

# *Where next?*



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# 1. Executive Summary

The financial services sector has a critical role in the UK economy. In addition to providing essential financial products, it creates demand in other sectors and helps improve the flow of capital around the economy. A well-functioning financial services sector improves both capital efficiency and overall UK productivity.

The analysis in this report shows that sustainable growth in the UK financial services sector could lead to the sector contributing an extra 0.2 percent to GDP each year and creating more than 47,000 new jobs.

However, there is a significant positive spillover effect from this growth to the wider economy leading to 265,000 new jobs and cumulative GDP growth of 2-3% in the UK by 2020.

This paper highlights the need for a shared vision of the future size and role for the FS sector between regulators, policy makers and the industry itself. If its stakeholders do not share a vision, then this will have economic consequences with the UK ending up with a smaller FS sector than desirable.

## **1.1. The policy context**

In the aftermath of the 2007 financial crisis, the UK's financial services (FS) sector faces challenges on two fronts:

1. A significant increase in the volume and pace of regulatory and tax reform; this is creating uncertainty in terms of both compliance and potential outcomes.
2. Challenging global economic conditions that are making it hard for the UK FS sector to recover from the financial crisis.

The challenge for policy makers is the provision of effective regulation that limits the likelihood and impact of any future FS sector crises while allowing both the FS sector and the wider UK economy to prosper. This is an inherently difficult task. The FS sector has made a significant contribution to UK economic growth over the last decade and has a key role to play in the future of the UK economy. However, the impact and consequences of the 2007/8 financial crises frame much of the debate relating to the future structure of the sector.



## **1.2. Scenario analysis: the future economic contribution of the FS sector**

Much of the policy debate has centred on the role of regulatory reform. However, as yet, there has been no substantive discussion that considers the overall role the FS sector might play in the future of the UK economy.<sup>1</sup> There are of course many possible outcomes for FS sector growth over the next decade and it is not the focus of this paper to determine what these outcomes should be or prescribe solutions. Instead we set out two possible scenarios as to what a future FS sector might look like in terms of its contribution to the UK economy. We then evaluate some of the drivers behind these scenarios in order to raise awareness of the economic conditions that are needed for the FS sector and the wider economy to thrive. Our scenarios are described as follows:

**Scenario 1:** combines a robust regulatory regime that facilitates FS sector growth with economic conditions that are also beneficial to the FS sector. The FS sector grows at a substantial, but more sustainable rate than it did before the 2007 crises.

**Scenario 2:** provides an alternative view of the FS sector which is constrained by weaker economic conditions both domestically and globally, as well as a regulatory environment that does less to facilitate growth than that specified in Scenario 1.

The two scenarios we put forward are just examples; but are designed to raise awareness of some of the challenges the FS sector, policy makers and UK businesses associated with the financial sector will face.

The scenarios are constructed using a large-scale dynamic economic model of the UK economy that has been developed by PwC for the purposes of understanding how policy measures and changing economic conditions affect businesses. They are compared to a baseline where all sectors in the UK economy grow in-line with a long-term steady state growth rate of 1.8 percent.<sup>2</sup>

## **1.3. Our findings**

Our key finding from Scenario 1 is that new product innovation within the FS sector, increased business and investor confidence, increased lending and more efficient use of capital will lead to increased UK economic growth. If the sector is adversely affected by the wider economic environment, innovates at a slower rate, and is not able to foster increased business confidence, then UK growth potential will be restricted.

*Our scenarios are compared to a baseline where all sectors in the UK economy grow in-line with a long-term steady state growth rate of 1.8 percent.*

<sup>1</sup> Any discussion in this area has been restricted to micro level impacts of specific regulations and their associated impacts on GDP.

<sup>2</sup> This figure is consistent with the long-term growth rate of the UK economy. In Table 1 of this report we show that the FS sector has been growing at a faster rate than the UK economic average.

