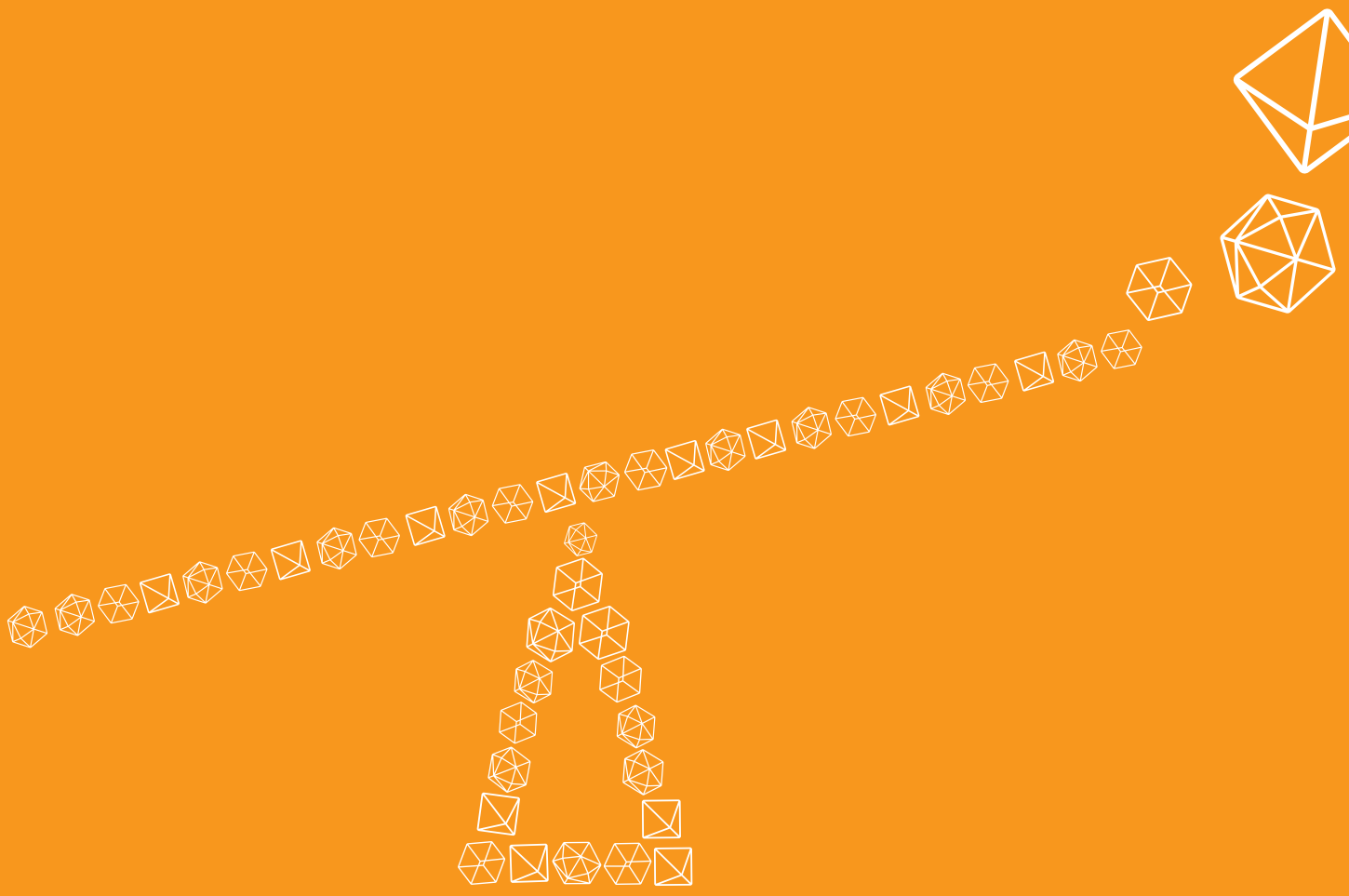
Research report: June 2010

NESTA Making Innovation Flourish

Rebalancing Act

Shantha Shanmugalingam, Ruth Puttick and Stian Westlake



Rebalancing Act

Foreword

After a period of heated debate on deficit reduction, the subject of economic growth has re-entered the political consciousness. This is welcome: sound public finances are essential to the recovery, but not sufficient. The deficit will not be tackled solely by reducing government spending. As the new government seeks to rebuild the UK's economy, the concept of economic 'balance' has come to the fore.

Recent speeches by the Prime Minister and the Secretary of State for Business, Innovation and Skills have raised the vital question of growth, and put the idea of rebalancing the economy at the front and centre of political debate. In particular, both speeches raised the issue of sectoral rebalancing – what will take the place of the economic growth that for so long was provided by the UK's financial services sector.

This is a controversial subject, with some commentators advocating a relentless focus on promoting manufacturing, and others insisting that financial and business services are the only areas in which the UK can prosper.

This report seeks to move the debate forward with data and analysis. It looks at a number of scenarios for a rebalanced economy, and asks two important questions: what is realistic, and what is desirable for the country. It highlights the vital role of innovation and high-tech industries in driving sustainable growth, and looks at what government can do with limited resources to make this happen.

NESTA is very grateful to the support of Oxford Economics, who worked with us on much of the analysis in this report, and to the Department for Business, Innovation and Skills, who provided constructive comments and reviewed early drafts.

We are sure that this research will be a valuable contribution to the debate on how to foster economic growth. As ever, we welcome your views.

Jonathan Kestenbaum
Chief Executive, NESTA

June, 2010

NESTA is the National Endowment for Science, Technology and the Arts.

Our aim is to transform the UK's capacity for innovation. We invest in early-stage companies, inform innovation policy and encourage a culture that helps innovation to flourish.

Executive summary

The concept of a 'rebalanced' economy has become central to the debate on how the UK can emerge from recession and generate sustainable growth.

Economic 'balance' has come to refer to many things, including the balance between imports and exports, the balance between the public and private sectors, the balance between public spending and tax receipts, and the balance between the South East and the rest of the country. This report focuses on one particular aspect: the balance between different sectors in the economy.

This issue has become particularly topical in the aftermath of the global financial crisis, which has led many to question the decades-long rise of the UK's financial services sector at the expense of manufacturing industries. An important debate has begun between those who believe the UK needs a new balance between its different sectors, with a smaller role for finance and a greater one for manufacturing and technology, and those who believe that services, and in particular financial and business services, will continue to provide the country's bread and butter and its best chance of recovery.

But this debate has often taken place in the absence of evidence. Strongly held views on the inherent importance of manufacturing or on the UK's competitive position in financial services have played a more prominent role in the argument over rebalancing than scrutiny of what the different options mean for the UK's economy.

This report is an attempt to take a more analytical approach to this debate. It starts by analysing the current and historical balance of the UK economy in comparison to other rich countries, and highlighting the challenges of drawing firm inferences about the state of sectoral balance from a straightforward comparison with other countries. The report then models four different scenarios for future growth, to determine the credibility of different visions for a rebalanced economy. It concludes by considering the types of policies that the government should enact to address the challenge of growth.

The report sets out four possible scenarios for future growth, including a 'business-as-usual' case, a broad-based manufacturing renaissance, a high-tech growth scenario, and a case in which businesses invest heavily in innovation across the economy. It applies these scenarios to a widely recognised economic model to identify what one would have to believe for the scenarios to be plausible.

The results show the shortcomings of the business-as-usual scenario: it is slow to generate jobs (employment growth does not occur until 2013) and delivers poor growth in the UK's regions and nations (employment growth in Wales is projected to be an anaemic 0.1 per cent per year over the decade, 0.2 per cent per year in the North East). The broad-based manufacturing renaissance, however, strains credibility. While manufacturing output is expected to grow in all scenarios, an increase in the sector's contribution to the economy by 3 percentage points from today's levels by 2020 implies levels of manufacturing growth (around 6.2 per cent per year) not seen since before 1945.

The other two scenarios, though ambitious, are both more plausible in terms of the factors required for them to occur. They would

generate higher rates of growth outside London, a faster return to employment growth (by 2011 rather than 2013) and a very sound overall level of economic growth.

A further important implication of all four scenarios is that even in those where the manufacturing contribution to the economy grows, business services continue to be the largest contributor to UK economic growth, showing the centrality of services (including creative sectors such as software and advertising) even in a more manufacturing oriented economy.

Policy implications

Since both the high-tech scenario and wider innovation scenario have some uncertainties – neither is a sure thing – and are in some senses complementary (creating the conditions for innovation across the economy will in itself benefit the growth of high-tech sectors and vice-versa), policy should be put in place that works towards both of these goals. This policy path is supported by analysis of the UK's comparative advantage,[1] as well as NESTA's own research highlighting the vital link between innovation and growth. At the same time, policy has to take into account the straitened state of public finances. Accordingly, the recommendations in this report are focused on improving value for money, and do not require additional government spending.

The report recommends that policy for growth should be focused on two ends: fostering an environment in which innovative firms can flourish; and making sure that the government actions support high-potential, high-tech sectors, wherever possible.

Government policy as it relates to high-tech sectors should concentrate on harnessing existing spending – for example through government procurement and university research and teaching – to meet the demands of high-potential sectors, underpinned by a framework of taxation that encourages investment and enterprise and a financial regulation that ensures access to finance.

Encouraging innovation across the economy will require the government to engineer a business environment which encourages a diverse pool of ideas to emerge from universities and companies, promotes entrepreneurial risk-taking, fosters open and competitive markets, provides a supportive financial architecture and a highly skilled workforce.

There are also measures that the government should seek to introduce now. In particular, government should pay special heed to the small minority of high-growth businesses that generate the bulk of job creation – and which NESTA research has shown to be disproportionately innovative. Mainstream government support, such as Business Links, is not clearly targeted at this group. In an age of austerity, government should consider the role that private sector-led programmes that incubate and support high-potential businesses in particular can play.

The report also highlights the importance of access to finance; government policy here on banking competition and small business lending, combined with existing policies like the Innovation Investment Fund, can help provide the financial architecture that businesses need to innovate and thrive. As part of its year-long work, the recently established Banking Commission should seek to examine how financial institutions in the UK provide debt and equity to innovative companies and options for enhancing this support.

These recommendations, and the question of how to deliver investment in innovation and high-tech outlined in this report, will be the subject of further work by NESTA in the coming months, with a view to helping provide an evidence-based framework for how the UK economy can return to growth.

A note on terminology

'Government' as used here can refer to the UK Government and the Devolved Administrations in Scotland, Wales and Northern Ireland, with appropriate caveats as to the varying powers and responsibilities of these administrations over specific budgets and services.

1. Oxford Economics (2010) 'Examining Sectoral Growth in the UK.' Oxford: Oxford Economics.

Contents

Rebalancing Act

Part 1: Introduction – economic recovery and the debate on rebalancing

This section outlines the current heated debate on how – and whether – we should rebalance the UK's economy, a debate which is central to policy on economic growth and recovery. In particular, it focuses on the question of sectoral rebalancing: the desire to ensure that "success and prosperity are spread more evenly across regions and industries". But this debate is one that has often taken place in the absence of economic analysis. This section proposes a way to address this, in order to help policymakers tackle the challenges of growth.

The idea of rebalancing the economy has been at the forefront of British political debate since the collapse of the UK's banking sector in 2008. It is increasingly seen as a vital prerequisite for economic recovery and sustainable growth. This report asks whether the UK economy is unbalanced and examines potential rebalancing scenarios.

The starting point for these questions is the UK's desperate need for economic growth. The recession has left the country in a parlous state. The UK today is more indebted than any other major economy bar Japan, with a combined private and public sector debt of 466 per cent of GDP in 2009.[2] In two short years, the UK public sector net borrowing has jumped from 2.4 per cent of national income to 10.3 per cent, one of the worst in Europe.[3] And public debt is predicted to reach 90.6 per cent of GDP by 2015, twice the level seen in 2007.[4]

Our personal finances are also in bad shape. While other European households were saving, the UK's were going deeper into debt. Net borrowing by UK households was on average 2.5 per cent of their gross disposable income over 2000-2007, while in contrast in France and Germany households were saving (6.1 per cent and 7.7 per cent respectively).[5] And as a result UK household debt grew from 68 per cent of GDP in 2000 to over 103 per cent in 2009, the highest among the G7 economies (and more than twice the level in France and Germany).[6]

Unemployment has also been increasing and now stands at 2.51 million. Though the level of unemployment – 8.0 per cent of the working population – is by no means exceptional amongst other leading economies, it is the highest figure for 15 years. With the recovery still uncertain, unemployment could still climb further particularly when public sector job cuts kick in.

The backdrop to all these problems is the UK's long-standing productivity challenge. Productivity growth is what ultimately drives UK living standards in the long term. For decades, UK labour productivity has been lower than in the US and leading European economies. Whilst UK productivity has experienced the fastest rate of growth of any G7 country in the period 1991-2008, the UK continues to lag behind the G7 average.[7]

Economists broadly agree that fostering economic growth while tackling the deep-seated problems that confront the UK requires a better balance in a number of areas:

- More balanced public finances: Current borrowing levels are unsustainable, so reducing the public sector deficit must be a priority for the new government. Lower expenditure, higher taxes and robust growth will be required to achieve it.[8] But the demand for public services is unlikely to fall significantly, so new innovative approaches to public sector delivery will need to be developed to reduce costs while maintaining the quality of public services.

- Less dependence on consumer spending: UK consumers, backed by cheap credit, have been an engine of growth over the past decade. But the burden of personal debt means their contribution will be more limited in the next few years. The deleveraging of households and the public sector suggests that exports and investment will have to play a more important role going forward.

