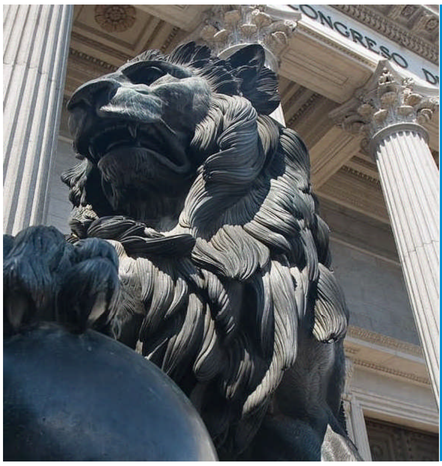


Destination 2030:
How the UK economy could fare

PRICEWATERHOUSECOOPERS

Executive summary

PwC's base scenario for the UK economy assumes gradual positive progress on the main global trends affecting the economy: stability and health of the financial system, continuing global economic integration, and further moves towards sustainable economic growth. However, prospects for the UK economy could be significantly altered if any of those trends were to change pace or direction.

We have modelled three scenarios that assume rapid change in crucial global trends and have quantified their potential effect on the UK economy. The period analysed spans to 2030 to allow for changes in the economy under the different scenarios to become material.   Table 1 below contains descriptions of these scenarios and lists the most affected sectors under each one.

Table 1: Scenario descriptions and the respective most affected sectors

Scenario		Description	Relative winners	Relative losers
1	Green shift	An energy technology revolution leading to a low-carbon economy	Business services, communications	Mining and quarrying, government and defence
2	Debt and depression	Collapsing banking systems plunging the world into a prolonged recession	Health and social services, other services, business services	Manufacturing, hospitality, construction
3	Doha and beyond	Globalisation accelerating following a swift economic recovery in 2010	Business services, transport and communications, financial services	Mining and quarrying, agriculture

The key findings from our scenario analysis are summarised in Table 2 below.

Table 2: Key findings

The business services sector would be expected to grow faster than the overall economy in any of the three scenarios and be the fastest-growing sector in both the *Green shift* and the *Doha and beyond* scenarios. Even in the *Debt and depression* scenario, the business services industry emerges as the UK's champion in the private sector.
Manufacturing growth would not outpace GDP growth in any scenario. While the manufacturing sector would benefit from engineering innovation in the *Green shift* scenario and from rising demand for high-value UK manufactures in the *Doha and beyond* scenario, this would not be enough to offset the long-run relative decline of the sector.
The City – as captured by a significant part of the business and financial services sector – would represent the UK's main comparative advantage industry. In the *Doha and beyond* scenario, with unprecedentedly free trade, the City would be a key winner. Without domestic or international trade distortions, the UK's capital stock would gravitate towards enabling the provision – to both domestic and external markets – of business and financial services.

A top-level snapshot of the potential sectoral composition of the UK economy under the three scenarios is shown in Figure 1 below.

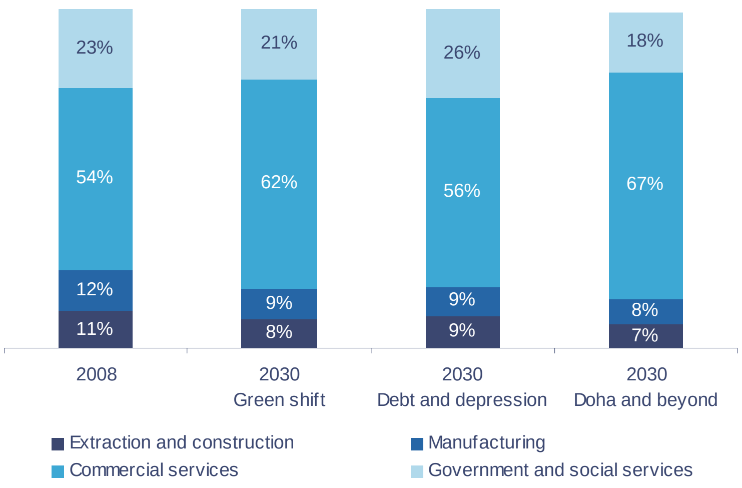
The most striking characteristics of the scenarios are the expansion of the government and social services sectors in the *Debt and depression* scenario, and the relative decline of agriculture and manufacturing in the face of international competition in the *Doha and beyond* scenario.

Yael Selfin
yael.selfin@uk.pwc.com

Mal Božić
mal.bozic@uk.pwc.com

Sajeel Shah
sajeel.shah@uk.pwc.com

Figure 1: Composition of the UK economy in 2008 and 2030 under the three scenarios



Introduction

Our medium-to-long term expectations for the UK economy, as depicted by our base case scenario in Figure 2 below, assume a slow recovery beginning in 2009. In this scenario, it would take some years for the financial services sector to return to its pre-recession levels of output and employment. With the economy gearing up for modest growth, and even if the push to meet carbon emission reductions edges back nearer the top of the political agenda, there would be little appetite for drastic changes to the industrial landscape. Furthermore, the stop-start process of trade liberalisation through the World Trade Organisation (WTO) framework would continue and global trade growth would also resume, but without an energetic push to reinvigorate the process of economic globalisation.

