lending to private non-financial companies in the United Kingdom, percentage change



Source: Bank of England

4.1.7 The decline in volume of lending was one consequence of the credit crunch and recession – but arose due to the higher cost of finance linked to increased risk-premia on lending. While the Bank of England undertook the unprecedented step of cutting interest rates to their lowest level in the Bank’s history as well as undertaking its £200 billion asset purchase programme (or so-called quantitative easing), the cost of finance has remained stubbornly high for consumers in relative terms. Figure 4.5a illustrates the sharp rise in the difference between the main Bank of England Bank Rate and the cost of unsecured borrowing for consumers through 2008 as the credit crunch worsened and the recession hit. Spreads have remained at their highly elevated levels as banks looked to rebuild their capital base after the damage done to balance sheets through the crisis. The upshot of this is the, in relative terms; the cost of unsecured borrowing has risen sharply. This poses a major challenge for sectors highly reliant on consumer spending and means the current flow of finance is highly impaired.

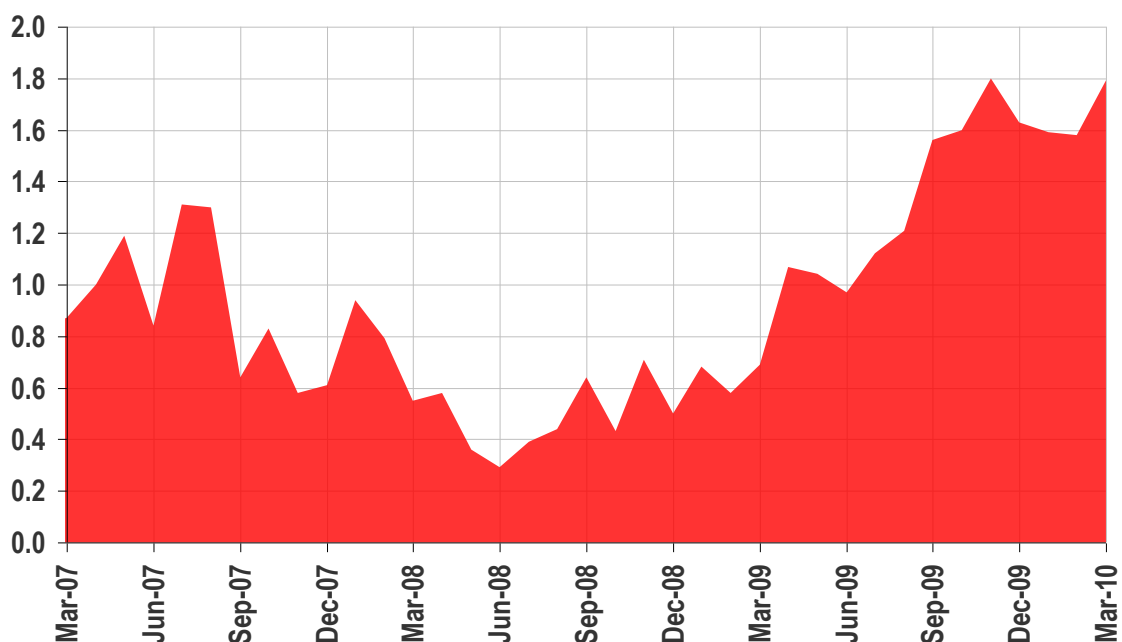
Figure 4.5a Spread between major unsecured consumer lending facilities and Bank of England Bank Rate, basis points and Bank Rate, per cent



Source: Bank of England, cebr analysis

4.1.8 Just as the relative cost of borrowing for households has risen, the effective interest rate on new lending to businesses compared with wholesale financing costs has risen sharply too. Figure 4.5b illustrates the change in the spread between the rate of interest charged for new loans to businesses and the interbank rate, the interest rate at which banks lend to one another – in times of normality closely related to the Bank of England base rate. The relative cost of borrowing for businesses rose steadily through 2009 and remains at elevated levels – acting as a major constraint on businesses.

Figure 4.5b Spread between effective interest rate on new lending to UK businesses and three month LIBOR, percentage points



Source: Bank of England, cebr analysis

4.1.9 The credit crunch and recession had a profound effect on lending flows and the cost of finance. In most cases lending is still running at only a trickle compared to historical levels. In order for the United Kingdom's economic recovery to gather momentum, significant improvements in the availability of finance will be needed.