2. McKinsey Global Institute (2010) 'Debt and deleveraging: the global credit bubble and its economic consequences.' Washington DC: McKinsey Global Institute. Figures relate to Q2 2009.
3. HM Treasury (2010) 'Public finance statistics.' London: HM Treasury.
4. IMF (2010) 'World Economic Outlook April 2010: Rebalancing Growth.' Washington DC: International Monetary Fund.
5. Eurostat (2009) 'Household saving rate higher in the EU than in the US despite lower income: Household saving and investment, 1995-2007.' Luxembourg: Eurostat. These figures reflect net lending (+) or net borrowing (-) to/from the rest of the economy by households in percentage of gross disposable income.
6. McKinsey Global Institute (2010) 'Debt and deleveraging: the global credit bubble and its economic consequences.' Washington DC: McKinsey Global Institute. Figures relate to Q2 2009.
7. ONS (2010) 'International comparisons of productivity: Revised estimates for 2008.' GDP per hour worked. Newport: ONS. Available at: http://www.statistics.gov.uk/pdfdir/icp0210.pdf
8. CentreForum (2009) 'A balancing act: fair solutions to a modern debt crisis.' London: CentreForum.

- A healthier UK current account: The UK's growth profile over the last decade also resulted in a current account deficit, which peaked at 3.3 per cent of GDP in 2006. Following the recession and the fall in sterling, the current account deficit is now at 1.3 per cent.[9] But there are differing views regarding what will happen to it as the economy recovers. Some forecasts, such as IMF and Oxford Economics, suggest that the deficit will fall further. Others suggest that the deficit may rise as the economy recovers and imports rise. The devaluation of sterling will continue to facilitate adjustments but at a cost of higher import prices, and thus higher inflation.[10] So devaluation should not be viewed as a costless substitute for productivity-enhancing policies.

- Balancing the public and private sectors: The public sector accounted for 24 per cent of UK jobs created between 2000 and 2008, reaching 5.8 million employees in 2008.[11] And this is likely to underestimate its contribution given the increasing role that private and third sector organisations have played in the delivery of public services over the period ('public sector outsourcing').[12] This is a major reversal relative to the prior eight years, in which the public sector shrank by 608,000. The forthcoming fiscal consolidation makes further public sector jobs expansion implausible, and employment cuts very likely. So private job creation will have to take over if the UK is to make progress towards reducing unemployment levels.

- Regional balance: The past two decades have seen a widening of regional differences in economic growth and job creation. London and the South East have experienced robust growth, benefiting from the concentration of business and financial services, whilst the North East, Northern Ireland and Wales have all lagged behind. This creates economic and social issues that consecutive governments have attempted to rectify.[13,14] Regional disparities are likely to become accentuated as heavy public spending cuts hit all regions of the UK.

But of all the ways in which the economy can be rebalanced, perhaps the one that has attracted the most attention in the aftermath of the global financial crisis is the balance between the sectors of the UK economy. The dramatic failure of leading banks and the global deflation of asset bubbles crystallised widespread worries about a model of growth based on financial services and the steady appreciation of real estate. Promises of a 'post-industrial' future now seem much less reassuring than they did five years ago.

The idea of an economy less dependent on financial services and with greater strengths in manufacturing and technology has drawn widespread support. It has received endorsement from across the political spectrum: Vince Cable, the Business Secretary has identified the UK's problem with *"growth over-dependent on the banking sector"*;[15] Prime Minister David Cameron argued that *"[the] economy has become more and more unbalanced, with our fortunes hitched to a few industries in one corner of the country, while we let other sectors like manufacturing slide"*;[16] while former Business Secretary Lord Mandelson called for *"an economy with less financial engineering and more real engineering"*.[17]

In some cases, these calls have manifested themselves as ambitious goals for the manufacturing sector: it has been argued that the UK's manufacturing sector should aspire to the size and scale of its counterparts in countries like Germany and Finland. France's president Nicolas Sarkozy has gone so far as to set an explicit growth target for French manufacturing: 25 per cent growth in output over the next five years.[18]

But rebalancing also has its sceptics. They point to the strength of the UK's services sector, and argue that banking and allied industries are perennials that represent the UK's best hope for growth. Anatole Kaletsky, editor-at-large of The Times, summed up the sceptics' argument in a recent piece:

> *"The new consensus states that Britain has an overextended and unstable financial sector that needs cutting down to size... The problem is that it is almost certainly wrong. Finance and the business services, such as law, accountancy and management consultancy that are natural spin-offs from buoyant financial activity, are the industries in which Britain has always enjoyed its clearest comparative advantage."*[19]

Rebalancing sceptics would argue that it was ever thus: Britain has always profited from commerce and services more than from manufacturing, and has always felt uneasy about the fact.[20] The depiction of British finance as the enemy of honest manufacturing was as vehement in the nineteenth and

9. IMF (2010) 'World Economic Outlook April 2010: Rebalancing Growth.' Washington DC: International Monetary Fund.
10. The letter to the Chancellor from the Governor of the Bank of England about the failure to hit the inflation target highlighted that an increased cost of imports had fuelled inflation last month.
11. ONS (2010) 'Public Sector Employment Statistics, Q4 2009.' Newport: ONS.
12. In 2007/8 they employed over 1.2 million people. If indirect and induced impacts are included, the jobs supported by private and third sector enterprises providing public services reach 2.3 million. See BERR (2008) 'Understanding the Public Services Industry: How big, how good, where next?' A Review by Dr DeAnne Julius CBE, July 2008. London: BERR.
13. Centre for Economics and Business Research (2010) 'State of the Nation 2010.' London: CEBR.
14. An unintended consequence of government policy is that the public sector has become all too important in some regions. For example, it accounts for over 70 per cent of GDP in Northern Ireland (in contrast to around 36 per cent in London). Cities like Birmingham and Nottingham have also become over-reliant on public sector jobs (See Centre for Cities (2010) 'Cities Outlook 2010.' London: Centre for Cities).
15. Speech to the Institute of Directors on 28 April 2010.
16. Speech in Shipley, Yorkshire, 28 May 2010.
17. The Times (2009) Lord Mandelson hands out £2.3 billion to carmakers. 'The Times.' 28 January 2009.
18. Alfroy, P. (2010) Sarkozy vows to raise manufacturing by 25% over next five years. 'Industry Week.' 5 March 2010.
19. The Times (2010) The City got its way but might just regret it. 'The Times.' 19 May 2010.
20. Willetts, D. (2010) 'The Pinch: how baby boomers stole their children's future.' London: Atlantic Books.

twentieth centuries as it is in the twenty-first. Dickens's Mr Merdle and Trollope's Augustus Melmotte exemplify the Victorians' unease with unscrupulous financiers who ruined 'real' businesses, while Britain agonised over its industries throughout the last century, whether in the discussion of the Macmillan gap between the wars or in the reaction to deindustrialisation in the 1980s.[21]

What has been missing from this debate is analysis.[22] How unbalanced is the UK's economy when examined quantitatively? And what would different plans for rebalancing mean for growth?

The remainder of this report attempts to do precisely that. First of all, it looks at the current and historical shape of the UK economy, asking whether it is possible to diagnose sectoral imbalances. Then, it sets out four possible scenarios for future growth, one business-as-usual, and the others involving elements of rebalancing. Using a widely accepted economic model, the report considers how each scenario impacts on economic growth, regional performance, employment and growth in the number of companies in the UK. It goes on to ask how credible they are: what would one need to believe for these scenarios to deliver a healthy rate of economic growth over the coming decade? Finally, it identifies the policy implications of the most plausible and attractive scenarios.

21. Mulgan, G. and Brown, G. (1990) Britain takes the biscuit. 'London Review of Books.' 12:20, pp.10-11.
22. There is a good tradition of economic analysis of the sectoral structure of the economy. The issue has been covered in 'Globalisation and the changing UK economy' (Department for Business, Enterprise and Regulatory Reform) and the European Commission's 'EU Industrial Structure 2009 – Performance and Competitiveness'. At an academic level, discussions encompass both Baumol's (1967) model of unbalanced growth and wider analysis of deindustrialisation (for a review of this literature, see for example Rowthorn, R. and Ramaswamy, R. (1997) 'Deindustrialisation: causes and implications.' Staff Studies for the World Economic Outlook. Washington, DC: International Monetary Fund).

Part 2: Is the economy sectorally unbalanced?

This section examines the question of the sectoral balance of the economy. It first of all asks how we can assess whether an economy is balanced. Then it looks at a number of possible measures, focusing on the contributions of three particularly important sectors – manufacturing, financial and business services – to growth in output (expressed as Gross Value Added, or GVA), employment and exports. Finally, it asks whether the current state of balance in the economy can be said to be a good or a bad thing in itself.

The conclusion it reaches is a mixed one: it is fiendishly difficult to come up with a rigorous measure for how balanced economies are. Many of the phenomena that have affected sectoral balance in the UK, in particular the decline of our manufacturing sector, have also affected other countries. However, it is clear that the UK's financial services sector is larger than that of many developed countries and that its manufacturing sector is smaller, whether measured in terms of output, employment or exports.

The case that this sectoral mix is *a priori* worse than others is not proven. Other countries, including those with healthy manufacturing sectors and small financial services sectors, have also raised concerns over their sectoral mix, for reasons that sound no less plausible than the concerns raised in the UK.

How do you measure sectoral balance?

To answer the question of whether the economy is unbalanced, it is necessary to define what balance means. When it comes to sectoral balance, this is harder than it looks.

The first challenge is how to define sectors: looking at the high-level balance between, for example, manufacturing and services generates different results for different countries compared with looking at industries in detail (for example by using 3-digit Standard Industrial Classification codes).

A second challenge is how to choose appropriate international comparators to decide what the 'right' balance is. Should this be an average of all developed countries? If so, should outliers, such as Norway or Australia's extractive industries or Switzerland's banking sector be included or excluded?

A third challenge is what statistical technique to use to compare sectors and countries. As part of this report, Oxford Economics analysed the sectoral breakdown of the UK economy using a number of different commonly used techniques to measure diversity; even holding the definition of sectors and the comparator countries constant, they generated significantly different results.[23]

All this makes estimating the sectoral balance of an economy a much more impressionistic exercise than the partisans of either side of the argument might make out. The most informative way of addressing the question may be the simplest: eyeballing the levels of sectoral balance in a range of broadly similar countries, and comparing their change over time.

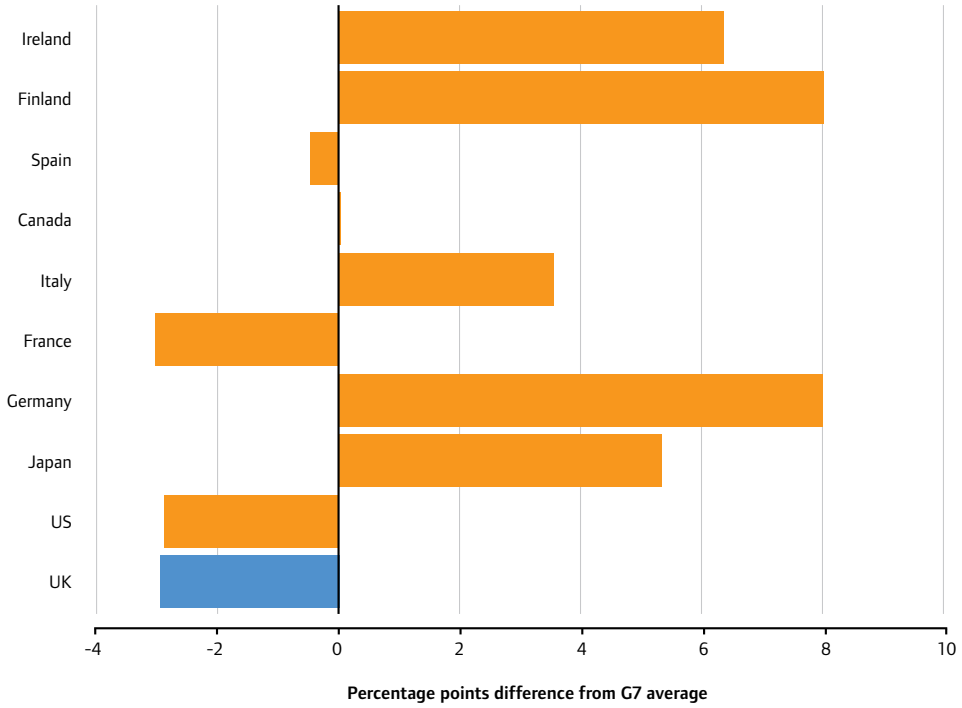
How does the UK's current sectoral balance compare with other leading economies?

To address the question of how balanced the UK economy is, NESTA worked with Oxford Economics. We sought to examine how the UK's sectoral composition changed over the past 40 years and how this compares with other developed countries.

The first and arguably the most important measure to examine the balance of an economy is output, measured as GVA. Figures 1 and 2 show the current GVA contributions of

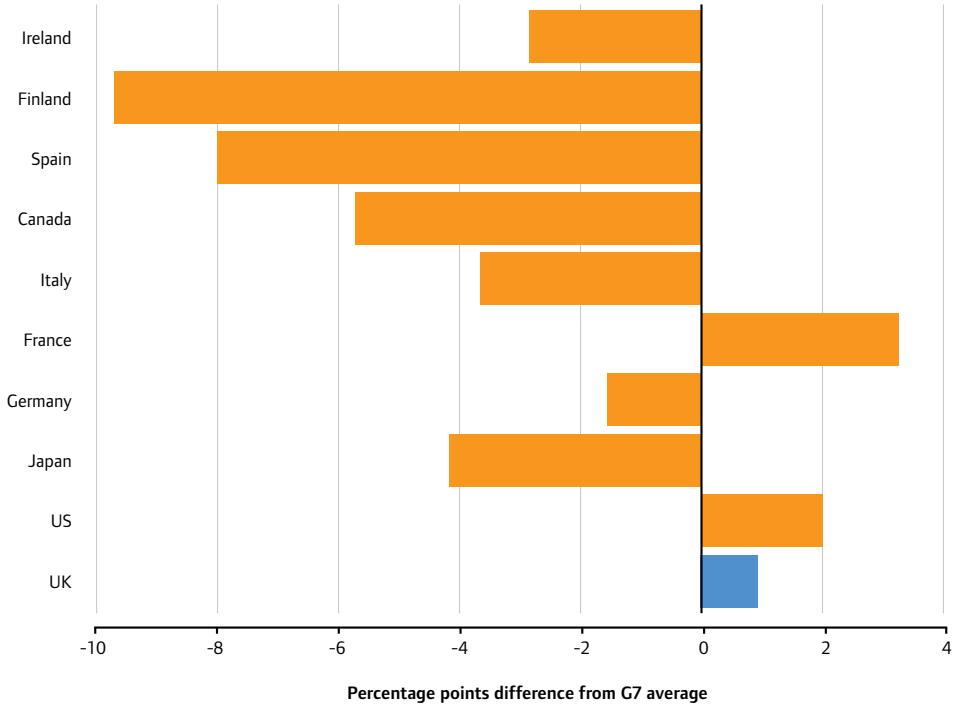
23. Indices, such as Herfindahl, Ogive and Entropy can be used to measure economic diversity but their outcomes can be contradictory reflecting the underlying difficulty in objectively identifying what a well balanced economy looks like. These results are set out in Oxford Economics (2010) 'Examining Sectoral Growth in the UK.' Oxford: Oxford Economics.