The sheer exhaustion brought on by steering the economy through the recession would leave both Westminster and boardrooms across the UK content with gradual evolution of the UK economy, with a focus on addressing cyclical trends. However, the actions of legislators and business leaders cannot be isolated from momentous global changes to which an open economy like the UK is particularly susceptible. In this report we extend our base case scenario analysis for the UK economy by considering three global, structural shifts that could bring about relatively rapid change in the structure and inter-sectoral dynamics of the UK economy over the next two decades.

The scenarios

We identified three key assumptions in our base case scenario, changes to which would have significant impact on the prospects for the UK economy: a shift towards sustainable economic growth; the stability and health of the financial system; and continuing global economic integration. Consideration of potential big shocks to these three assumptions yielded the three alternative global scenarios described in Table 3 below.

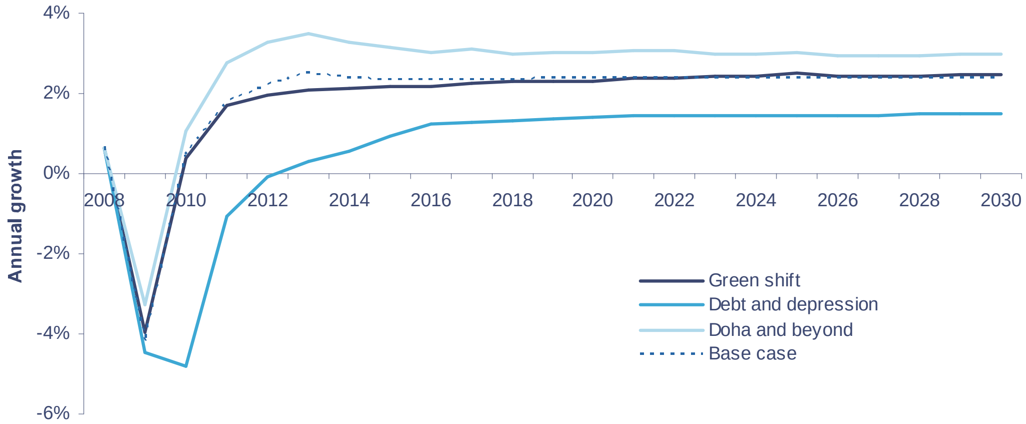
Table 3: The three scenarios

Scenario	Description
1. Green shift	As evidence mounts of potentially catastrophic climate change, and forecasts of global calamity are increasingly pessimistic, political, scientific and social consensus is reached around the need for drastic action. With the US and China on board, a stricter and ambitious emissions reduction framework replaces the expiring Kyoto Protocol and any arrangement agreed at the Copenhagen conference in 2009. Government incentives, regulatory requirements and changing consumer choices lead to an energy technology revolution, favouring renewable energy over fossil fuels and boosting energy efficiency throughout the value chain. Investment soars in energy sources such as wind, solar, tidal, wave, geothermal, green coal, nuclear, hydrogen, biomass, kinetic and others. World oil demand growth slows as well as investment in fossil fuel extraction.
2. Debt and depression	Following signs of greater liquidity in 2009, credit crunch conditions return and intensify, reversing the budding economic recovery. After several years of painful adjustments, the global economy reaches a new equilibrium point with sub-optimal levels of demand. The consequent cementing of high unemployment rates and deflationary pressures neutralises many of the tools available to economic policymakers. Countries begin to turn inward, reversing some of the gains made during the latest round of trade liberalisation. Trade blocs from NAFTA to the EU come under pressure from domestic politics that favour putting near-term national interests first. The attraction of devaluation leads to some countries abandoning the euro. China, stung by falling export revenues, exerts its geopolitical power more readily and dashes hopes that it would lead the world out of depression.

Scenario	Description
3. Doha and beyond	With the recent fall in global trade volumes turning out to have been only a blip, globalisation and increasing economic interdependence is back in favour. Rising living standards give national politicians a new mandate to pursue trade liberalisation. A grand bargain is reached between developed and developing countries to complete the Doha round of trade talks. The WTO system gains fresh momentum, reducing the distortions from preferential bilateral and multilateral trade deals and creating a level economic playing field. With trade in agriculture liberalised, African and South American farmers prosper, leading to rapid economic growth in some of the poorest countries. Capital and labour flows are liberalised, allowing technological innovation and cross-border knowledge transfer to flourish, while labour markets in the developed economies receive a boost, reversing some of the trends originated from an aging population.

Each of these three global scenarios would affect the rate of growth in GDP and GDP per capita in the UK. Moreover, they would have profound effects on the structure of the UK economy. Before looking at the expected shifts in the sectoral make-up of the UK economy under each scenario, Figure 2 below shows the modelled GDP growth forecasts for each scenario[1]. The UK economy would enter a new golden age under *Doha and beyond*, while *Debt and depression* would see the GDP growth rate stay permanently below its long-term average rate of 2.4%. The *Green shift* would impose a cost on the economy in the early years of a conversion to a low-carbon structure, but the investment required to complete that transformation would spur innovation, higher productivity and economic growth. All three scenarios stand in contrast to our base case expectations for the UK economy of a slow recovery beginning in 2009.