4.2 Differential improvements in financial conditions across the economy

4.2.1 The previous section highlighted the deep collapse in lending through the credit crunch and recession. However, there has been clear improvement in conditions on wholesale financial markets following the range of government interventions around the globe. Bank recapitalisations and guarantees provided a backstop for the financial sector which contributed to improving market conditions. Furthermore, quantitative easing – the purchasing of assets (mainly government bonds) by the Bank of England to increase the money supply with the aim of increasing nominal spending – has led to some improvements. But the problem is these improvements are likely to have disproportionately affected certain stakeholders.

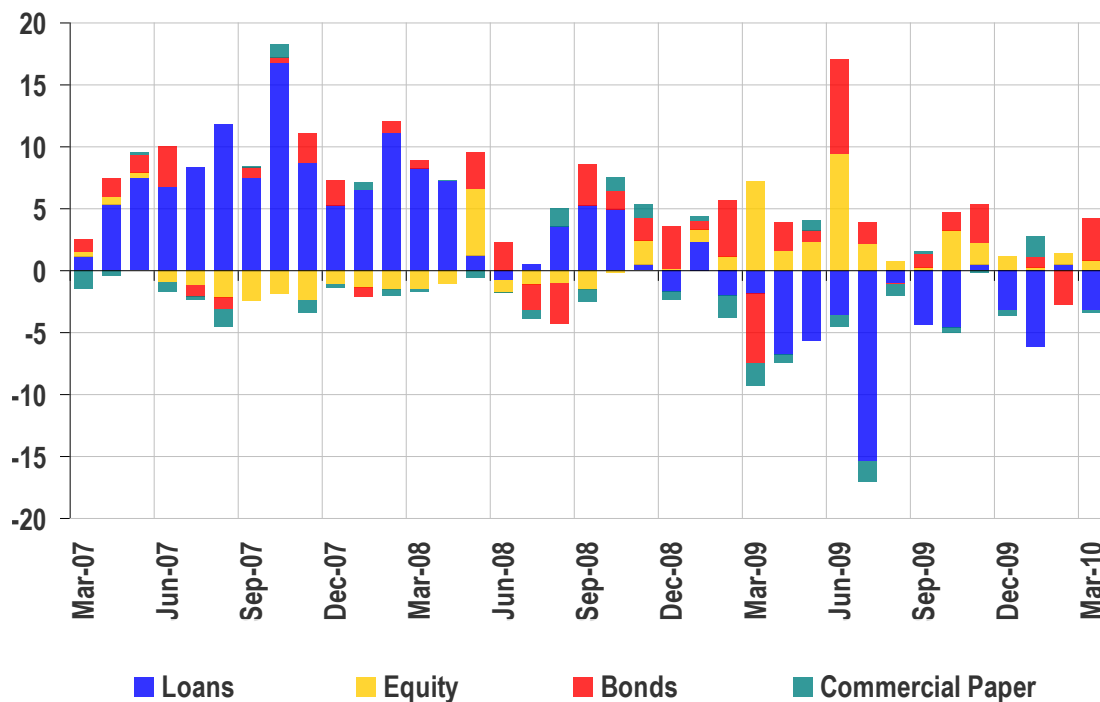
4.2.2 When quantitative easing was introduced in March 2009 it was in the context of the steepest decline in output during the recession as lending to businesses and consumers alike had plummeted. The main aims of the asset purchases were to

drive up a whole range of equity and bond prices, effectively lowering the cost of finance to companies and increasing its availability; and improve the functioning of corporate bond markets.⁴¹

- 4.2.3 While comprehensive conclusions on the impact of quantitative easing are still unclear, some patterns have emerged. Equity prices rebounded strongly (although there are clear problems with disentangling the effects of quantitative easing from the impact of the wider recovery in the global economy) and yields fell back – reducing the cost of borrowing. Companies were able to raise finance by issuing bonds and equity. Notably, June 2009 saw £9.4 billion raised in equity finance and £7.6 billion through new bond issuance. Through the two years from January 2007, companies had raised on average just £0.2 billion per month through equity and bond issuance combined.
- 4.2.4 Hence, there was a clear improvement in financing conditions but net loans declined in all but two of the thirteen months following the introduction of quantitative easing. As such, in the main it is likely to have been large corporations, able to access bond and equity markets that have benefitted most from the improvement in lending conditions. Small businesses do not have the resources to participate in markets such as asset-backed securitisation and so on. Hence, for consumers and Small and Medium Sized companies reliant on bank finance, conditions have not improved nearly as much as for large corporations, as illustrated by the continued weakness in lending flows through early 2010 shown in section 4.1.