*The economic growth associated with Scenario 1 translates into GDP growth and in turn this leads to job creation.*

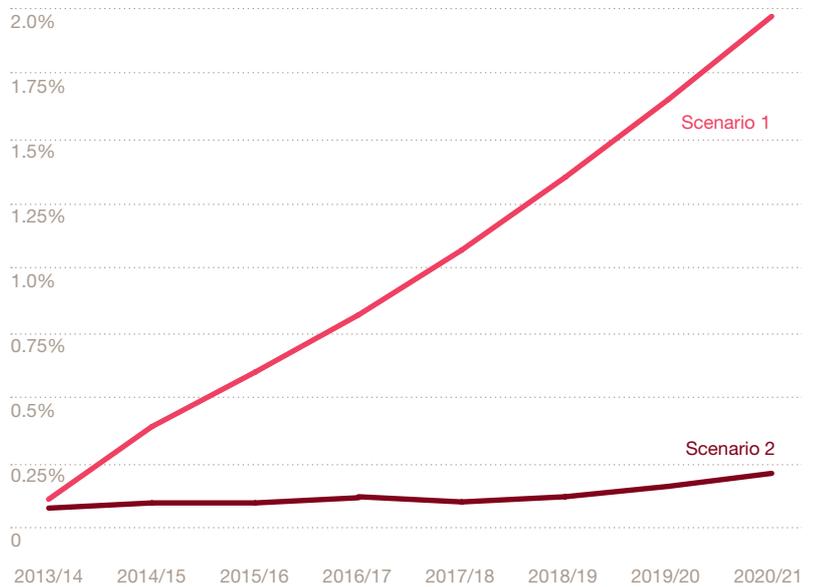
The key results from our modelling are shown in Chart 1 below. The chart illustrates how the two alternative scenarios impact on the level of real GDP relative to a baseline of stable UK economic growth averaging at 1.8% per annum.

- In Scenario 1, the whole economy is nearly 2 percent bigger than in the baseline scenario by 2020/21. In Scenario 1 the economy is approximately £60bn larger than it was in 2013/14, the FS sector directly contributes around half of this growth and the rest is generated through indirect and induced effects. Indirect effects are defined as factors such as increased demand by the financial sector and inputs from its suppliers. Induced effects relate to the confidence that a well-functioning FS sector instils in investors and businesses. The extra growth shown in this scenario is consistent with the FS sector contributing around 0.2 percent to GDP growth each year between 2013/14 and 2020.
- In Scenario 2, UK GDP increases by only 0.2 percent relative to the baseline over the same period. The FS sector grows at a slower rate and this means that the wider economy will also grow less rapidly. In this scenario, the key reason for the slower growth is a lesser degree of business and investor confidence which leads business to produce lower levels of output.

The GDP growth associated with Scenario 1 leads to the creation of new jobs in the UK economy. In Scenario 1 more than 265,000 additional jobs could potentially be created by 2020 – more jobs are created in the wider economy (approximately 218,000) as opposed to the FS sector (more than 47,000).<sup>3</sup> This is due to the strong spillover effects associated with a growing FS sector and the associated confidence it gives business decision makers.

**Chart 1**

Impact of Scenarios 1 and 2 on the level of nominal GDP. All figures presented as % change from baseline



Source: PwC analysis

<sup>3</sup>Note: these figures are net and represent job creation that is specific only to this scenario.

*Understanding growth drivers, particularly in the context of the rapid pace of regulatory change the sector is experiencing, is critical for any FS business going forward.*

#### **1.4. What is driving our results?**

The drivers of this result are critical in determining the path of the FS sectors economic contribution and the performance of companies in the FS sector.<sup>4</sup>

For the purposes of this report we have used our Computable General Equilibrium model (CGE). This is a dynamic multi-sector model of the UK economy that has been built specifically to conduct scenario analysis. The model estimates how the UK economy would react to changes in policy, technology and other external factors. More details are given in Section 3.2.

The model measures how much of an impact different scenarios have on the UK economy relative to an assumed baseline. There are more than 600 levers that can be pulled within the model to generate alternative scenarios, but for this report we focus on variables within the model that link directly with the FS sector and have been widely commented on when discussing the financial crises.

#### **1. The ease with which capital can move through the economy.**

The lack of availability of credit during the peak of the financial crises made it difficult for the FS sector and businesses in need of funds to grow. Future growth in the FS sector relies on the restoration of sustainable credit supplies that reflect the true cost of lending. Businesses will look to other sources of finance if credit is too costly.

#### **2. The return on capital in both the FS sector and other sectors.**

If the FS sector is more profitable in terms of the products that it offers then there are various forms through which lower costs could be passed through to consumers (increased competition driving down prices, adjustments to risk premia, more capital available to lend). Higher capital returns, in turn trigger new investment and productivity increases.

**3. Capital efficiency.** The UK is a global FS hub and has been responsible for truly innovative financial products. While some of these products have contributed and amplified the effects of the FS crises the future growth of the FS sector will in part be linked to new but more sustainable and better understood range of FS products. FS regulators need to ensure the FS sector retains the capacity to continue innovating.