Figure 1: Manufacturing as a share of GVA in several leading economies (2007)



Source: OECD.

Figure 2: Financial and Business Services as a share of GVA in several leading economies (2007)



Source: OECD.

manufacturing, finance and business services in the UK economy against other G7 countries. This analysis highlights two factors.

First, that the UK has a somewhat smaller manufacturing sector and a somewhat larger financial and business services sector than several rich countries.

Second, it highlights that we are not unique in this respect: the US and France exhibit similar departures from the norm.

How has sectoral balance changed over time?

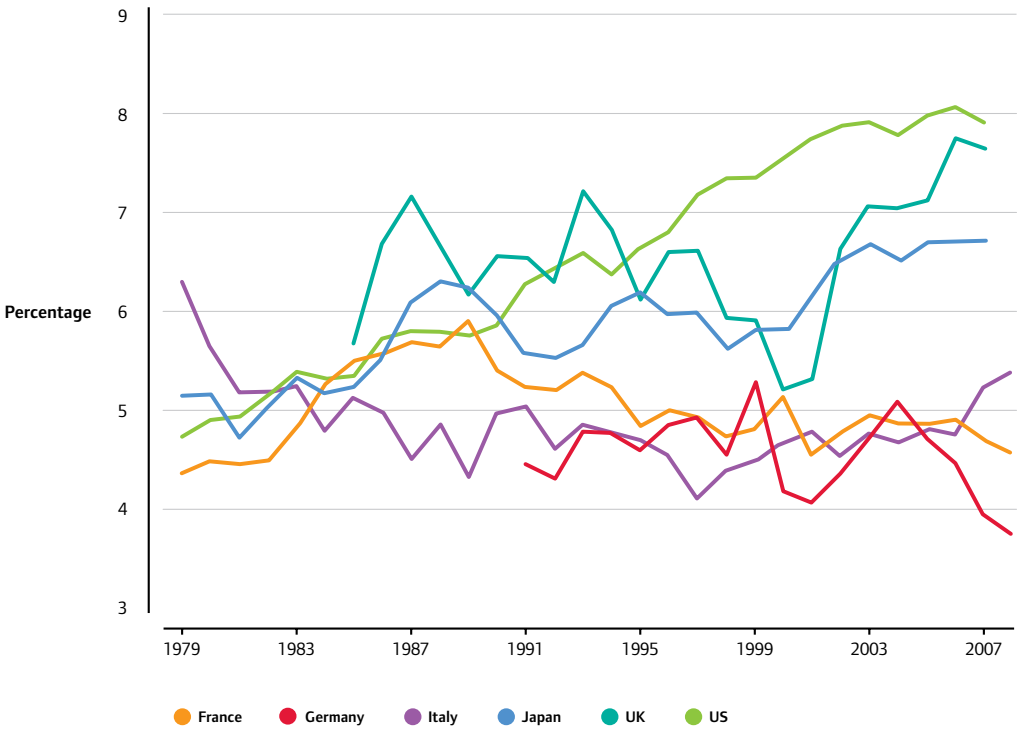
Though the current sectoral balance may not be exceptional, we sought to examine whether the trends observed in the UK economy were different from those seen elsewhere. We analysed trends in the economies of the UK and other leading countries, specifically changes in sectoral contributions to GVA growth, employment and exports.

Change in output over time

It will come as no surprise to learn that financial services have grown significantly over the last 30 years, from 5.7 per cent of the output of the UK economy in 1985 to 7.7 per cent in 2007. While the relative growth is impressive, the change to its absolute contribution to the UK economy is much more modest: a mere 2 percentage points (Figure 3). The financial services sectors in the US and Japan have also experienced growth over the same period. In the US, the sector experienced very similar growth to the UK, going from 5.4 per cent of total GVA in 1985 to 7.9 per cent in 2007. This growth has been more consistent and less susceptible to recessions than in the UK. The Japanese financial services sector has seen somewhat slower growth, with contribution to GVA going from 5.2 per cent to 6.7 per cent between 1985 and 2007.

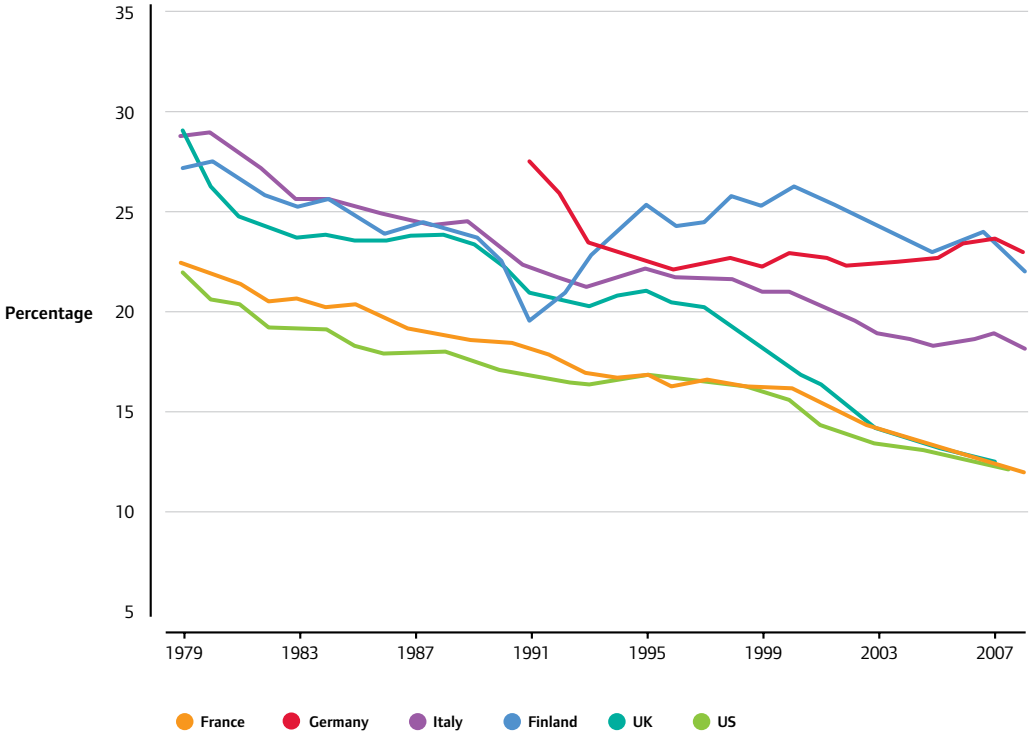
In the same period, manufacturing has declined rapidly, dramatically falling from 29 per cent of the UK output in 1979 to 13 per cent of output in 2007 (Figure 4). All the major economies examined, apart from Finland, saw a fall in the

Figure 3: Financial Services share of total value added across a range of economies (at current prices)



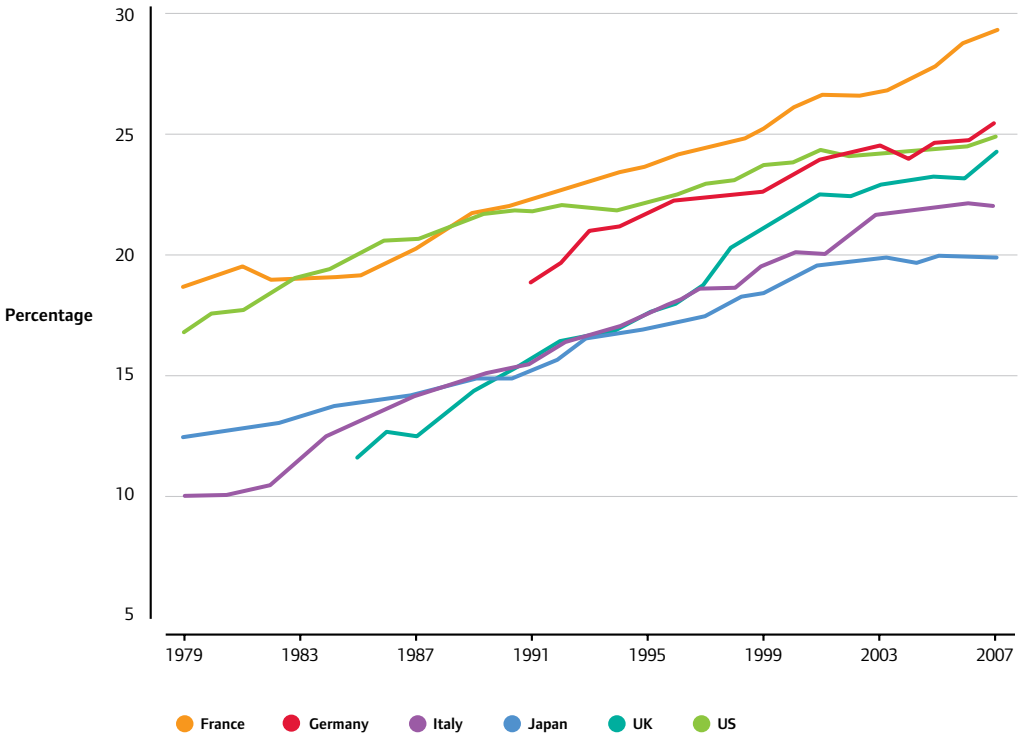
Source: OECD.

Figure 4: Manufacturing share of total value added across a range of economies (at current prices)



Source: OECD.

Figure 5: Business Services as a share of Value Added across a range of economies (at current prices)



Source: OECD.

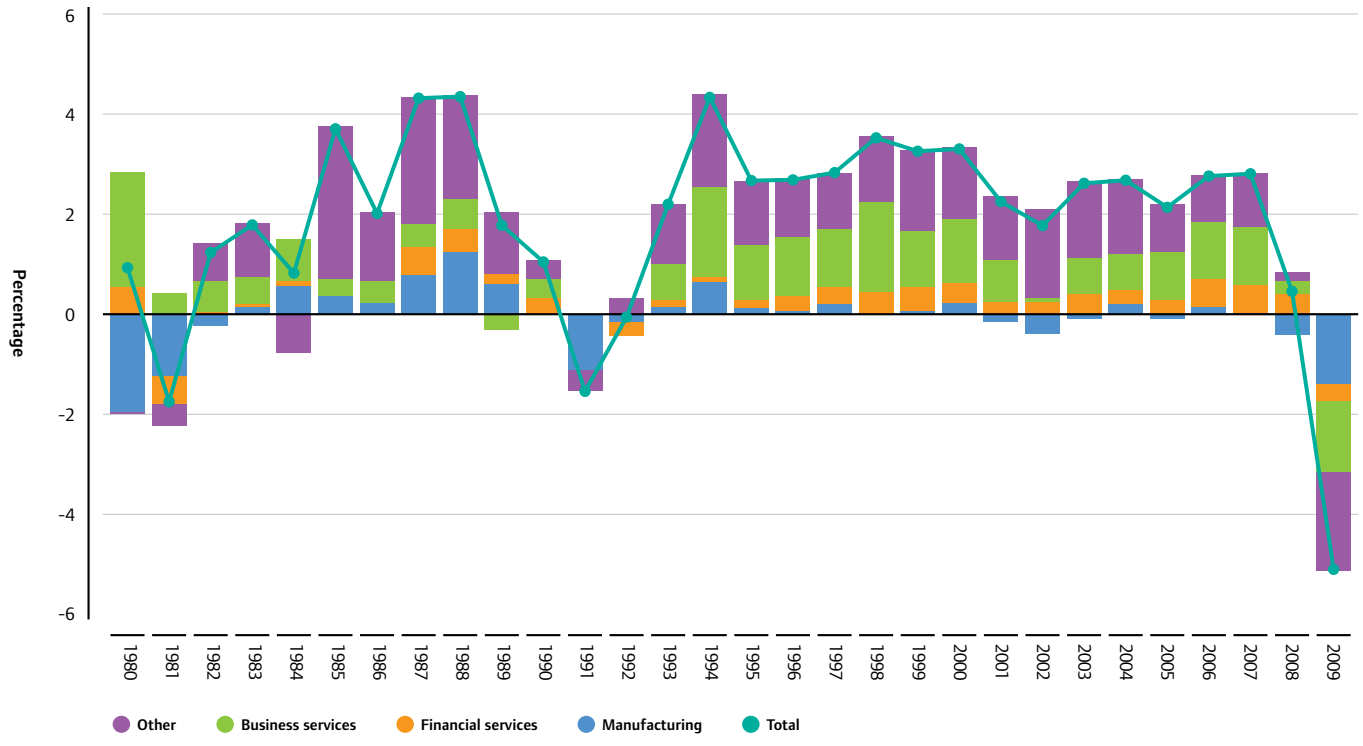
contribution from manufacturing. The rate of decline, however, has been the steepest in the UK. And the UK now has one of the lowest manufacturing contributions in the countries examined, with only France and the US having the similarly low levels of manufacturing.

The growth of the business services sector[24] plugs the gap in the UK economy between the decline of manufacturing and the growth of financial services. Internationally, all the leading economies examined have experienced growth in business services. Growth in the UK has been quicker than in other countries, doubling its contribution to GVA from 12 per cent in 1985 to 24 per cent in 2007, an impressive 12 percentage points (see Figure 5). Over the same period, business services in France saw a similar explosion in growth, rising from 19 per cent to 29 per cent of total GVA – a level of contribution higher than in the UK. In the US, the sector grew from 20 per cent to 24 per cent of total GVA. In contrast to financial services, this growth has not been as cyclical with business services' contribution relatively stable during the recessions of the early 1990s and following the dotcom crash.