Figure 2: GDP growth under the three scenarios and in the base case



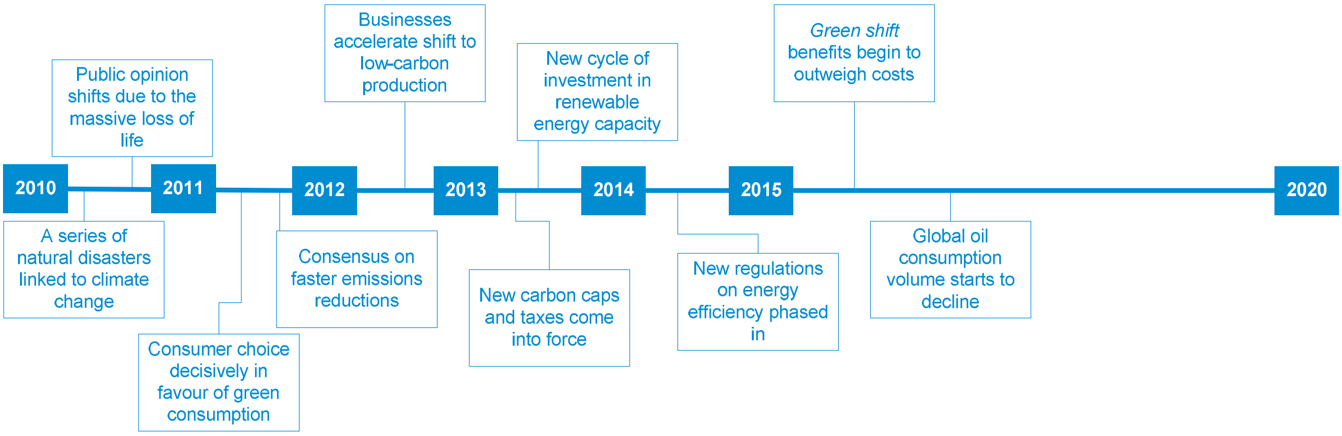
Note that beyond 2015, this chart shows estimated trend growth in each scenario excluding cyclical variations in output that are impossible to predict that far in advance.

Scenario 1: Green shift

The *Green shift* would be set off by a series of natural disasters, most likely abroad, that would galvanise public opinion and political will in the UK and other major economies, leading to a concerted effort to redress damage done to the environment by carbon emissions. Figure 3 below highlights some of the developments that would characterise this scenario.

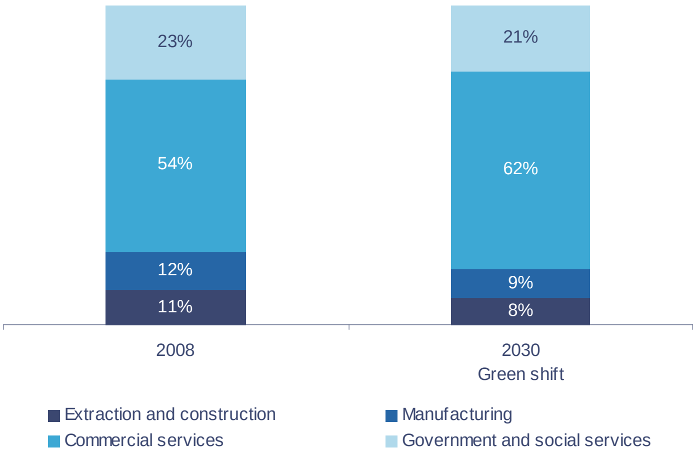
[1] We modelled GDP growth in the three scenarios using historical growth trends and correlations with growth in other sectors and geographical regions, as well as sector sensitivities to key metrics in each scenario.

Figure 3: Timeline of possible events characterising the *Green shift* scenario over the next ten years



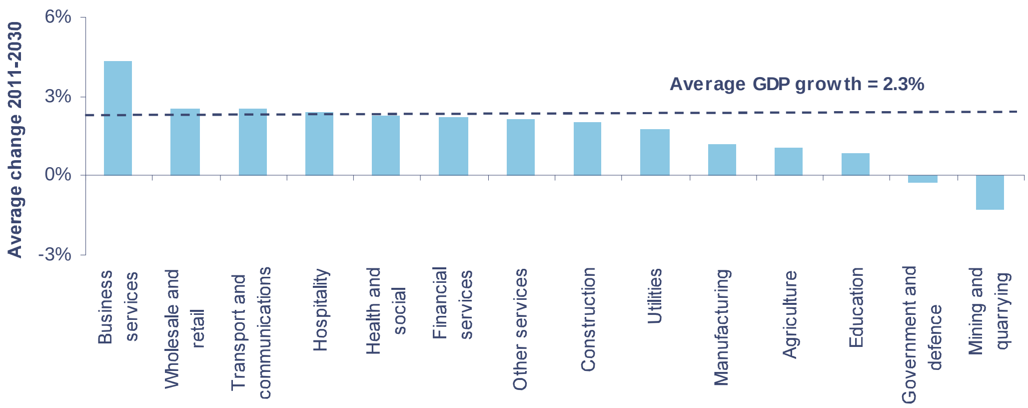
The main outcome of the *Green shift* scenario by 2030 would be growing relative prominence of the private-sector commercial services industries[2], taking GDP share from all other sectors, as seen in Figure 4 below. The boost to manufacturing from the development of a low-carbon energy infrastructure would not be enough to offset the decline of the sector relative to commercial services.

Figure 4: Structure of the UK economy in 2008 and 2030 under the *Green shift* scenario



Turning to individual sectors shown in Figure 5 below, output from the mining and quarrying sector would contract by 1.2% on average between 2011 and 2030, as the structural decline in the industry is accelerated by the fall in use of fossil fuels. On the other hand, business and other services would benefit from demand for new products such as sustainability consulting, carbon accounting and pricing, and higher spending on engineering research. Much of the business services output would be exported, as countries like China and India would buy relevant UK expertise. The communications sector would also grow above the average GDP growth rate of 2.3% as telecommunicating and video conferencing would become evermore common. Wholesale and retail output would grow at a rate significantly lower than its historical average, although slightly above the GDP average in this scenario, as a backlash would build against environmentally-damaging consumerism while carbon taxes would also increase the cost of most products.