**4. Spillovers from a well-functioning FS sector to UK productivity and demand.** A well functioning FS sector gives the wider business community confidence to borrow, invest and grow. The strong links between the FS sector and the wider economy only serve to amplify these spillovers. Our modelling shows that confidence is a fundamental driver of both FS sector wider economic activity if it stimulates aggregate demand.

Our modelling ranks the importance of these drivers and finds that business confidence and financial product innovation are the most important, and that these drivers can work in both positive and negative direction creating both FS growth and stress. There is capacity for further drivers to become important depending on the pattern of FS sector growth and the surrounding economic environment. Understanding growth drivers, particularly in the context of the rapid pace of regulatory change the sector is experiencing, is critical for any FS business going forward.

<sup>4</sup>The modelling technique we have used allows different economic variables to be adjusted in line with our suggested view of the future. There are multiple variables to choose from, but we restrict our variable selection to those that have been key in driving the UK economy's FS related growth in the past 5 years.



### **1.5. Implications for policy makers**

This analysis leads us to draw two key conclusions for policy makers.

- 1. The strong links between the FS sector and the wider economy mean that it has a disproportionate impact on GDP growth.** This is a pattern observed in virtually all economies and is recognised in the academic literature (see Aghion *et al.* 2004<sup>5</sup>). Specifically to the UK, our analysis shows that it is important that any new regulatory measures provide capacity for FS innovations to provide further enhancement to the efficient provision of capital for all sectors of the economy. Such innovations will become increasingly important, for example as firms in the FS sector comply with more stringent holding capital regulations through Basel III.
- 2. Sustainable growth in the financial sector will be an important driver of value and job creation over the next decade.** £60bn additional GVA realised in Scenario 1 implies a 2 to 3 percentage point higher level of GDP in 2020 and 265,000 jobs created across the whole economy.

Throughout this report we have stressed that it is important for the reforms to be balanced against the performance of the FS sector, and its contribution to the overall UK economy. Better regulation does not necessarily mean more regulation – regulation that is not well thought out will likely put more capital pressures on the FS sector, affecting banks' abilities to lend money and capital to businesses and firms. Overall a stronger understanding of the combined economic impact of the different regulatory measures current being implemented in the FS sector would help policy makers understand the likely future growth path of the FS sector and its likely future contribution to the UK economy.

### **1.6. Structure of the report**

The rest of the report is structured as follows:

- Section 2 examines the current economic contribution that the FS sector makes to the UK economy in more detail.
- Section 3 describes the economic modelling approach that is used to derive the results in this report. It summarises the key results from the economic model, and highlights the implications for policymakers.

*As has been shown, if £50bn additional FS GVA is realised in our scenario 1 then this would imply a 2 to 3 percentage point higher level of GDP in 2020 and 265,000 jobs created in the wider economy.*

<sup>5</sup>Aghion, Philippe, Peter Howitt and David Mayer-Foulkes. "The Effect Of Financial Development On Convergence: Theory And Evidence," Quarterly Journal of Economics, 2005, v120 (1, Feb), 173-222.



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## ***2. The relationship between the Financial Services sector and the wider economy***

## 2.1. The role of the FS sector in the UK's economic performance

Over the past decade, the FS sector has contributed significantly to UK economic growth – it employs over one million people, and is the fourth largest UK export sector.

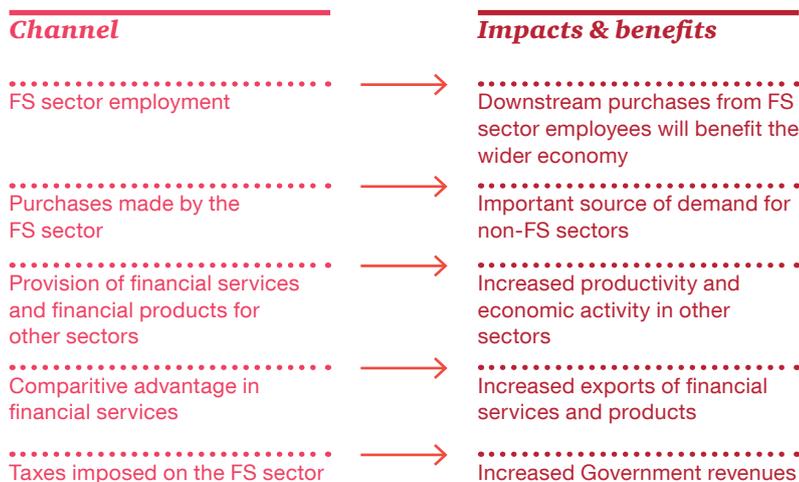
Figure 1 below shows the benefits of a well functioning FS sector to the wider UK economy. This growth has been generated through the UK's status as a global financial hub, the support that it provides UK business through the supply of financial services products and the downstream purchases it makes in terms of its operational inputs (IT equipment, buildings and property etc.) that it needs to conduct its daily activity.