Examining the contribution to growth from these sectors highlights the role of financial and business services in driving growth (Figure 6). With the exception of 2002, financial and business services have been the most important sources of growth in the UK economy over the past 15 years, often contributing to the majority of growth seen in a particular year. The contribution of business services often dwarfs the impact of financial services. This level of contribution is disproportionate to the size of each sector. The sharp downturn in 2009 impacted all sectors of the economy with manufacturing and other sectors suffering large contractions.

24. Business services covers a range of sub-sectors including renting machinery and equipment, computing, research and development, legal, accountancy, other professional services consultancy, architectural, engineering and technical consultancy, technical testing and analysis, advertising, labour recruitment, security activities and industrial cleaning.

Figure 6: Business as usual – GVA growth



Source: OECD.

Sectoral contribution to employment
Different productivity levels in sectors often results in varying impacts on employment. Examining employment changes in the financial services sector highlights that despite overall growth, contribution to total employment has actually fallen from 3.9 per cent in 1994 to 3.5 per cent in 2007. Growth in the financial services sector's contribution to total employment has been modest, but positive, in the US and Japan. The contribution of manufacturing to overall employment has also decreased sharply by 16 percentage points from 26 per cent to 10 per cent between 1979 and 2007. Similar declines in employment have been seen in other leading economies (Figure 7).

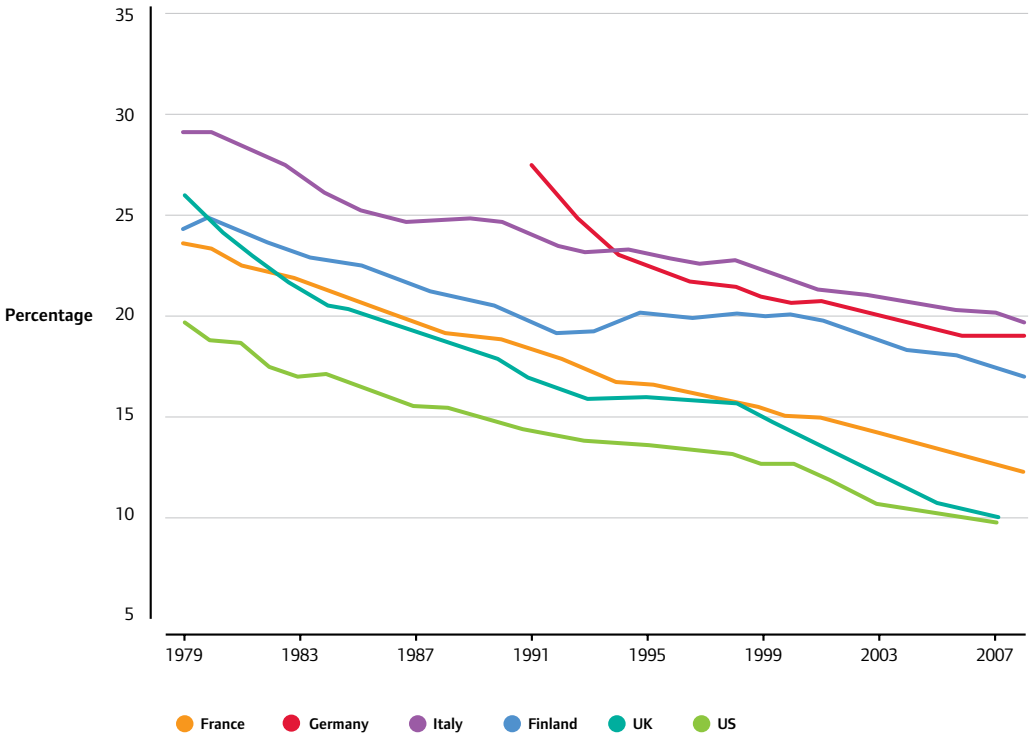
The business services sector has become far more important for employment than both manufacturing and financial services, contributing to around 17 per cent total employment (Figure 8). The growth of business services sector employment has been similar in other leading economies, though the UK now has a slightly higher overall contribution (17 per cent compared to 16 per cent and 15 per cent in France and the US respectively). Within business services, employment in professional services (legal, accountancy and other consultancies) and labour recruitment has grown strongly in the last decade (Figure 9).

Sectoral contribution to exports
The UK's current account deficit, and how to close it, is an area of concern for policymakers and economists. In the UK, the contribution of manufacturing to exports has been in decline, falling from 16 per cent of GDP in 1995 to 11 per cent in 2007 (Figure 10). In 2007 manufactured goods represented 44 per cent of UK exports, just five points higher than the share of services (39 per cent). The increase in the contribution of services has been driven significantly by business and financial services.[25] Their share of exports has gone up from 10 per cent to 25 per cent in the same period (an additional 7.5 points each).

This large share highlights the comparative advantage that the UK has developed in this sector. The UK and US are the largest exporters of both business and financial services in the world, with the UK ahead of the US in some

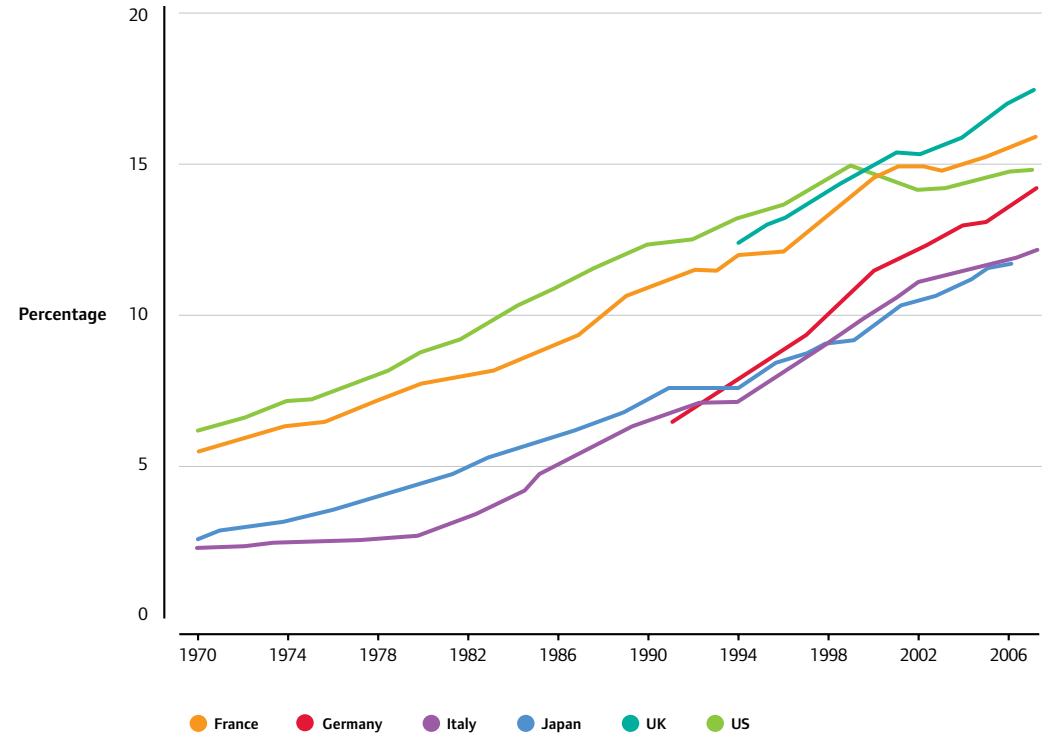
25. Source: UNCTAD Handbook of Statistics 2009. Business services is defined to include 'Computer and information' and 'Other business services', and thus excludes 'Royalties and licence fees' and 'Personal, cultural and recreational services' among others. Financial services includes the categories of 'Financial Services' and 'Insurance'.

Figure 7: Manufacturing share of total employment across a range of economies



Source: OECD.

Figure 8: Business Services share of total employment across a range of economies



Source: OECD.

Figure 9: Business services contribution to employment by sub-sector

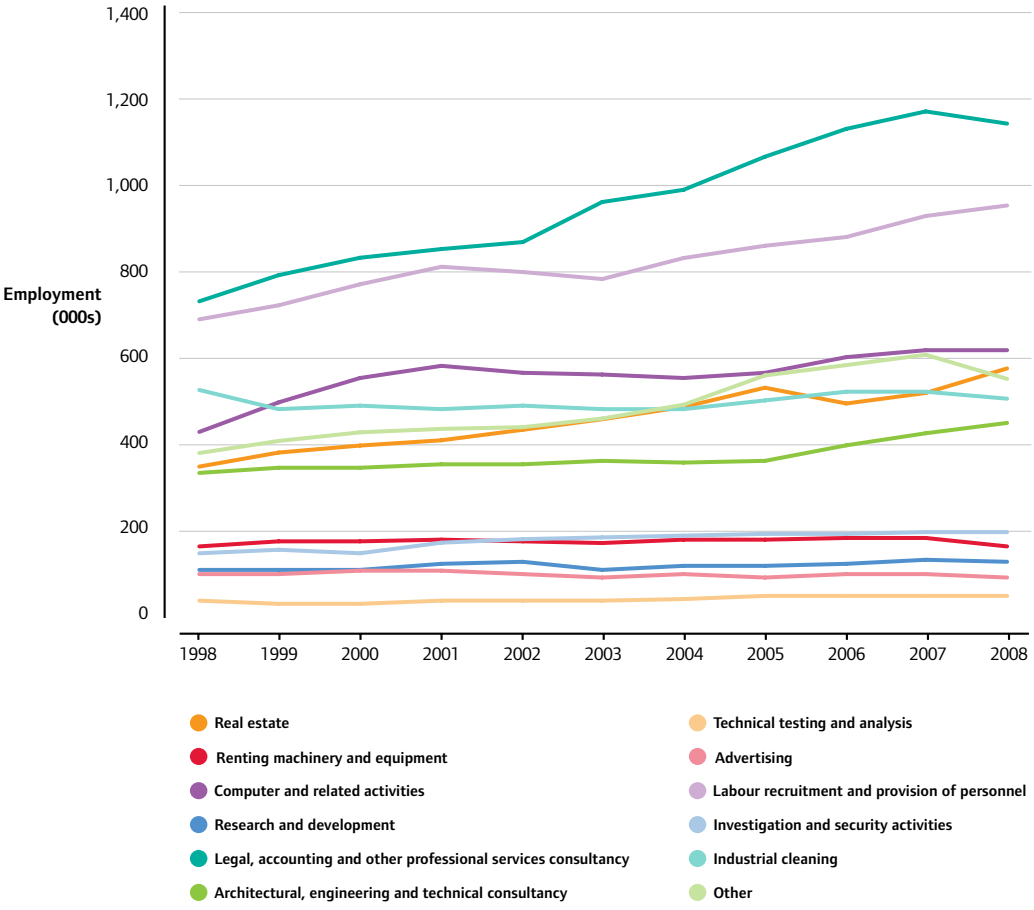


Figure 10: Sectoral contribution to exports

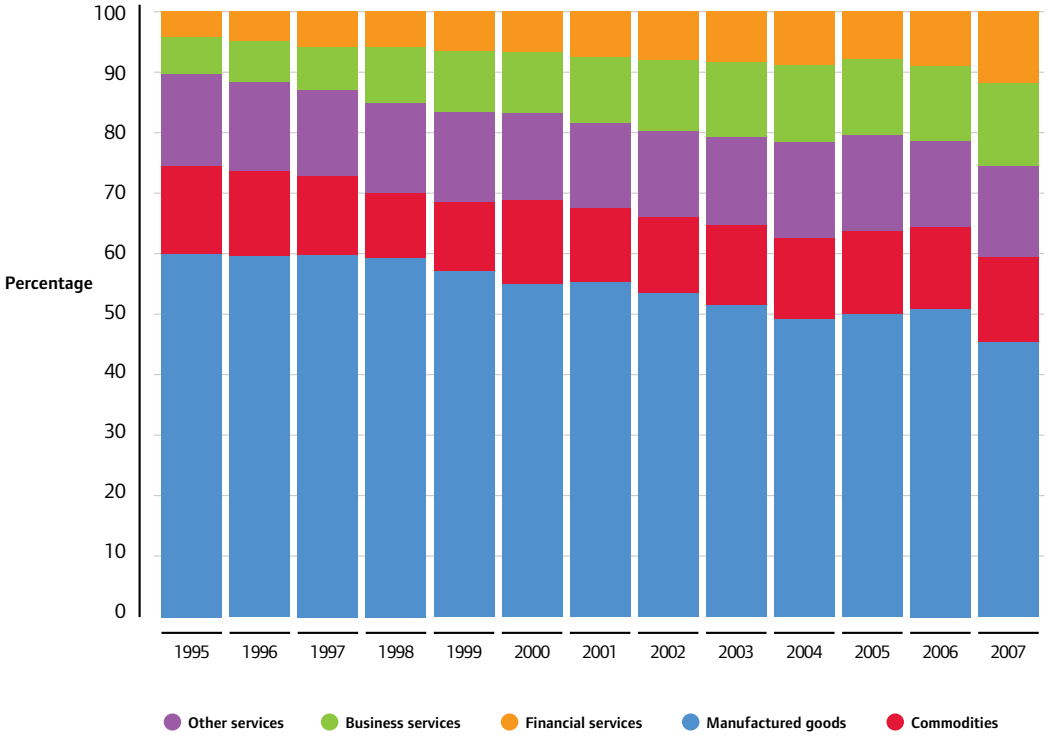
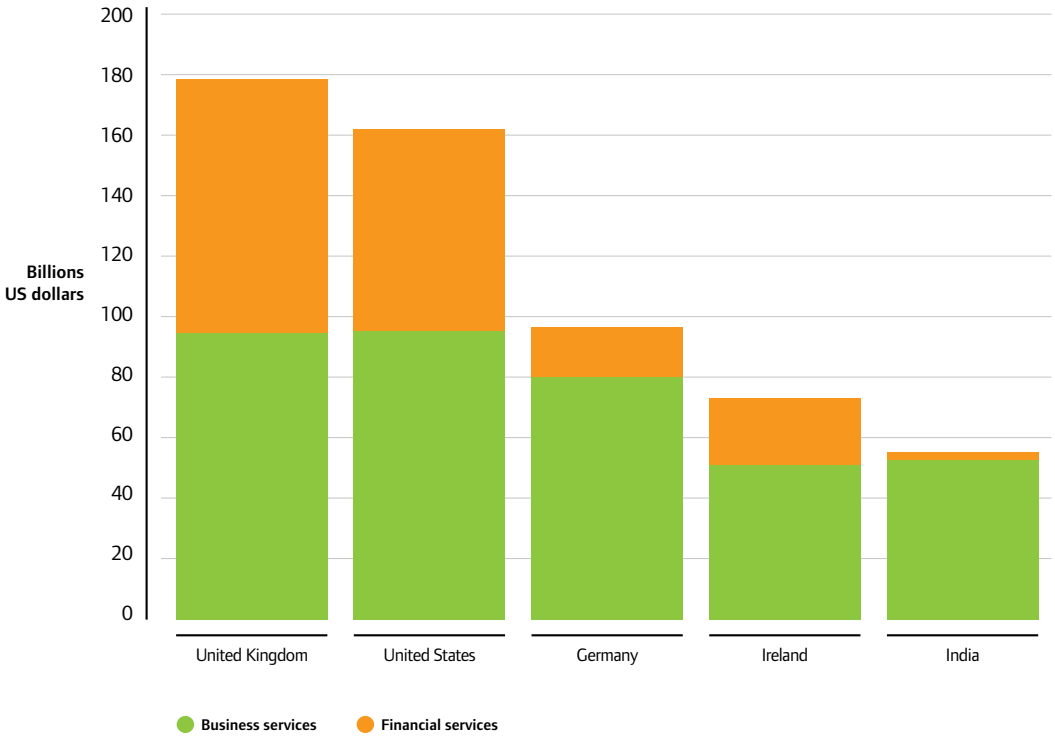


Figure 11: Major business and financial services exporters in 2007 (figures for India relate to 2006)



years (e.g. 2007). The UK accounted for roughly a quarter of global financial exports, and around one-tenth of business services exports in 2007 (Figure 11).