Figure 5: Average rate of change in the output of individual sectors under the *Green shift* scenario



[2] Private-sector commercial services industries include: business and financial services, hospitality, transport and communications, wholesale and retail, and other services.

With the economy growing above 2% by 2013, the government would curtail public spending to pay down debts accumulated during the recession. The construction sector would also grow below the GDP average. Although the retrofitting of existing real estate stock and the transformation of brownfield sites into medium-density developments would support economic activity in the sector, this would not offset the fall in output from a fundamental shift away from the housing development model, which is based on car-dependent suburban sprawl and large new built developments in city centres aimed at the buy-to-let market.

Box 1: Decomposing sector performance

Figure 5 above highlights the broad winners and losers in terms of economic output under a green revolution. However, the overall picture could hide a wide disparity in output as well as profitability between different industries in each sector. In Table I below we present some examples of specific industries that could benefit or suffer under the *Green shift* scenario. Some of these industries represent a relatively small part of the UK economy and would therefore have a relatively minor impact on overall UK GDP growth.

Table I: Examples of potential opportunities and threats in selected industries under the *Green shift* scenario

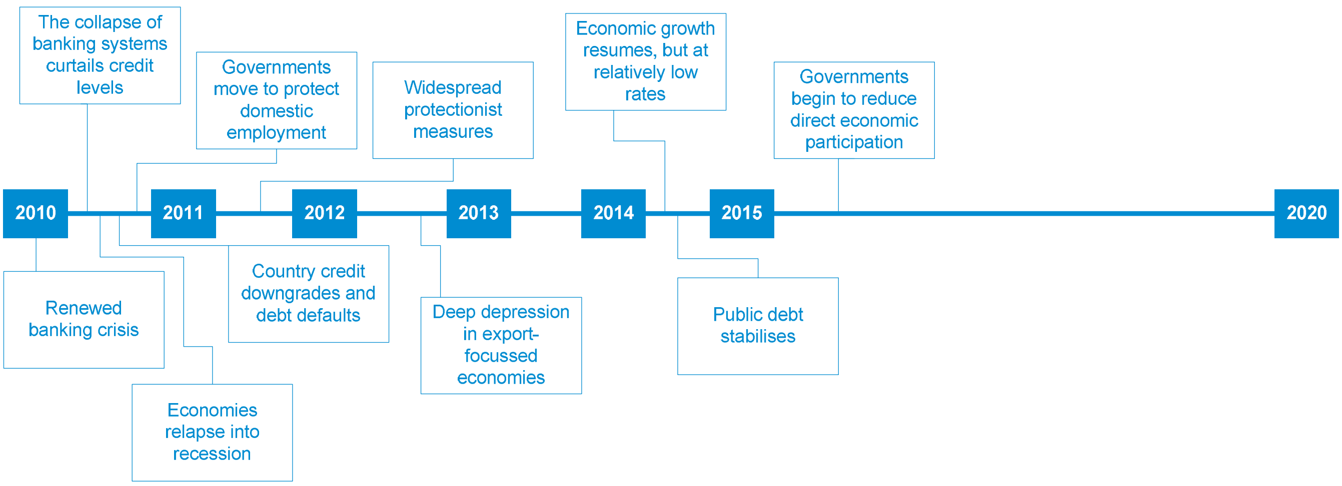
Sector	Examples of potential business opportunities	Examples of businesses that could suffer
Business services	Corporate change services and consultancy Green audit and corporate responsibility reporting services PR agencies' advice on showcasing businesses' green credentials R&D services to support the creation of greener technologies Green technology consultancy to developing countries	Services supporting traditional City and M&A work would suffer from reduced output but an even sharper drop in profitability Paper-based media with on-line substitutes such as newspapers, books and directories Travel agencies and other travel-related services
Transport and communications	Telecommunications services and equipment supporting companies and the public sector opting to travel less (conferencing, virtual meeting facilities) Mobile telecommunications supporting the recovery from climate induced disasters and the further economic development in emerging countries	The aviation sector including airlines, airports, as well as aircraft and parts manufacturers would be severely hit in terms of output and even more in terms of profitability
Wholesale and retail trade	Wholesale and retailers of bicycles, electric cars and products using recycled materials Second-hand shops and web-based exchanges DIY accessories to grow your own supply of fruit and vegetables in the garden	Wholesale and retailers of clothing, accessories, and gasoline-based motor vehicles
Health and social	Charities and the larger voluntary sector that focuses on aid for developing countries Pharmaceuticals and in particular generic drugs producers selling to developing countries at a subsidised price	Cosmetic procedures will become less popular under the more austere consumers' mood
Hospitality	UK hotels that win business from domestic tourists looking to reduce their carbon footprint by travelling abroad less frequently Eden Project clones	Tourist attractions geared at the overseas market Restaurants will be hit by a trend to eat more at home and a fall in corporate entertaining
Financial services	Trading of carbon permits and derivatives Demand for weather-related derivatives will grow as global weather becomes more unstable and climate changes are increasingly material to a growing number of industries Microfinance to become part of financial services' mainstream offering, supporting relatively poorer communities with little access previously to the formal financial services sector	Insurers exposed to damage caused by climate-change related natural disasters expected under this scenario Global health insurers exposed to rising incidence of climate change-related infections and diseases City profitability and pay practices will continue to be under heavy scrutiny. City's focus is likely to shift towards more basic products and services as there would be no incentive to create more sophisticated instruments