⁴¹ Bean, Charles (2009) speech at Cutlers' Feast, Cutlers' Hall, Sheffield 21 May 2009; available at <http://www.bankofengland.co.uk/publications/speeches/2009/speech389.pdf>

Figure 4.6 Net funds raised by businesses in the United Kingdom, £ billion current prices

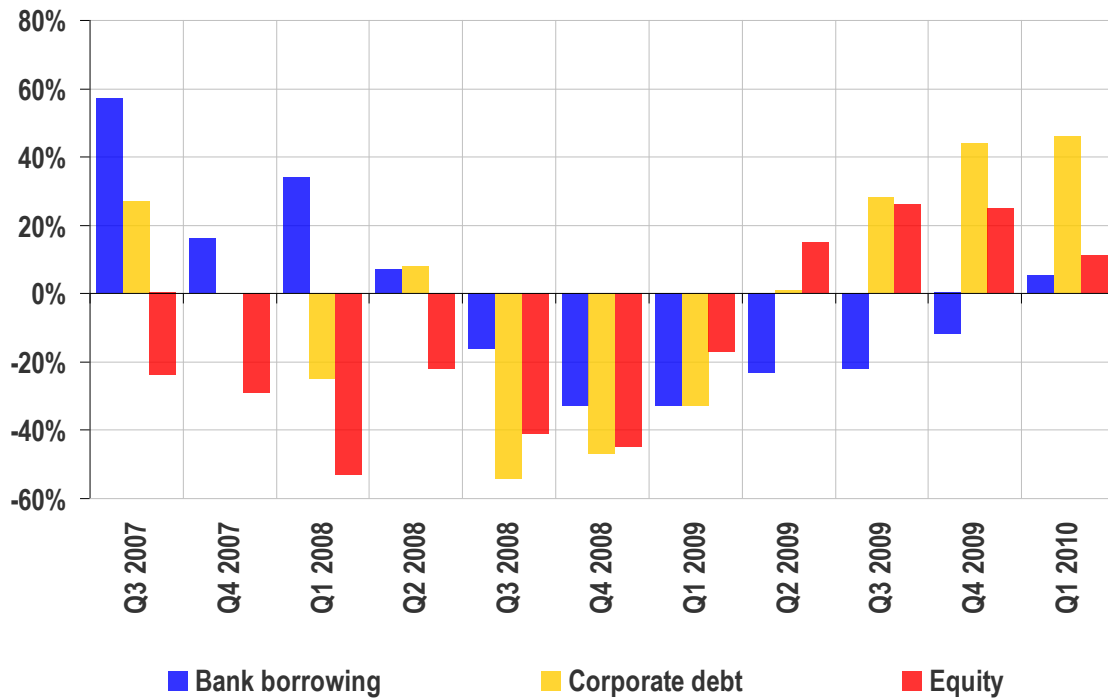


Source: Bank of England

4.2.5 The findings from the Bank of England data are further borne out by the Deloitte Chief Financial Officer (CFO) survey which asks businesses to rate the attractiveness of different sources of external finance. The results for the first quarter of 2010 showed that a net balance of just 5% viewed bank lending as an attractive source of external finance, as illustrated in figure 4.7 below. In contrast, 46% of businesses rated corporate debt markets as an attractive source of finance and 11% with regards to equity. Moreover, over the last year there has been a clear improvement in Chief Financial Officers' ability to raise finance through the markets for corporate debt or issuing equity – with positive net balances on the Deloitte survey for each of the last four quarters. In contrast, borrowing from banks has remained a generally less attractive option, although there have been steady improvements.

4.2.6 The key point to take away from this is that large corporations have benefitted from improvements in their ability to access finance over the last year, but this has not been led by the conventional route of bank lending. Households and smaller businesses do not have access to the markets that have shown most noticeable improvement – i.e. corporate debt and equity issuance – and are largely reliant on bank lending, the supply of which has remained constrained and costly.

Figure 4.7 United Kingdom CFOs' opinion on attractiveness of different sources of external finance, net percentage balance