Does sectoral balance matter?

The analysis presented above gives support to the widely held view that the UK's economy is light on manufacturing and heavy on financial and business services. The more important question is what this means for policy: is the structure of our economy in itself a good reason to try to rebalance it?

This has certainly been argued. The ERA Foundation has used the UK's export figures to support the case for much greater emphasis on manufacturing and technology, stating that manufacturing *"provides the major source of real wealth generation"* and consequently is the only sustainable way to address the current account deficit.[26]

Others have argued that financial services, or even services more generally, are either inherently unstable or unlikely to provide significant growth in the immediate future.[27] It is hard to believe that the banking sector will experience the kind of growth it experienced in the past three decades in the coming years. The risk of having all our economic eggs in a basket that has so recently failed us seems foolish.

A related concern is the risk that particular sorts of imbalance might lead to what has been called 'Dutch Disease', the phenomenon of a single powerful sector undermining the competitiveness of the wider economy. Although the concept has generally been applied to natural resource-rich economies, several commentators applied it to the influence of the UK's financial services sector on the wider economy before the recession.[28]

Finally, a number of advocates for the manufacturing sector have argued that, in comparison with the services sector, it creates more high-wage jobs in more parts of the UK. Although we have not examined regional variations in growth over the past 30 years, it has been argued that manufacturing is especially good at creating well-paid skilled manual jobs.[29] The large manufacturing sector in Germany has been cited as one reason that there is a more even distribution of income and employment, while the decline of manufacturing has been one cause of the decline in the economic fortune of several English regions.

At one level, these are all credible arguments for a shift in the sectoral composition of the UK economy. However, there are equally plausible counterarguments.

Opponents of sectoral rebalancing can point to the similar sectoral structures of the French and American economies and argue that these are just as good models for the UK as Germany and Finland. They might indeed draw attention to the concerns over balance currently being voiced in Germany and Finland, with concern in Germany over the size of its manufacturing sector, and worries in Finland over over-reliance on high-tech manufacturing, in particular on Nokia, and the challenge of encouraging small high-growth firms.

It is also not clear-cut that a shift towards manufacturing would be the best or only way to increase the value of British exports. Global business and financial services exports have been growing faster than manufacturing. Capitalising on the increasing tradability of services brought by ICT (among others) is sensible, particularly as the UK has a leading position in them. Whether the UK's strong performance in business and financial services exports is sustainable in the future is an open question, but arguably manufacturing also faces tough export competition.

All this raises the important question of the burden of proof for economic policy. It seems to us that the argument for sectoral rebalancing requires more evidence than examination of the relative sizes of different parts of the UK economy or other statistical techniques, given that the conclusions that can be drawn from such an examination are limited.

This is the reason for the analysis undertaken in the next section: four possible 'rebalanced' scenarios are modelled to identify how plausible and how acceptable these scenarios would be.

Summary

The concept of a 'balanced' economy, as far as it relates to sectors, is a slippery one. On the one hand, it is clear that the UK is more reliant on financial and business services than many other developed countries, and that

26. The ERA Foundation (2010) 'The Sustainability of the UK Economy in an Era of Declining Productive Capability.' 4th Report. Leatherhead: The ERA Foundation.
27. See for example Weale, M. (2009) 'Commentary: Growth Prospects and Financial Services.' London: NIESR.
28. Wolf, M. (2009) How to share the losses: the dismal choice facing Britain. 'Financial Times.' 16 December 2009.
29. Sir John Rose, Address to the Royal Society of Arts, 10 November 2009.

manufacturing has declined sharply in the past two decades.

However, neither the current composition of the UK economy nor the underlying trends are unique. The current level of sectoral contributions to growth and employment are similar to those observed in other countries, particularly the US and France.

The difficulty in determining whether the UK economy is unbalanced suggests alternative approaches are needed to assess the visions for the economy advocated by proponents of manufacturing and financial services. A more appropriate way of examining the implications of sectoral rebalancing is to model these scenarios with changing sectoral contributions. This is the focus of the next section.

Part 3: Visions for the economy – four scenarios for future growth

This section considers what rebalancing might mean for the future of the UK's economy. The previous section concluded that it is difficult to either support or reject a policy of rebalancing by looking at the current sectoral composition of the economy. This section takes a different approach, modelling rebalancing scenarios to examine possible impacts on economic growth and other important indicators.

Of the four scenarios tested, it is argued that the business-as-usual scenario has significant drawbacks from the point of view of employment and regional growth, but that a full-blooded manufacturing renaissance requires some implausible assumptions to be true. More focused scenarios, based on growth in high-tech sectors, or in innovation increasing productivity across the economy, appear more plausible while generating attractive growth, employment and regional prospects.

This section presents four scenarios for future economic growth, one of which is the business-as-usual scenario used in a range of existing economic forecasts, and the other three which represent different paths for the UK economy that might occur over the next decade. These scenarios were constructed and modelled in partnership with Oxford Economics, using an adaption of its Industry model and of their base case for the future performance of the UK economy.

The scenarios are not predictions, but possibilities that can be evaluated. The report looks at the outcomes through two lenses: are they plausible – or to put it another way, what would one have to believe for them to occur – and are they desirable? In each case, we look at the consequences for important outcomes such as regional growth rates, employment, and exports.[30]

The four scenarios modelled were as follows:

1. Business-as-usual: This is effectively the base case, and is based on carefully considered assumptions about the most likely course of the UK economy over the next decade. It assumes that there are no major policy changes. It is moderately positive on the prospects for the UK economy, with an annual growth rate of 2.6 per cent until 2020.

2. Manufacturing Renaissance: Manufacturing has been cited as the sector that could play a large role in any sectoral rebalancing. Under this scenario, UK manufacturing reverses the decline of the last decade, and accounts for around 15 per cent of GVA in 2020 (up from 12 per cent in 2009). The scenario models closing half the gap with Finland and Germany in manufacturing share of output by 2020. These two countries were chosen as possible targets as they are often cited as successful examples of large manufacturing sectors in developed economies.

3. High-tech flourishing: This scenario reflects calls from advocates of high-tech manufacturing to focus support and policy effort on these high-potential sectors. In this scenario, high-tech industries catch up to their equivalents in Germany and Finland by 2020. In some instances, there are high-tech manufacturing sub-sectors where the contribution to GVA is already equivalent to or exceeds the equivalent level in Germany and Finland. No change in contribution was assumed for these sub sectors.

30. It is important to note that the same outcome can be a test of both plausibility and of desirability. For example, a scenario that implies a high level of exports might be judged to be desirable. Beyond a certain point a very high level of exports may become a test of plausibility, since it could be taken to imply that the scenario involves the UK sector achieving a market share that in reality it is unlikely to achieve.

How the Oxford Economics (OE) model works

The scenarios presented in this report used a specially adapted version of the Oxford Economics industry model. This uses a modified input-output structure to link changes in demand and competitiveness to UK value added and employment for 32 sectors. Rather than impose a fixed coefficient input-output relationship, however, the model freely estimates UK value added by sector as a function of world demand, international competitiveness and weighted (by the input-output coefficients) domestic demand (which included both final and intermediate demand). This combines elements of time series economic modelling and input-output modelling and allows the data to determine the relative importance of the three main drivers.

In doing so, it drops the restrictive assumption made in fixed coefficient input-output models that marginal relationships are equal to average relationships. It is quite possible, for example, for output in a sector to remain unchanged in response to a demand change if the evidence suggests that fluctuations in demand are met by variations in imports rather than changes in UK production. Indeed, for most of manufacturing industry we find evidence that the marginal input-output coefficients are likely to be lower than the average coefficient found in the published tables.

In the case of manufacturing sectors, the international demand driver used is world output in that particular sector. For example, UK value added in basic metals is a function of world value added in basic metals, competitiveness (relative unit labour costs) and weighted domestic demand so we are, in effect, modelling the UK's market share. We do not have measures of world value added for services so world GDP is used as the international demand driver for distribution, transport and communications while we find that international capital investment is a better indicator of the international demand for UK financial and business services.

The model also includes a limited demand and supply (capacity) side. This means that it generates conventional expenditure (Type II) as well as input-output (Type I) multipliers and has crowding out effects if increased demand pressures raise costs and affect international competitiveness. Higher inflation will also push up interest rates and reduce consumer and investment spending.

31. NESTA (2009) 'Innovation Index.' London: NESTA.
32. The Oxford Economics model suggests that the pound would gain on the euro and dollar after a short (i.e. 1-2 year) period of devaluation. Secondly, and in line with most other models, world trade plays a more important role, while domestic demand is anticipated to be modest to 2020 in comparison to the last decade. These scenarios were modelled in March 2010 before the recent eurozone crisis.

4. Innovation across the economy: Innovation has generated two-thirds of productivity growth between 2000 and 2007.[31] This scenario assumes widespread investment in innovation by all sectors of the economy. This metric measures not just R&D, but other categories of investment that are important across the economy, such as the development of new products, services and business models, new creative output and investment in design. In this scenario, the UK would replicate returns to innovation that came from investment in intangibles in the 1990s, when these were at their peak.

The manufacturing, high-tech manufacturing and innovation scenarios are modelled by modifying the business-as-usual forecast developed by Oxford Economics.[32] The results of the four different scenarios are as follows.

1. Business-as-usual

Let us first of all consider the business-as-usual scenario. The scenario suggests that the UK would grow at a reasonable rate over the next decade (by 2.6 per cent/pa). However this recovery has two serious draw backs: it comes with slow employment growth (not anticipated until 2013) and unfavourable regional growth prospects.

The business-as-usual case anticipates sluggish initial economic growth before a peak in 2013.

Average annual GVA growth for the decade is anticipated to be in the region of 2.6 per cent/pa, in comparison to 2.4 per cent/pa seen between 1990 and 2000 and 1.3 per cent/pa between 2000 and 2010 (Figure 12). The projected scenario timeline between 2010 and 2020 is expected to include the recovery phase and therefore a period of above-trend growth. In contrast, 2000 to 2010 includes the most severe recessions since the Depression. The underlying trend is similar across the two decades once these two factors have been factored in.

Growth is anticipated to come predominantly from business services, with both manufacturing and financial services contributing in smaller proportions. Business services is projected to grow by 5.8 per cent/pa in the next decade – this would be higher than growth in the last decade (which averaged 3.5 per cent/pa). Business services growth figures between 2000 and 2010 are impacted by the recession; when total output grew by 1.3 per cent in 2008 and fell by 4.1 per cent in 2009.

Boosted by a weaker pound, manufacturing is expected to grow by 1.7 per cent per annum from 2010 to 2020. This is in contrast to the contraction seen in the last decade, partly as a result of the recession. In particular, high-tech manufacturing performs well, growing by around 3.0 per cent/pa to 2020. Again, this would represent a reverse in fortunes from the last decade when high-tech manufacturing shrank by 0.4 per cent/pa. Even with regulation anticipated to kick in, financial services are anticipated to exhibit the same growth as they did in the last decade (4.0 per cent/pa). It should be noted that the recession contracted financial services growth in the last decade and growth prior to the recession was higher (6.0 per cent/pa between 1996 and 2006).

Job growth is not anticipated to pick up until 2013, with stronger job growth expected in the second half of the decade (Figure 13). This would pull through an additional 1.6 million jobs by 2020. Business services are expected to become the main driver of job creation, contributing to the lion's share over the next decade. Other sectors, such as distribution and construction, are expected to aid recovery during the second half of the decade.