Sector	Examples of potential business opportunities	Examples of businesses that could suffer
Utilities	Electricity companies benefiting from substitution away from gasoline	Water companies suffering from shortages of water, the need to invest in improved infrastructure to preserve more water, and consumers' falling demand as they become more reluctant to waste the resource Gas companies will suffer reduced demand, as gas is increasingly replaced by green energies
Construction	Companies and contractors specialising in energy efficient buildings and retrofitting Companies specialising in brownfield clearing	Developers of low-density suburbs and speculative residential housing blocks
Agriculture	Sustainable forestry to meet increased demand for wood to replace man-made materials. The price of wood is expected to rise making this industry more profitable	Large-scale non-organic farming will face falling domestic demand and prices Meat and poultry farming as the population moves towards a less rich and more sustainable diet
Manufacturing	Manufacturers of components for electricity generation from renewable sources, such as builders of nuclear reactors, as well as windmills	Aerospace, as mentioned under transport above, will be severely hit The paper industry will also face declining demand from the move to less a paper-based media, and face growing pressures for its production process to become more green-friendly
Mining and quarrying		Oil equipment and services Mining
Other services	Providers of 'environmentally friendly' services ranging from 'dry' car washing to 'green' house cleaning	

Scenario 2: Debt and depression

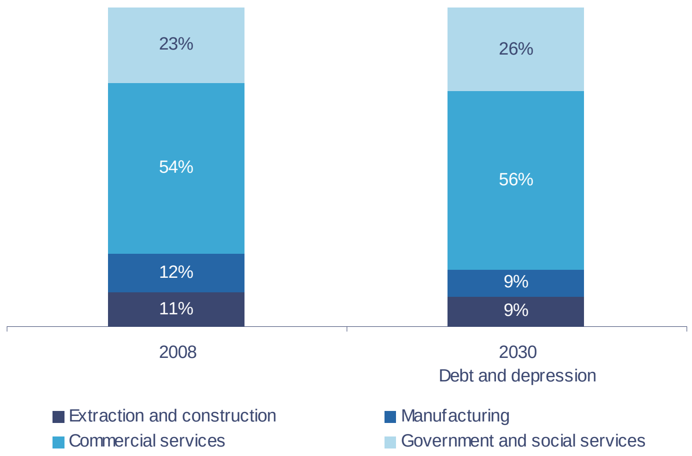
Under the *Debt and depression* scenario, most of the far-reaching damage to the global economy will occur between 2010 and 2012, as shown in Figure 6 below. The first four years of the next decade will be characterised by mutually reinforcing negative developments in the UK banking system and the real economy. For instance, limited access to credit will dampen demand for houses and put downward pressure on their prices. This, in turn, will increase mortgage default rates, weakening banks' balance sheets and reducing further their ability to lend. The UK economy would not be expected to start growing again before 2015.

Figure 6: Timeline of possible events characterising the *Debt and depression* scenario over the next ten years



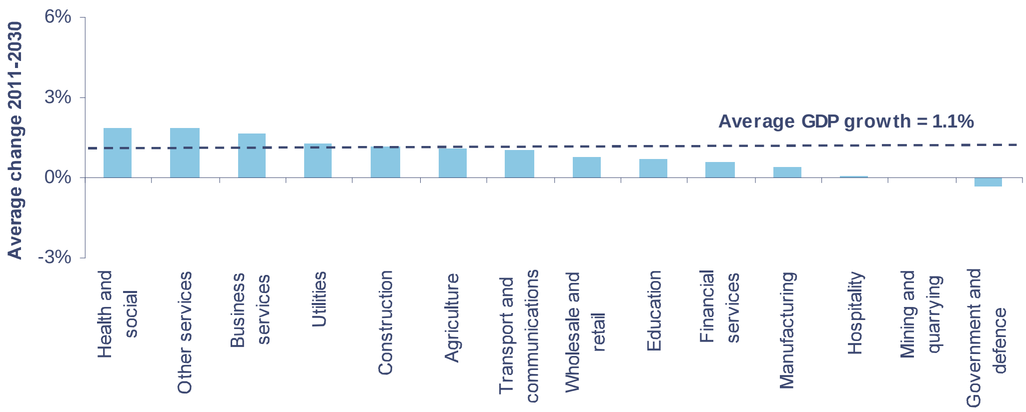
Unlike in the *Green shift* scenario, *Debt and depression* would see the government and social services sector increase its share of GDP between 2008 and 2030, as shown in Figure 7 below. Despite an overall fall in demand over the next five years, commercial services would continue to grow faster than primary and secondary sectors like extraction industries and manufacturing. One of the key reasons for this is that import substitution in light of rising protectionism would be more quickly implemented in the relatively less capital-intensive sectors like business services than in manufacturing.

Figure 7: Structure of the UK economy in 2008 and 2030 under the *Debt and depression* scenario



Largely publicly-funded health and social services would grow the fastest under the *Debt and depression* scenario, as shown in Figure 8 below. This would not be as a result of discretionary fiscal stimulus spending by the government, but rather it represents an area where the government would find it difficult to cut spending at a time when more spending would be needed on social benefits given rising unemployment and more families falling below the poverty line. There would also likely be a shift away from private towards public medical care as a result of rising unemployment and less generous employment packages. The UK economy would expand by a mere 1.1% on average between 2011 and 2030 and the government would struggle to keep public finances under control, with discretionary government and defence spending contracting over the period.