Source: Deloitte CFO Survey

4.3 Conclusions, business evidence and policy implications

- 4.3.1 Overall, the flow of credit is still a key issue for many households and businesses. Borrowing conditions have improved but are still a long way from any measure of normality, both in terms of lending volumes and the cost of finance. The story is by no means homogenous across the economy. The asset purchase facility introduced by the Bank of England in March 2009 has contributed to improved conditions in corporate debt and equity markets. For large businesses this has allowed a reasonable improvement in the ability to access finance. However, for households and small businesses more reliant on bank finance the improvements have not been as tangible as bank lending remains constrained with more onerous conditions and stringent approval processes for loans.
- 4.3.2 For many businesses, this is a major issue. Sales volumes are in many cases closely related to the overall cost and volume of lending. Despite the record low bank Rate and quantitative easing, key business metrics are still down by at least 50% from a normal year – even allowing for the easy credit era that is generally considered to have occurred through the 2000s and resulted in excessive lending growth. One senior executive in a major vehicle leasing finance firm described the current situation as follows. ‘If you had to quantify our business conditions on a scale from 1 to 10, we used to be at 10 – which was too ‘frothy’ but we’re only at 2 now – we need to be back at 6 or 7’. Businesses report the approval process for signing off bank loans as comprising far more layers and taking far longer than previously – weeks and months rather than days – holding back key businesses opportunities. For many businesses, there is still a long way to go to return to some semblance of normality.
- 4.3.3 The weakness of lending to consumers holds back consumption growth – notably in the automotive sector. A recent OECD paper uses a financial conditions index⁴² among other key explanatory variables to consider the effect of credit constraints on automotive sales.⁴³ It finds a significant effect of financial conditions on automotive sales for all G7 countries, except France. Their estimations indicate that tight financial conditions influence sales with a lag in the United Kingdom while in Canada and the United States tight credit conditions can explain more than 80% of the collapse in sales at the end of 2008.⁴⁴ Tight lending conditions undoubtedly played a key role in sending new car registrations in the United Kingdom to their lowest level since 1995, despite the introduction of the car scrappage scheme in May 2009

⁴² Derived from Guichard, S., D. Haugh and D. Turner (2009), “Quantifying the Effects of Financial Conditions in the Euro Area, Japan, the United Kingdom and the United States,” OECD Economics Department Working Papers, No. 677.

⁴³ David Haugh, Annabelle Mourougane and Olivier Chatal (2010), ‘The automobile industry in and beyond the crisis’ OECD Economics Department Working Papers, No. 745

⁴⁴ Ibid, p. 15

4.3.4 The coalition agreement made the following commitment: 'We will develop effective proposals to ensure the flow of credit to viable SMEs. This will include consideration of both a major loan guarantee scheme and the use of net lending targets for the nationalised banks.' The Emergency Budget contained commitments from high street banks on a set of principles to follow when lending to SMEs while the Enterprise Finance Guarantee (EFG) supports lending to viable small businesses that lack sufficient collateral or the financial track record to access a normal commercial loan. Furthermore, the Government announced it would create a Growth Capital Fund to address the Rowlands Review findings that, for some fast-growing SMEs, capital for growth is not being provided by the market and that this problem was exacerbated by the recession.⁴⁵

4.3.5 Furthermore, the coalition agreement committed to action on banking reforms, which the Budget has since reified. The coalition agreement stated: 'We will take steps to reduce systemic risk in the banking system and will establish an independent commission to investigate the complex issue of separating retail and investment banking in a sustainable way; while recognising that this will take time to get right, the commission will be given an initial time frame of one year to report.'

4.3.6 In the Budget on 22 June 2010, the Chancellor announced details of an Independent Commission on Banking, chaired by Sir John Vickers. The Commission will look into the following:

- reduce systemic risk in the banking sector, exploring the risk posed by banks of different size, scale and function;
- mitigate moral hazard in the banking system;
- reduce the likelihood and impact of firm failure;
- promote competition in both retail and investment banking whilst ensuring the needs of customers are addressed; and
- consider the extent to which large banks gain a competitive advantage from being perceived to be too big to fail.⁴⁶

⁴⁵ Budget June 2010; pp. 27-8

⁴⁶ HM Treasury (2010); 'Reform and regulation: The Government's approach to financial service regulation'. Accessed here: http://www.hm-treasury.gov.uk/reform_and_regulation.htm

- 4.3.7 The commission will report within one year, but for the economic recovery to become broader based, the government must ensure that the cost and availability of credit for businesses and households improves in the coming months. The evidence above clearly illustrates that financing conditions are still strained and well below what could reasonably be considered normal levels
- 4.3.8 In this context the Green Paper on business finance – due for publication before the end of the summer recess – will be particularly important. Increasing the availability of finance for businesses that are the lifeblood of the UK's economic recovery is vital.
- 4.3.9 Improvements in financing conditions for large corporations, although valuable and a positive development, have far surpassed the steady improvement in credit flows to households and small businesses since the latter do not have access to corporate debt and equity markets to raise finance, which have been the main mechanism for large corporations to access capital while banks have, in general, retrenched. The government must consider this and the policies that can be taken to improve the flow of credit to households.
- 4.3.10 The government must also scrutinise the cost of credit for households and businesses. Competition in the banking sector must be sufficient to keep spreads between bank funding costs and interest rates charged to customers as low as possible.