Growth in manufacturing is predominantly achieved through productivity gains, with employment expected to fall by 2.2 per cent each year from 2010 to 2020 – equivalent to

Figure 12: Contributions to GVA growth in the business-as-usual scenario

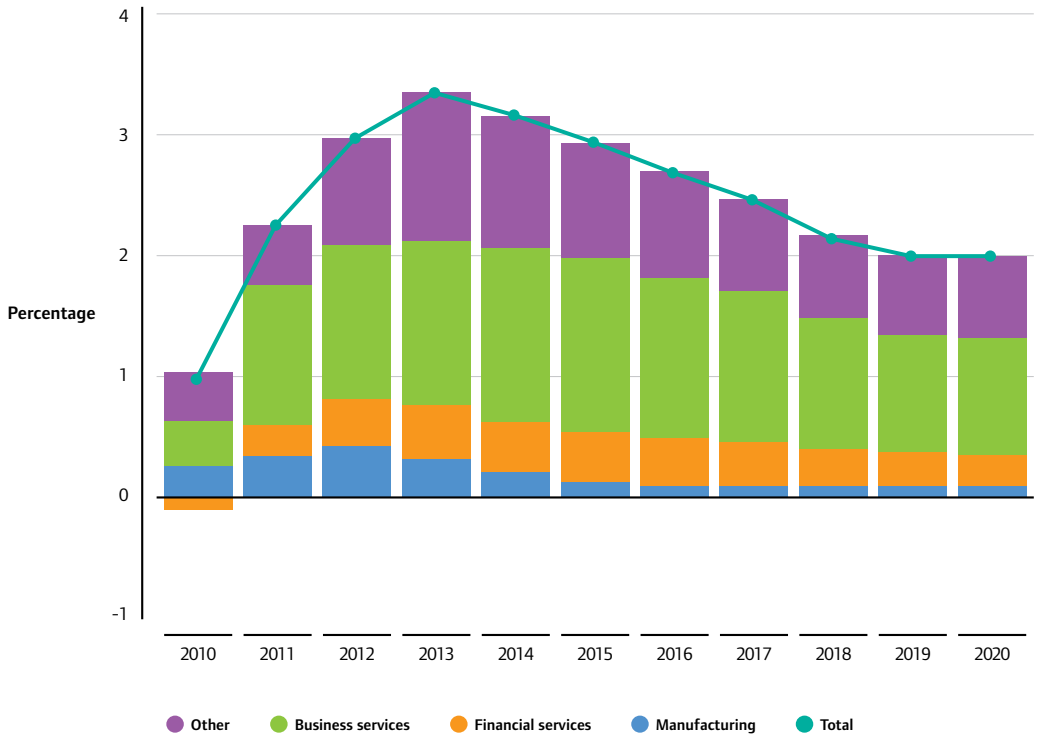
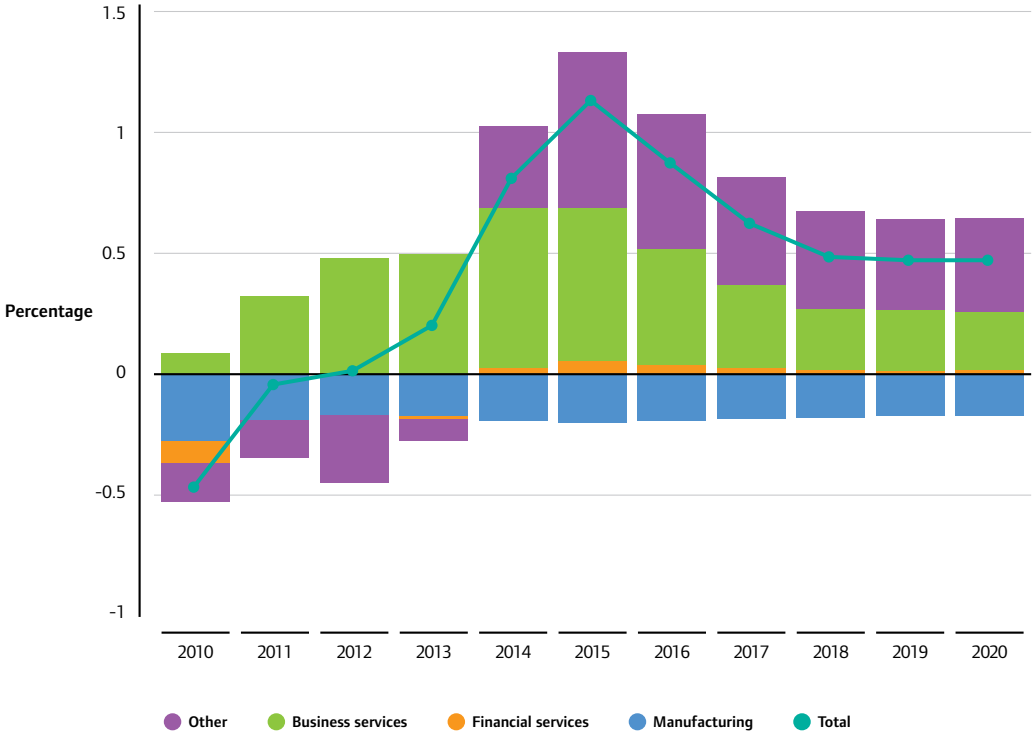


Figure 13: Contribution to employment growth in the business-as-usual scenario



around 550,000 fewer jobs in the sector in 2020. High-tech manufacturing also continues to shed jobs over the decade. In the short term these factors would reduce the rate of decline in manufacturing's contribution to the UK economy by 2020.

With demand anticipated to come predominantly from world trade, the model anticipates the current account deficit would be eliminated by 2013 with the UK running a small surplus for the remainder of the decade. The composition of UK exports is expected to continue to shift from goods to services, with services representing 45 per cent of UK exports by 2020, with imports continuing to be dominated by goods. As a result, the UK trade deficit in goods is expected to grow from £69 billion in 2009 to £91 billion in 2020, but this is more than compensated by the increase in the trade surplus in services, expected to triple from £38 billion in 2009 to £123 billion in 2020.

The business-as-usual scenario is more optimistic than that set forth in recent analysis by Coutts and Rowthorn,[33] which suggests that the deficit would increase by the end of the period to 5 per cent. Differences arise due to weaker sterling, higher unemployment, stronger external demand and slower domestic demand in the OE model.

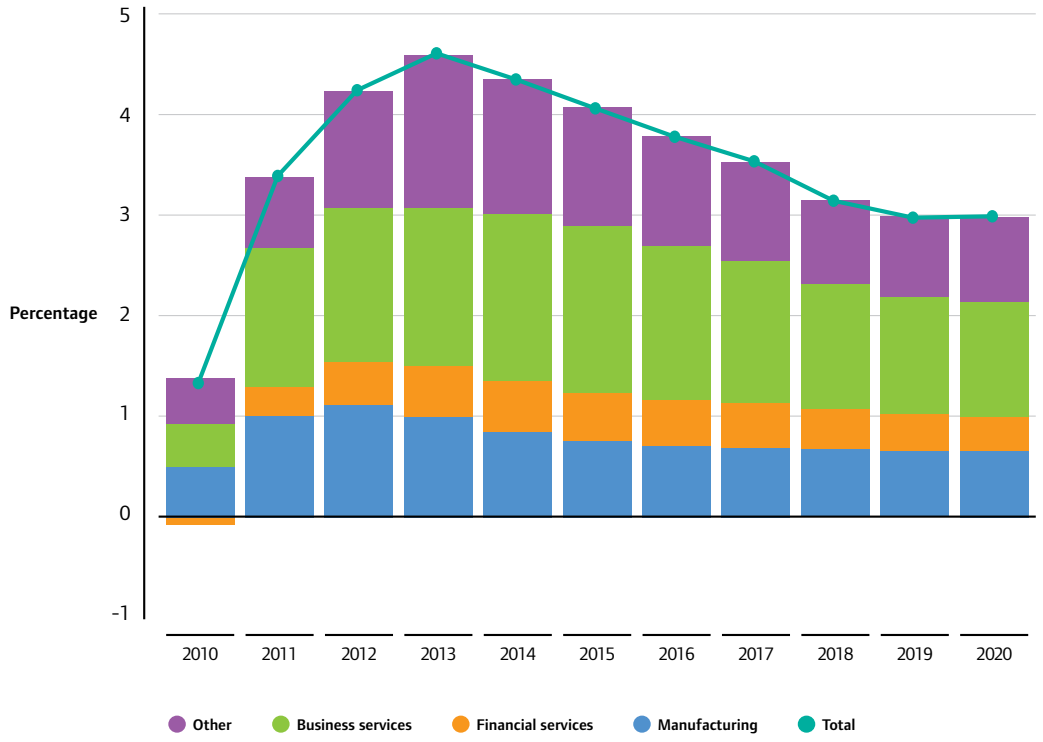
Under the business-as-usual scenario, growth and job creation continues to be the strongest in London and the South East. North East and Wales are expected to continue to lag with the gap anticipated to widen. For example, London is anticipated to grow at an average of 3.2 per cent/pa over the next decade. This is significantly higher than the growth rate in Wales which is expected to be in the region of 1.9 per cent/pa. This discrepancy is also seen in job growth where London again dominates with growth in the region of 1.0 per cent/pa over the next decade compared to 0.1 per cent/pa in Wales.

How do the scenarios play out?

Building on this business-as-usual scenario, we examine what happens to economic growth,

33. Coutts, K. and Rowthorn, R. (2009) 'Prospects for the UK Balance of Payments.' Centre for Business Research, University of Cambridge. Working Paper 394. Cambridge: University of Cambridge.

Figure 14: Contribution to GVA growth in the manufacturing scenario



employment, balance of payments and regional growth under the three scenarios.

Economic growth

For the UK to make significant progress towards developing an industrial structure similar to Germany and Finland (the manufacturing scenario), the model suggests that there would need to be some major shifts in the economy. Modelling of this scenario gives a sense of the scale of activity required rather than an accurate prediction of what would be required.

Based on the modelling analysis, the **manufacturing scenario** would require GVA growth at a very high growth rate of 3.7 per cent/pa from 2010 to 2020 (Figure 14). This level of growth would see manufacturing reversing the trends of the past decade to contribute a share of the economy last seen in the late 1990s. Manufacturing itself would need to grow at an average rate of 6.2 per cent/pa. Such explosive growth is highly unlikely and would require growth of a scale not seen in recent times in the UK.

Growth in manufacturing would have a positive impact on some sectors through increased domestic demand for intermediate purchases and through any increase in final demand (consumer or investment spending), which makes increasing its share more difficult. In particular, business services benefit from this increase and would be anticipated to grow by 6.7 per cent/pa on average over the decade. So even in the manufacturing renaissance scenario, business services continue to be the most important contributor to GVA growth. This highlights how the inherent nature of the UK economy makes it difficult for manufacturing to increase its contribution to the UK economy, even when output increases significantly.

In reality, there would be negative impacts on other sectors through crowding out. When growth restraints are imposed, sectors such as construction and distribution see lower growth than in the business-as-usual as wage costs increase for workers.

Figure 15: Contribution to GVA growth in the High-Tech scenario

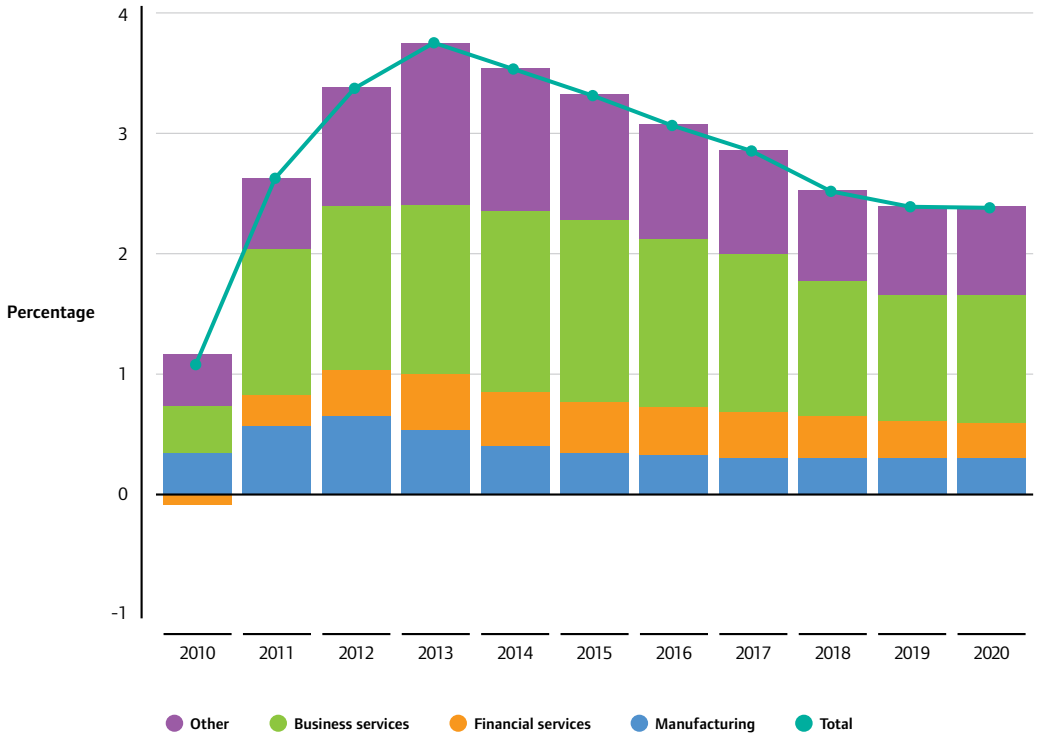
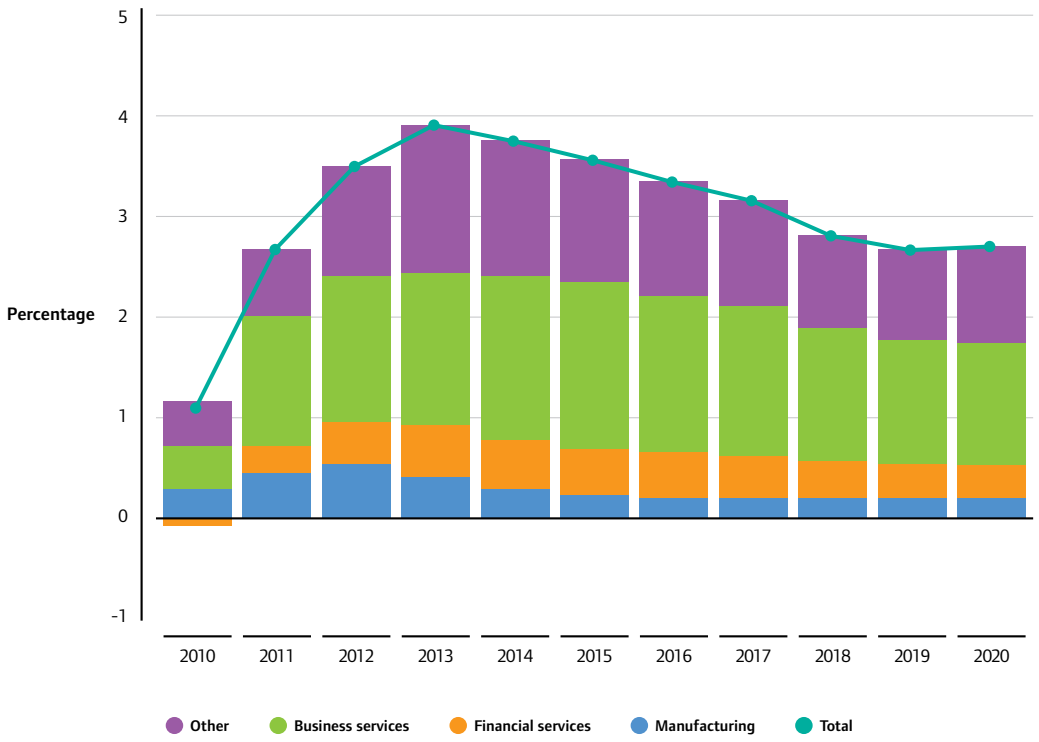


Figure 16: Contribution to GVA growth in the innovation scenario



The second scenario, whereby UK **high-tech sectors** reach equivalent levels exhibited in Germany and Finland, produces projections which, while aggressive, could be achievable (Figure 15). Overall average growth would be in the region of 3.0 per cent/pa. Growth in the high-tech manufacturing sector would be predicted to be in the region of 7.7 per cent/pa, similar to the level in the late 1990s but higher than for the 1990s overall. This level of growth would result in high-tech manufacturing contributing to 3.4 per cent of total UK GVA in 2020, up from around 2.5 per cent in 2000. Business services are an important contributor to growth in this scenario too, and drive the majority of growth over that period.