Figure 8: Average rate of change in the output of individual sectors under the *Debt and depression* scenario



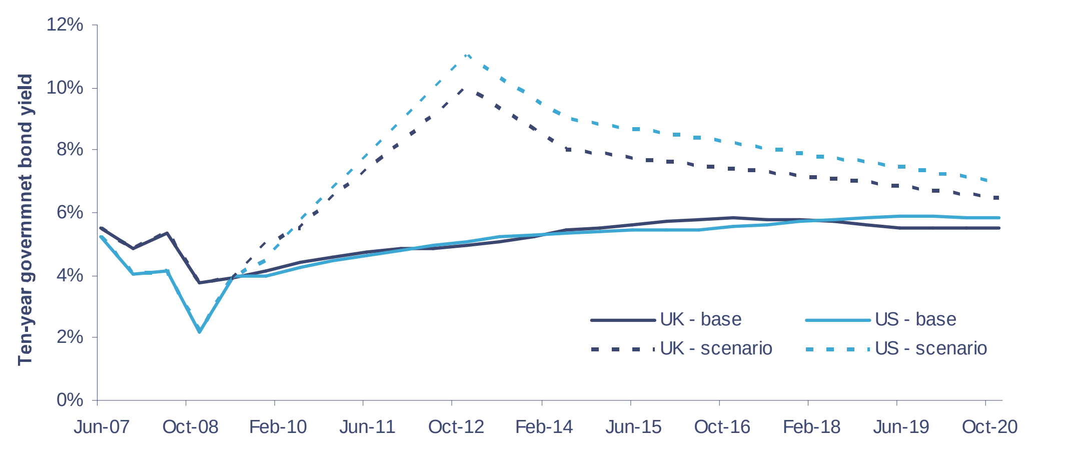
Business and other services would grow faster than the economy overall, reflecting an almost unstoppable economic evolution favouring service industries in the UK, although growth in these sectors would still be well below its own historic rates in recent decades. Greater emphasis being placed on national self-sufficiency would benefit agriculture and the decline of mining and quarrying output would slow. However, manufacturing would be the fastest-shrinking sector as export markets would become more difficult to penetrate while UK importers would struggle to bring production back onshore after years of de-industrialisation. The construction sector would also suffer under the *Debt and depression* scenario as some of the housing oversupply generated in the boom years would be exacerbated by declining population numbers, as the majority of foreign nationals who arrived to work in the UK in the previous 5 years would return home. This trend would continue into the next decade with lower fertility and migration rates putting downward pressure on household formation from around 2015. Finally, depressed house prices and persistently high unemployment would have opposing impacts on the hospitality sector: while tight household budgets might rule out frequent visits to restaurants and cinemas, more families might choose to holiday in the UK, boosting the domestic sector.

Box 2: Bond markets galore

Under the *Debt and depression* scenario bond markets could be affected significantly. Governments' finances would deteriorate significantly, as more public funds would be needed to bail out failing industries that are either vital for the future of the economy or too large or politically controversial to fail. At the same time, tax revenues would remain low and spending on social benefits would increase.

This should see a significant shift in government bond yields, as governments would seek to tap into larger pools of savings in order to finance their debt. As depicted in Figure I below, yields on ten-year treasury bonds in both the UK and US could rise to around 10% under such a scenario, about double the rate we would expect in our base scenarios for the US and UK economies.

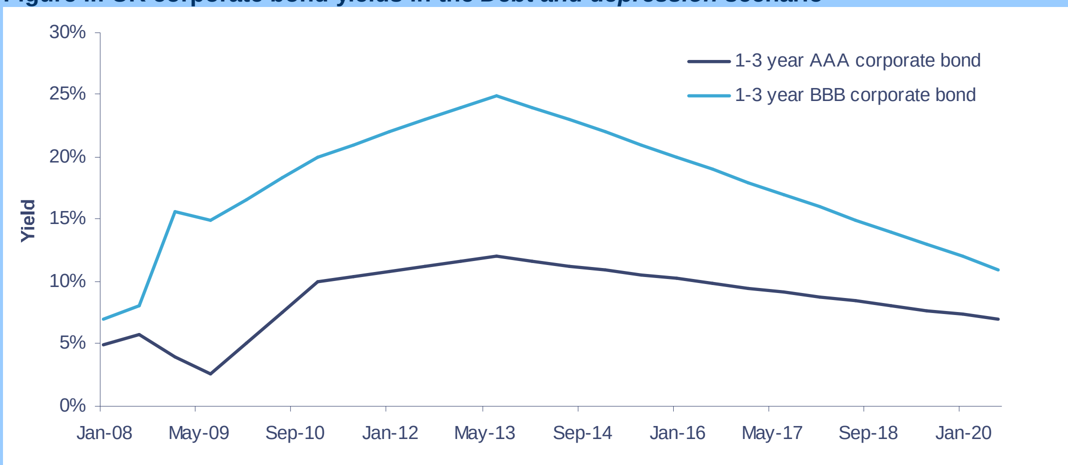
Figure I: Ten-year government bond yields in the base case and under the *Debt and depression* scenario



Corporate debt would also be severely affected in this scenario. The increased number of bankruptcies would be expected to make investors more risk averse and put upward pressure on yields. And with government borrowing accelerating, companies would need to offer higher yields in order to attract the finance they need.