A useful way to measure the contribution of a sector is in terms of its GVA. Table 1 shows the GVA generated by the FS sector over the period from 1997 to 2012. The FS sector gradually became more and more important during the past decade, as its proportion of total UK GVA grew from 5.4% in 2001 to a peak of 10.4% in 2009, before decreasing to 9.1% in 2012 in the aftermath of the financial crisis.

Haldane *et al.*<sup>6</sup> (2011) analyse the rapid growth in financial sector GVA over the past 160 years; they suggest that the UK FS sector has grown more than the rest of the economy by two percentage points per annum.<sup>7</sup> Wadhvani (2010)<sup>8</sup> notes that this growth reflects a considerable deepening in the use of finance in most developed and developing economies which has in turn contributed positively to whole economy growth.

**Figure 1**

Benefits of income generated by the FS sector to the wider UK economy



Source: PwC

**Table 1: Real GVA of the FS Sector, 1997-2012**

	£bn	% change	% of total UK GVA
1997	70.9	-	7.0%
1998	66.2	-6.6%	6.3%
1999	63.0	-4.8	5.9%
2000	60.4	-4.3%	5.4%
2001	66.4	10.1%	5.8%
2002	71.0	6.9%	6.0%
2003	80.5	13.4%	6.5%
2004	86.7	7.7%	6.8%
2005	101.9	17.5%	7.8%
2006	101.7	-0.2%	7.6%
2007	111.3	9.4%	8.0%
2008	125.5	12.8%	9.1%
2009	139.0	10.8%	10.4%
2010	126.2	-9.2%	9.4%
2011	125.4	-0.6%	9.4%
2012	126.3	-4.1%	9.1%

Source: Office of National Statistics, HM Treasury, PwC analysis

<sup>6</sup> Bank of England (2011) *Measuring financial sector output and its contribution to UK GDP*, Quarterly Bulletin Q3 2011

<sup>7</sup> Haldane, A., Brennan, S. and Madouros, V. (2010) "What is the contribution of the financial sector. Miracle or mirage?" Chapter 2 in the *Future of Finance: The LSE report*, Adair Turner and Others. London School of Economics and Political Science.

<sup>8</sup> Wadhvani, S. (2010), "What mix of monetary policy and regulation is best for stabilising the economy?" The future of finance and the theory that underpins it.