Modelling the impact of **enhancing innovation across the economy** highlights how broader economic growth can be fostered (Figure 16). Some sectors invest more in innovative activities and so perform well in this scenario. However, this approach also highlights that there are innovative activities in all sectors of the economy and even sectors which are not typically considered to be innovative, such as construction, benefit from an uplift in innovation.

With wider investment in innovation, growth rates around 3.2 per cent/pa over the decade could be generated. Both high-tech manufacturing and business services benefit with growth rates of 4.4 per cent/pa and 6.7 per cent/pa respectively.

There would be some slight shifts in the sectoral composition of the UK economy under this scenario. Manufacturing companies that invest more in innovative activities, such as aerospace, pharmaceutical and communications, grow more strongly and contribute more strongly to UK GVA than in the business-as-usual. Business service and financial services also show stronger gains through innovation.

Employment

With higher growth being modelled in all three scenarios, employment levels are also higher than in the business-as-usual case. The levels of employment seen in the three scenarios correlate with anticipated growth levels. Table 1 below highlights changes in employment.

All three scenarios would return the UK to employment growth earlier than the business-as-usual scenario. All see employment moving, from a low in 2010, to growth in 2011, rather than 2013 as anticipated in the business-as-usual scenario. The manufacturing scenario would require a very large number of new workers in the economy, around 4.1 million by

Table 1: Employment growth in each scenario

	2000-2010	2010-2020			
		Business-as-usual	Manufacturing	High-tech manufacturing	Wider innovation
Percentage growth					
Total	0.4	0.5	1.3	0.8	0.8
Hi-tech manufacturing	-4.1	-1.3	1.3	2.2	-1.2
All manufacturing	-4.1	-2.2	0.9	-1.3	-2.0
Business Services	2.0	0.2	0.3	0.2	0.2
Estimated increased number of jobs in 2020 above 2010 (m)					
Total		1.6	4.1	2.4	2.7
Hi-tech manufacturing		-0.1	0.1	0.1	-0.1
All manufacturing		-0.6	0.3	-0.3	-0.5
Business Services		1.3	1.9	1.5	1.6

2020. The other two scenarios would also see strong job growth by 2020 but much less than that estimated in the manufacturing scenario.

Initial analysis suggests that, accompanying this level of employment growth, the manufacturing renaissance scenario would need the total number of companies in the economy to increase by around 400,000 by 2020, almost double the projected business-as-usual scenario of around 200,000 additional companies. This would require around 15,000 additional manufacturing companies in the market by 2020, against a projected business-as-usual scenario where there would be an estimated 25,000 fewer manufacturing companies in operation in 2020. Even in this scenario, the business services sector would have the greatest number of companies in existence in 2020. The other two scenarios would require around 300,000 additional companies in the UK business stock by 2020.

Current account
All scenarios offer slight improvements in the current account deficit. Both manufacturing scenarios would generate benefits in terms of regional growth and improvements on the current account (exports less imports). Under business-as-usual, the OE model suggests that the balance of goods and services would improve and stand around £32 billion in 2020. The manufacturing scenario rather implausibly leads to a much faster elimination of the deficit and delivers a surplus of over £350 billion by 2020. While this level of surplus is large, and would perhaps generate feedback effects not fully captured by the model, it demonstrates the scale of surplus anticipated if manufacturing were to grow rapidly. A surplus approaching this size also raises questions of vulnerability to fluctuations in international demand. The high-tech and innovation scenarios lead to more modest surpluses in the region of £60-70 billion by 2020. In the manufacturing scenario, goods dominate exports. For the high-tech and innovation scenarios, the share of exports between goods and services converges but goods are expected to still be the highest contributor to exports by 2020.

Regional impact
All three scenarios have positive growth impacts on the regions and nations. For example, growth rates in Wales would be in the range of 2.3 per cent/pa to 2.7 per cent/pa under the three scenarios compared to 1.9 per cent/pa in business-as-usual. Employment growth in Wales would be in the order of 0.2-0.3 per cent/pa in the scenarios compared to 0.1 per cent/pa in the business-as-usual scenario (Figure 17). In both manufacturing scenarios, the regions benefit to a slightly greater degree than London over the business-as-usual scenario. However these differences are very small. In all three scenarios, London and the South East are anticipated to still experience strong growth.

It should be noted that the models assume that the boost to growth in any given sector would be the same across all regions (e.g. if business services grows by 1 per cent a year faster at the national level, it does so in each of the regions as well). This method allows the different sectoral profiles of the regions to be incorporated into assessment of impact. However, the sectoral mix is only one component of a region's potential growth rate. Other factors such as demographics and skills also impact on growth. The models do not allow for these differences in the scenarios, which is why the regional differences do not vary significantly.

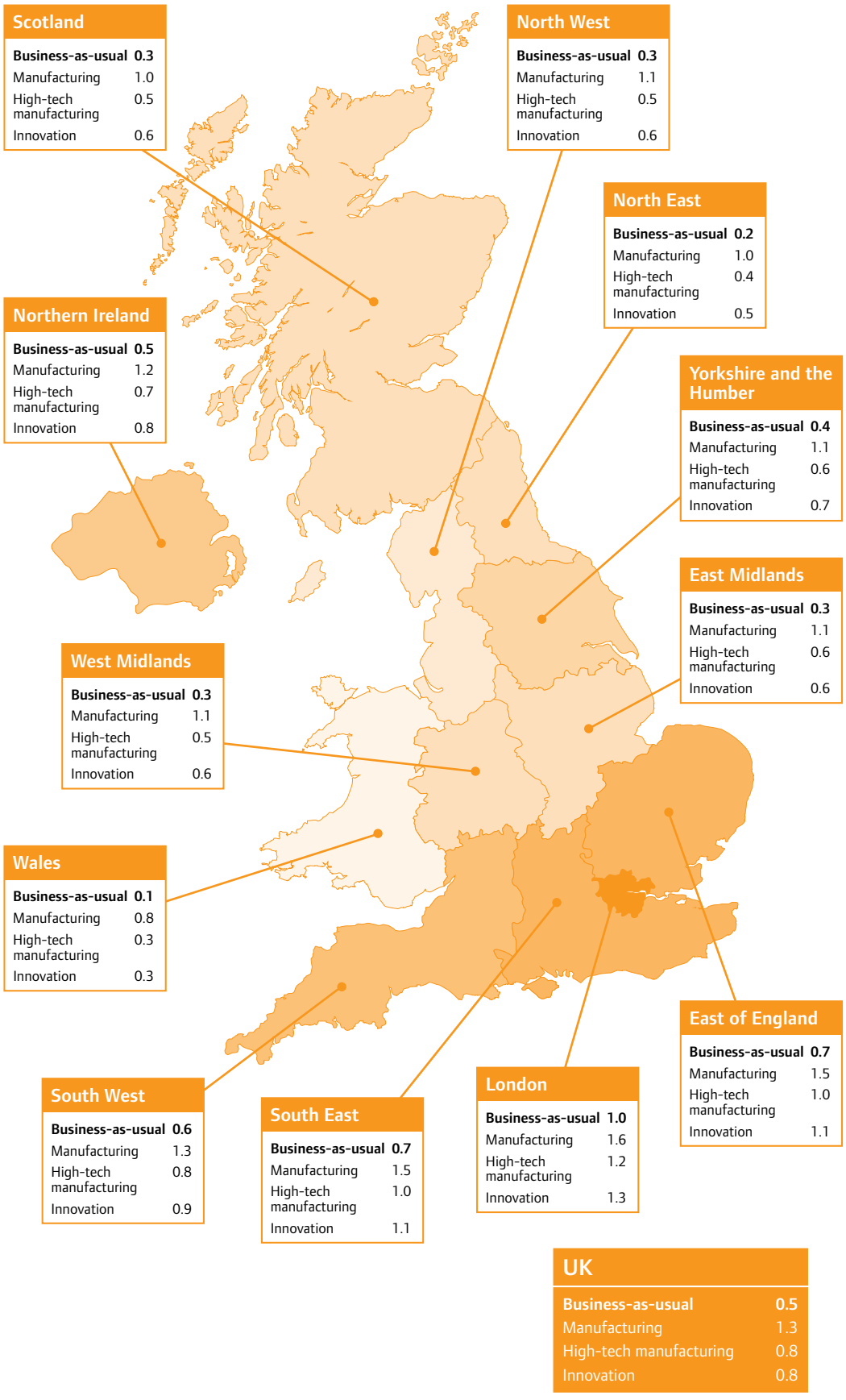
Summary

The scenarios do not seek to map out all possible end points for the economy by 2020 or predict the future. Rather they seek to highlight the factors which would need to be in play for changes to the sectoral composition of the UK economy to occur.

The business-as-usual scenario anticipates plausible economic growth to 2020. But this comes at the expense of two critical factors – sluggish employment growth in the first half of the decade and poor growth in some regions of the UK. These are not desirable factors, ones which all governments typically try to prevent, a fact reinforced by the new Prime Minister and Deputy Prime Minister who highlight their desire to "support sustainable growth and enterprise, balanced across all regions and all industries" in the new government's recently published programme.

Increasing manufacturing's contribution to the economy to around 15 per cent in 2020, 3 percentage points up from its share in 2009, would require changes in the economy which have not been seen in recent times (Figure 18). So while potentially desirable, this scenario appears to be implausible. The manufacturing sector would need to grow at an extraordinary rate (around 6.2 per cent/

Figure 17: Regional employment growth in each scenario



UK	
Business-as-usual	**0.5**
Manufacturing	1.3
High-tech manufacturing	0.8
Innovation	0.8

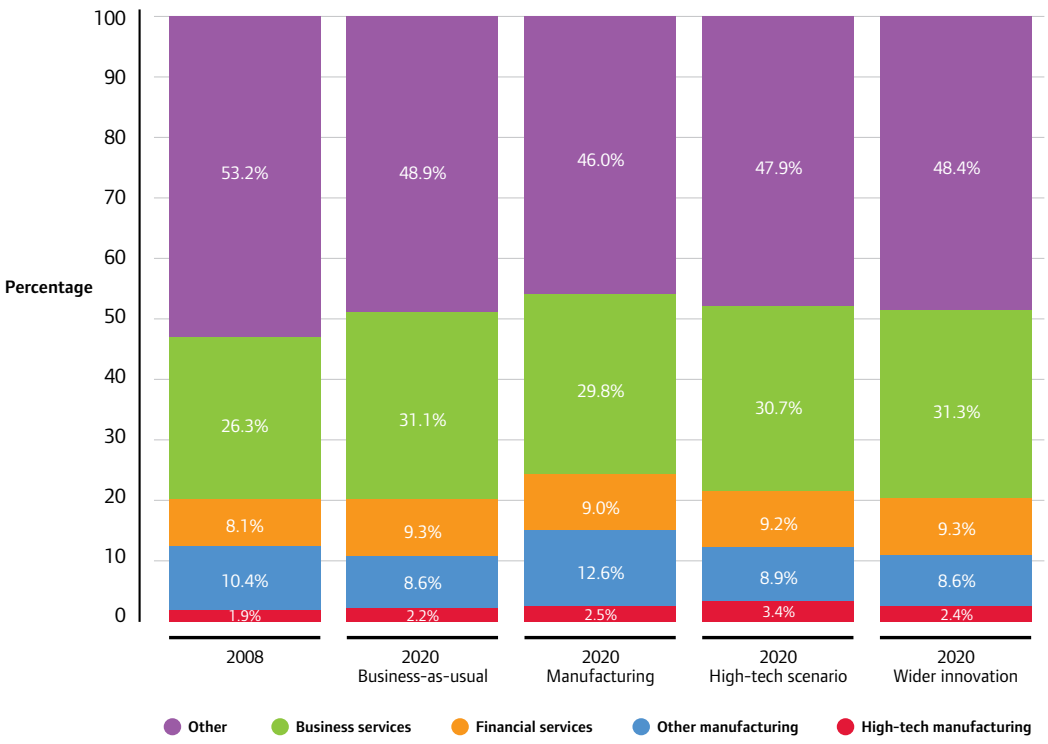
pa), and be supported by a large-scale increase in the UK workforce (up by an additional 4.1 million jobs by 2020). The gains in employment in manufacturing represent the equivalent of creating six new BAEs by 2020.[34] It is important to note that there is scope to strengthen the manufacturing sector, but given the boost that a manufacturing expansion generates in the other sectors of the UK economy, particularly business services, increasing its share of GVA would prove to be more challenging.