Investors under the *Debt and depression* scenario might also discriminate more between high and low grade debt as they would become more risk averse, with the margin between AAA and BBB bonds in the UK opening up to 1300 basis points at the peak of the economic crisis, as depicted in Figure II below.

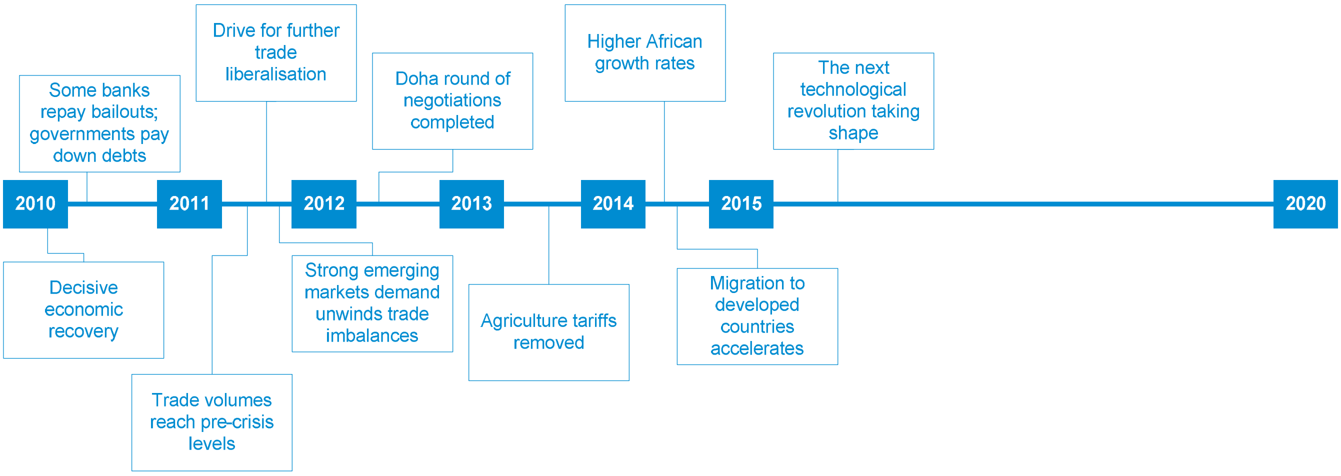
Figure II: UK corporate bond yields in the *Debt and depression* scenario



Scenario 3: Doha and beyond

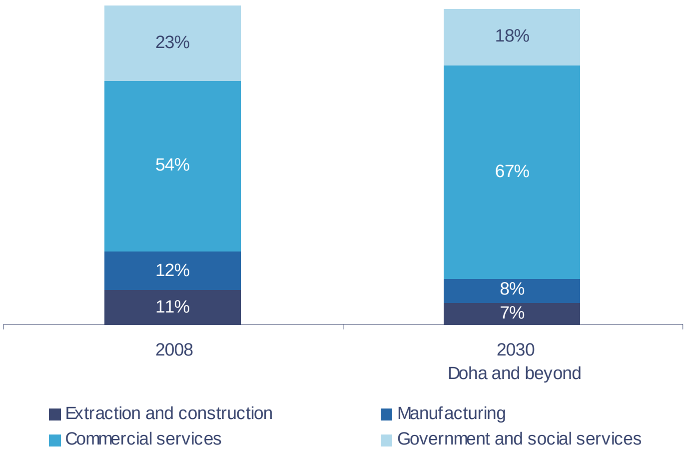
The timeline for the *Doha and beyond* scenario shown in Figure 9 below assumes a decisive global economic recovery would begin in early 2010. The related stabilisation of global capital and trade flows and the swift resumption of economic growth and prosperity would give national politicians a new mandate to pursue trade liberalisation, providing enough political goodwill to lead to the dismantling of swathes of trade barriers by 2014. As an open economy geared up to take advantage of international opportunities, the UK would enter a new, sustainable growth path in the second half of the next decade, supported by strong productivity growth and a fast-growing working age population, mainly through higher immigration.

Figure 9: Timeline of possible events characterising the *Doha and beyond* scenario over the next ten years



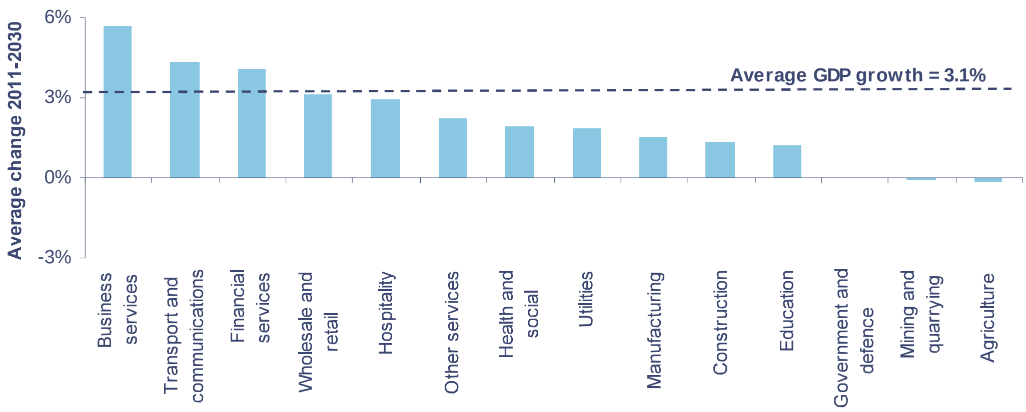
Commercial services in the UK would be the absolute winner of this scenario, taking GDP share from all other sectors by 2030 and accounting for more than two-thirds of output, as shown in Figure 10 below. The government would use the fast-growing tax revenues to pay down debt rather than to increase spending significantly.

Figure 10: Structure of the UK economy in 2008 and 2030 under the *Doha and beyond* scenario



The UK economy would grow by 3.1% on average between 2011 and 2030. As shown in below, business and financial services – helped by a strong City industry in which the UK would retain a strong comparative advantage – would experience rates of expansion only slightly lower than those recorded during the recent boom years. Rising prosperity would also drive demand for travel, hospitality and retail services, while flourishing technological innovation would support strong growth in the communications sector.

Figure 11: Average rate of change in the output of individual sectors under the *Doha and beyond* scenario



The output of the education sector would expand on average at an historically-high rate of 1.2% per year between 2011 and 2030 as the fast-rising population boosts school enrolments. Health and social services output growth would remain below the levels seen over the past decade and there would be an internal realignment of that sector with increasing prosperity leading to more privately-funded care. Some sectors, like agriculture, would be increasingly limited to niche, high-value but largely low-volume industries, such as organic farming. Similarly, the manufacturing sector would concentrate on a few sub-sectors in which it excels on a global level, with the rest of the UK demand for manufactures being met from imports.

Box 3: New exchange rate alliances under the *Doha and beyond* scenario

The new environment of greater global co-operation would see the creation of new exchange rate alliances to replace the existing agreements, which tended to concentrate on geographical proximity and historic trade relationships. As global trade would proliferate, and countries would focus on producing the products where they have comparative advantage to export to the rest of the world, there would be less need to focus on historic trade and political alliances. The new realignment of currency zones would therefore focus on the optimal characteristics supporting a common monetary policy between different countries, including the flexibility of their economies, and their potential growth rates and external balance positions, as well as expected future unemployment and inflation rates.

A possible outcome in this scenario might be for OECD countries to form a number of key exchange rate alliances, with countries in the emerging world gradually joining in later. The largest alliance, consisting of the main western European economies (excluding the UK) and economies with average growth and inflation prospects such as Mexico, could take up the *Meuro*. Another alliance, taking up the *New Dollar*, could consist of the US, and countries such as the UK, Canada, and Iceland. A third alliance, taking up the *Wonlir*, could include countries with stronger growth and inflationary pressures such as Korea, Poland and Turkey.

No currency zone can be perfect, even in our *Doha and beyond* scenario, as no country is identical. However, countries in each of the three alliances would share some of the key characteristics for a successful grouping. Table II below outlines the future rankings of OECD countries under the *Doha and beyond* scenario for some of the metrics that would determine the alliance to which they might belong.

Table II: Country rankings across possible indicators for exchange rate alliances

	Product market regulation	**Potential GDP growth**	**Productivity growth**	**Unemployment rate**	**Current account balance % GDP**	**Consumer prices**
1	US	Italy	Czech Republic	Norway	Norway	Japan
2	UK	Japan	Turkey	Netherlands	Switzerland	Norway
3	Canada	Denmark	Korea	Korea	Netherlands	Switzerland
4	Netherlands	Portugal	Hungary	New Zealand	Sweden	Netherlands
5	Iceland	Germany	Poland	Switzerland	Germany	Finland
6	Denmark	France	Greece	Denmark	Japan	France
7	Spain	Austria	Sweden	Japan	Austria	Denmark
8	Japan	Belgium	Ireland	Iceland	Finland	Belgium
9	Norway	Switzerland	Finland	Australia	Denmark	Italy
10	Finland	Netherlands	UK	Mexico	Korea	Canada
11	Australia	UK	US	Austria	Canada	Austria
12	New Zealand	US	Iceland	US	Mexico	Sweden
13	Switzerland	Mexico	Japan	Ireland	France	Germany
14	Ireland	Canada	Austria	UK	UK	UK
15	Hungary	New Zealand	Denmark	Czech Republic	Czech Republic	Australia
16	Sweden	Sweden	Australia	Canada	Italy	New Zealand
17	Germany	Spain	Norway	Italy	Belgium	Portugal
18	Austria	Finland	New Zealand	Sweden	US	Poland
19	Italy	Australia	France	Finland	Australia	Korea
20	Belgium	Iceland	Netherlands	Hungary	Poland	US
21	Portugal	Hungary	Belgium	Belgium	Ireland	Spain
22	France	Norway	Germany	Portugal	Turkey	Ireland
23	Korea	Greece	Switzerland	Spain	Hungary	Czech Republic
24	Czech Republic	Czech Republic	Mexico	Greece	New Zealand	Greece
25	Mexico	Ireland	Canada	France	Spain	Mexico
26	Greece	Poland	Portugal	Germany	Portugal	Iceland
27	Turkey	Korea	Spain	Poland	Greece	Hungary
28	Poland	Turkey	Italy	Turkey	Iceland	Turkey

Source: PwC projections based on OECD data. Countries ranked by relative score. Top ranking indicates most flexible product market regulation, lowest GDP growth, highest productivity growth, lowest unemployment, largest current account balance as % of GDP, and lowest consumer price inflation.