Both the high-tech and innovation scenarios offer plausible growth projections, demonstrating the important role that high-tech manufacturing, business and financial services – the so-called 'knowledge economy' – are anticipated to have in driving growth over the next decade. Both would deliver robust economic growth (over 3.0 per cent/pa) and bring a faster return to employment growth. Sector-specific growth rates in each scenario would be high but similar to those seen in recent history. Additionally the current account deficit could be eliminated faster than under business-as-usual. Finally, they offer much more tolerable growth rates in the regions than the business-as-usual scenario would imply. All these factors are obviously desirable.

But it is important to note that both the high-tech and innovation scenarios are stretching. They would require a number of factors to slot into place – the right skills in the economy, the ability to capitalise on external demand and significant private sector investment. Getting the right policy framework to support companies in making these investments will be critical.

34. This is an illustrative figure. BAE Systems employed around 40,000 people in the UK in 2002. The manufacturing renaissance would require job growth in the region of 260,000 by 2020.

Figure 18: Contribution to GVA in 2020 in each scenario



Part 4: How could the UK facilitate innovation and growth?

This section examines how government policy could support investment in innovation in all sectors, including high-tech ones. Innovation is a powerful driver of growth, and was responsible for two-thirds of productivity growth between 2000 and 2007.

If the UK is to secure a robust economic growth in the future, innovation should be placed at the heart of government policy to promote growth. In practice this suggests that policy for growth should be focused on two ends: fostering an environment in which innovative firms can flourish; and making sure that the government actions to support high-potential, high-tech sectors, are constructive wherever possible.

The analysis in the previous chapter illustrates the challenge of rebalancing the economy towards any one sector. However the scenarios illustrate how fostering innovation – be it in high-tech companies or more widely in the economy – can drive growth. This suggests that the central question for debate is not which sectors should be targeted for support, but how the government promotes innovation and enterprise.

The case for an innovation-led policy framework for growth

Innovation as a driver of growth in the high-tech sectors is well documented – pharmaceutical companies invest in innovation to discover new drugs and are increasingly using innovative sales and marketing methods to gain competitive advantage, and aerospace companies are constantly striving for innovations to deliver more fuel efficient engines. But what is less obvious is how innovation drives growth in the wider economy.

In 2007, NESTA estimates that the private sector invested £133 billion in innovation,[35] with traditional scientific R&D accounting only for 11 per cent. The bulk of investment in innovation is on activities that occur in all sectors, not just high-tech ones, and include investments needed to commercialise ideas, such as product design, training in new skills, organisational innovation, developing new customer offerings, developing branding and copyright. Investment in innovation has been growing over the decade, and the level appears to compare favourably to countries like France and Germany, and is similar to the US.

The importance of this investment for economic performance cannot be underestimated. The link between innovation and productivity is becoming increasingly well established, with innovation being responsible for two-thirds of UK labour productivity growth between 2000 and 2007. Given the UK's long-standing problem with productivity, understanding the contribution of innovation is a first step towards developing an effective policy response.

This macroeconomic analysis of innovation ties in with the experience of business who know that innovation is necessary for productivity improvements across the board – through improved processes, better products, new business models, and the adoption of new technology. This applies to all sectors as companies seek to move up the value chain – whether it is Rolls-Royce offering high value services, or disruptive technologies, like the internet changing the retail sector beyond recognition. For instance, the innovative use of new IT systems by wholesalers and retailers is considered to be one of the major contributors to productivity growth in the US in the late twentieth century.

This link between innovation and growth at the company level is vividly brought to life by some recent analysis of high-growth companies. The fastest growing 6 per cent of businesses generated half of the jobs created by existing businesses in the UK between 2002 and 2008.[36] What these companies had in common was a disproportionate tendency to be innovative. Crucially these companies were found in all sectors of the economy and across all regions of the UK.

35. NESTA (2009) 'The Innovation Index.' London: NESTA.
36. NESTA (2009) 'The vital 6 per cent.' London: NESTA.

Allied with the scenarios analysis in this report, the evidence base for private sector innovation as a major driver of growth becomes compelling.

How should policy respond?

Policies to promote innovation and growth should be focused on two goals: fostering an environment in which innovative firms can flourish; and making sure that the government actions to support high-potential, high-tech sectors, are constructive wherever possible.

Encouraging innovation across the economy
When it comes to encouraging innovation across the economy, government can influence a number of conditions without which innovation will be impaired or stopped altogether. The urgent need to reduce the deficit means that there is an equally urgent need to consider how to deliver more value for money from spending programmes. Invariably, reducing spending will be the first priority but this will not deliver productivity gains without radical reform to government programmes.

This approach suggests that government should highlight its overarching policy objectives to develop an environment that supports innovative companies. In some cases, there is good evidence for new policies to transform how government supports innovation and enterprise. These are highlighted below alongside desirable policy objectives.

- **Improve knowledge creation:** Companies generate ideas, develop new products, write new software, experiment with new business models, or draw up new designs. But in the process of knowledge creation leading to innovation, companies rarely operate in isolation. Rather they draw on multiple sources of knowledge and information, including university research, their own customers and supply chains, and external consultants. Policies should seek to develop a good science base, encourage companies to develop and commercialise ideas and put in place the right physical, transport and communications infrastructure.

  Improving transformation of good ideas from our universities into successful commercial products is a mechanism of driving innovation and growth. This will require a new model of university and business collaboration in the future. Proposed intermediary research centres may be part of the puzzle. But there are also likely to be opportunities to better leverage existing intermediary research centres to improve knowledge transfer with businesses.

- **Promote enterprise:** A culture of enterprise that encourages experimentation and does not stigmatise failure is essential to innovation. This can be developed through delivering support to entrepreneurs at an early stage of developing their companies and framing a tax environment that encourages risk-taking.

  The aim to support the generality of business appears misguided given that the 6 per cent of the fastest growing businesses generated over half new jobs between 2002 and 2008. With over £140 million[37] spent annually on Business Link programmes, new approaches should be considered to target growth business more effectively. Mainstream government support, such as Business Links, is not clearly targeted at this group. In an age of austerity, government should consider the role that cheaper, private sector-led programmes that incubate and support high-potential businesses in particular can play. Government should learn from more growth-oriented incubators, such as Seedcamp or Design London (both of which NESTA works with), and innovative advice providers, like the British Library's Business and IP Centre (see Box on p.34). This type of reform will be particularly important in the regions of the UK which are facing a greater challenge in fostering economic growth.

- **Encourage open and competitive markets:** As regulators of the market, government has a significant role in setting barriers to entry and growth in different markets. Governments implicitly endorse products through the granting of standards and licences. Small decisions by regulators and standards bodies can have a large impact on whether innovative goods and services come to the market and are embraced by consumers.

- **Ensure access to finance:** The ability of a company to exploit an idea is critically dependent on the availability and quality of capital. Government policy here on banking competition and small business lending, combined with existing policies like the Innovation Investment Fund, can help provide the financial architecture that businesses need to innovate and thrive. As part of its year-long work, the recently established Banking Commission should seek to examine

37. During 2008/9 the Department of Business, Enterprise and Regulatory Reform (now known as BIS) provided £141.7 million of funding (further information available from Hansard). Regional Development Agencies and HMRC also contribute funding for Business Link services.

Supporting companies with high-growth potential

The policy challenge of supporting companies with high-growth potential has arisen in the UK and other countries. Venture capital obviously has a role to play in providing finance to companies with high-growth potential and there are several examples of how governments have skilfully intervened to support the development of venture capital markets.[38] Outside the finance sphere, there are a growing number of examples of market-led interventions which address the specific needs of entrepreneurs seeking to develop transformative companies.

Seedcamp
Backed by NESTA, Seedcamp is a technology accelerator vehicle created to 'jumpstart' the entrepreneurial community in the UK. It is an intensive week-long summer school for start-ups in London, where young entrepreneurs get advice and input from experienced mentors. From the 20 start-up teams that successfully apply to attend each camp, between five and eight of the most promising prospects receive between €30,000 and €50,000 in financing in exchange for 5 to 10 per cent equity. Since the initiative was launched in 2007, Seedcamp has developed a network of over 400 mentors, and has made over 20 investments, including in companies such as BaseKit. Alumni, like Spotify, help mentor the new generation of tech entrepreneurs. Its model of combining mentoring with seed financing has been adopted by IBM for its new 'smart camp' and Seedcamp is now expanding with 'mini' camps all over Europe.

British Library's Business and IP Centre
The British Library's Business and IP Centre was launched in 2006 with a £1 million investment from the London Development Agency. The Centre facilitates access to the Library's unrivalled source of information on intellectual property, helping entrepreneurs to identify just how novel their idea is, as well as its market potential and competition base. The centre also offers training courses and meeting space. Over 6,000 entrepreneurs used the service between 2007 and 2009.

Creative Business Mentor Network
The Creative Business Mentor Network was set up to nurture creative businesses in the TV production, advertising and digital media sectors with an appetite for growth. The Network allows creative companies to benefit from one-to-one mentoring by some of the most successful business people within the creative sector. Experienced mentors share practical advice on overcoming the challenges of growing a creative business. Participation in the programme is free for mentees and mentors are unpaid.

The Network was created and funded by NESTA and supported by PACT, the trade association for independent media companies, and Grant Thornton. NESTA's involvement in this initiative allows it to test models for nurturing potential high-growth companies. In its first year, the Network mentored 24 companies. Three-quarters of the participants felt that the programme created 'major benefits' in terms of improvement to the commercial performance of their business. Return on investment to date is estimated at £1.49 net additional GVA for every £1 invested.

Danish Gazelles programme
The Danish Gazelle Growth Programme was established in 2007 by the Danish Agency for Science, Technology and Innovation to identify 40 to 50 start-ups or small enterprises with international growth potential, and help them to reach it. The companies are teamed up with expert international mentors from the private sector, and take part in a series of training and development camps over a number of months. The camps focus on particular aspects of growth strategies, from business model development to market testing, and creating international networks to how to monitor and adjust growth strategies over time.

38. NESTA (2009) 'Reshaping the UK economy.' London: NESTA.

how financial institutions in the UK provide debt and equity to innovative companies and options for enhancing support.

The corporation tax system would benefit from a long, hard examination to ensure that it supports companies investing in innovation. For example, the proposed introduction of the patent box in 2013/14 is a further attempt to use targeted tax relief to encourage innovation-intensive businesses. It will be another instrument in the policy mix, one that is aimed to stimulate both R&D and manufacturing in the UK. Understanding the interactions between these different instruments will be important to ensure a transparent, efficient tax system to stimulate business investment in innovation.

- **A highly skilled workforce:** The need for a highly skilled workforce is now widely recognised. While there have been significant improvements in higher education attainment rates, further education has been neglected. With demand for technicians set to grow,[39] government should seek to promote apprenticeships and greater progression from apprenticeships into higher education.

39. Engineering UK (2009) 'Engineering UK Report 2009/10.' London: Engineering UK.

This is not intended to be a comprehensive prescription of policies to support high-growth companies. There will undoubtedly be other policies which can effectively target high-potential companies, and we welcome suggestions on these policies.

Targeted policies for high-potential sectors
Focusing on the framework conditions for fostering innovation in the UK economy is a good starting point. In addition, government should consider its industrial policy. This should not be interpreted as a call for a return to industrial activism. Rather it takes the pragmatic view that governments will always play a role in tax, education, regulation, and infrastructure – essential components of industrial policy.

Almost all the impacts of policies are necessarily sector-specific. Being aware of the dynamics of various sectors, and understanding the sector-specific policy effects that can result, is a first step in designing policy.

Developing a coherent strategy or concordat that sets government's long-term vision for each sector, and offers clarity regarding government's intended actions, would provide companies with the certainty required to undertake the long-term investments that often underlie innovation success. Government is likely to benefit as well, not only from higher economic dynamism *per se*, but also as a consumer of innovative products itself.

Life Sciences is an example of such a sector in the UK. The interaction between the biomedical industry and the NHS should enhance the outputs of both parties. However the NHS is often perceived to be an unresponsive partner in healthcare research. Equally a healthy small and medium biotechnology and medical technology market could exploit collaborative opportunities to become important elements of the UK biomedical sector. NESTA is currently seeking to identify practical steps that could enable NHS Trusts, universities and companies to realise greater benefits through collaboration.

Energy, food and agriculture are another example of where government plays a large role in determining the shape of the sector – through procurement (e.g. Whitehall spend on energy efficiency), regulation (e.g. health and safety regulators) and subsidies (e.g. Common Agricultural Policy). Actions need to be carefully considered to ensure that innovation continues to flourish in these sectors.

Conclusion

Our analysis highlights the challenges in seeking to rebalance the economy. While a 3 percentage point increase in the manufacturing sector's contribution to the economy by 2020 appears farfetched, doing nothing also has unpleasant consequences for the UK – slower employment growth and flat-lining economies in some regions of the UK.

Innovation, whether in the high-tech manufacturing sector or more widely across all sectors, could drive robust growth with positive employment and regional impacts. But this will not be easy. The private sector will need to make significant investments in innovative activities to realise opportunities in the UK and, critically, overseas.

Getting the right policy framework to support companies in making these investments will be crucial. This implies policy for growth should be focused on two ends: fostering an environment in which innovative firms can flourish; and making sure that the government policy framework as it affects high-potential, high-tech sectors, provides vision and long term certainty.

Acknowledgements

This report is based on a research project conducted in partnership with Oxford Economics. The Oxford Economics team, including Dr Neil Blake, Dr Graham Gudgin, Andrew Goodwin and Graeme Harrison, provided a wealth of insight and creativity without which this publication would not have been possible. They were assisted by Professor Nicholas Crafts from Warwick University.

We are also grateful to Keith Smith of Imperial College and the Department for Business, Innovation and Skills, who raised many of the questions that this report seeks to address. The authors of this report are Stian Westlake, Shantha Shanmugalingam and Ruth Puttick.

Any omissions and errors are, of course, our own.

NESTA Making Innovation Flourish

NESTA

1 Plough Place
London EC4A 1DE
research@nesta.org.uk

www.nesta.org.uk

Published: June 2010
RA/54

ISBN 978-1-84875-091-3