**95%** ▶ 95% of all products supplied by the FS sector are FS related

**2.2. Who uses financial sector products and what does the financial sector buy?**

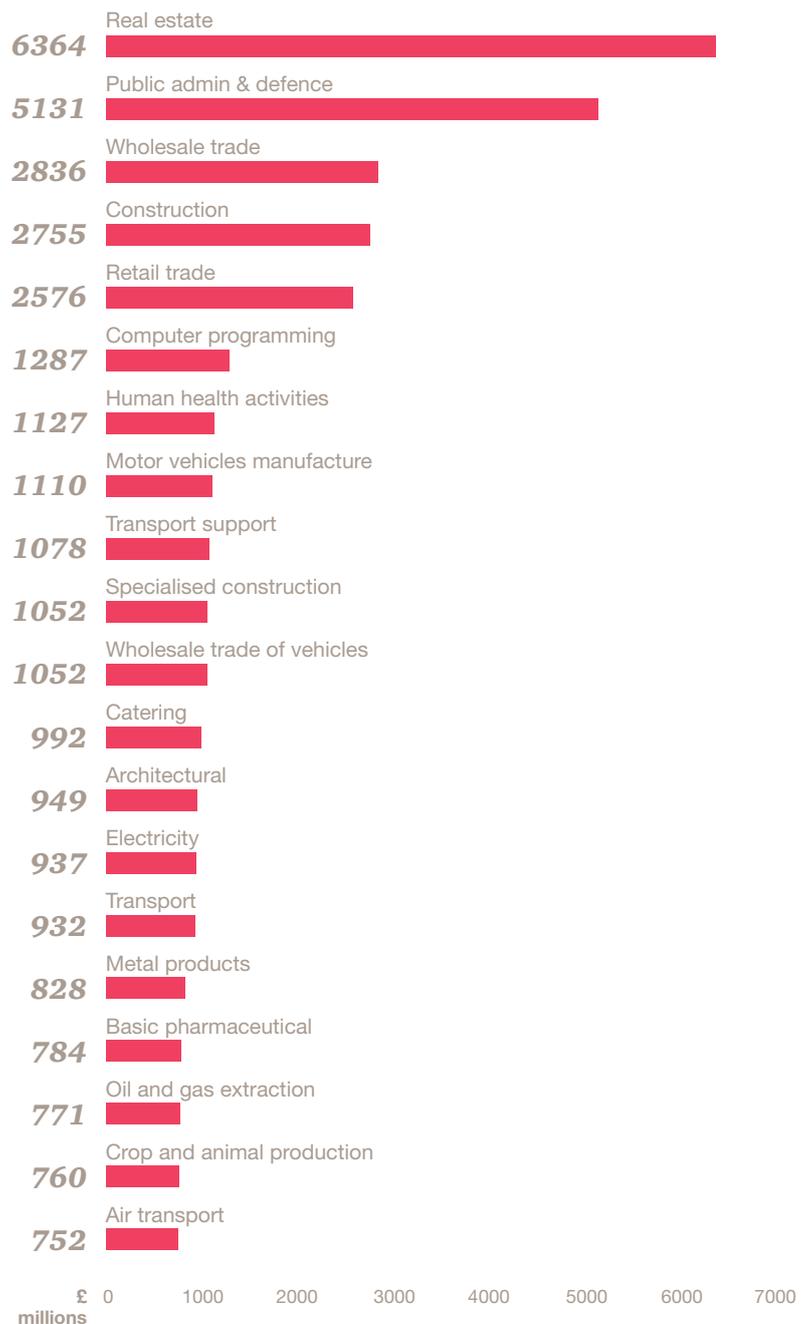
Every business requires some form of financial service in order to operate efficiently. Similarly, the FS sector requires goods and services from other sectors (e.g. office space, IT, telecommunications, postal services etc.) We use the Supply Use Tables (SUTs) published by the UK statistical authority the Office of National Statistics (ONS) in order to evaluate the extent of these linkages. The SUTs map sectoral economic interactions, which we set out below:

1. **The Supply matrix** contains details of the different products that UK businesses supply to each other and consumers. In the case of the FS sector product supply is broken down by the three categories, banking and finance, insurance and auxiliary financial services. In 2011, 95% of all products supplied by the FS sector are FS related, there is a small overlap with the real estate sector in terms of some supplementary products that are supplied to the markets. This is a pattern that has been stable for a number of years.
2. **The Use Matrix:** contains detail of the different products that industries use in their production process as well payments to employees and capital earnings. A detailed breakdown of household product demand is also given.

We can use the Use Matrix to show which sectors of the economy buy FS sector products and services and which sectors supply the FS sector respectively. These purchases are shown in Chart 2 and Chart 3:

**Chart 2**

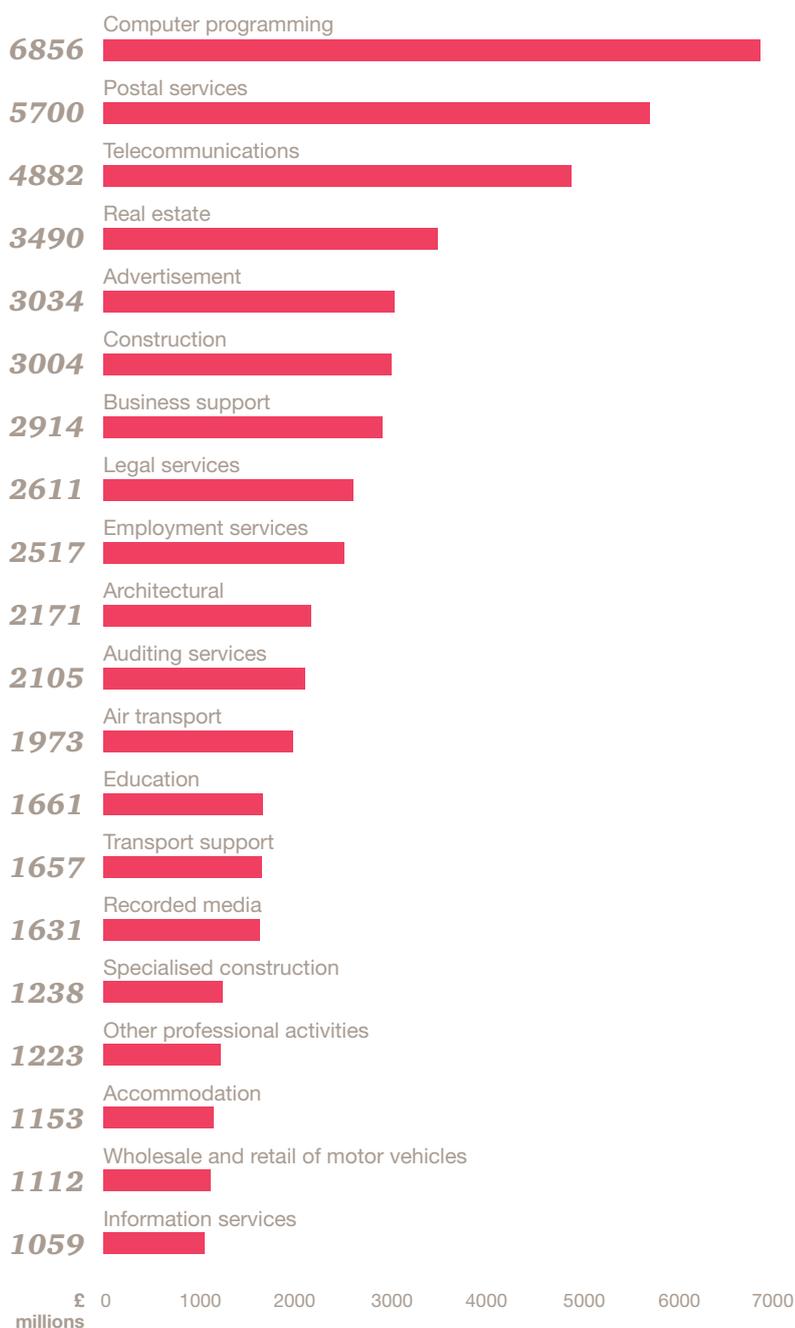
Who buys FS sector products and services, 2011 £ millions (top 20)



Source: Office of National Statistics, PwC analysis

**Chart 3**

**FS sector product and service purchases, 2011 £ millions (top 20)**



Source: Office of National Statistics, PwC analysis

Chart 2 and Chart 3 are useful in terms of providing an assessment of the upstream and downstream purchases associated with the FS sector. However, they do not illustrate the scale of these purchases relative to other sectors; in other words, we don't know whether other sectors buy more or less goods and services than the financial sector.

Table 2 answers this question by comparing different sectors of the economy and the products they use in their production processes. This analysis shows that the FS sector interacts with the rest of the economy in three main ways:

- 1. Business bought more than £113bn of FS sector inputs in 2010.** In a similar ways to business premises and an energy supply, most businesses require some form of financial services to be operationally functional. However, Table 2 does not show multiple dark shaded cells for these core business inputs (most are pink) which suggests that while central to business functionality, these services are not a large component of their cost base.
- 2. In 2010, the sector bought more than £90bn worth of inputs from other parts of the economy.** Relative to other sectors, the FS sector purchases substantial amounts of goods and services from other parts of the economy such as telecoms, IT, transport and catering services to use as inputs. This is reflected in the higher proportion of darker shaded cells in the FS sector columns than in the wider table.

*In 2010, the sector bought more than £90bn worth of inputs from other parts of the economy.*

3. **The FS sector generates a substantial amount of its own wealth – data suggest this is in excess of £20bn.** This level of activity is represented by the shaded cells in the intersection of the two highlighted grey areas on Table 2. Most of this activity is generated by the auxiliary financial services sector which represents many investment funds and brokering activities. These services often generate incomes that are then used to maintain credit levels and capital flows to support core

lending functions. These services have also generated considerable wealth for the UK economy over the past decade, but this should be counterbalanced with the role they have played in the financial crises. The location and development of these activities in the UK contributes significantly to its status as a financial hub and generates a substantial proportion of the FS sector's GVA.

Table 2 is weighted so that the different sectors represented in the table are different sizes, so this bias needs to be removed so that meaningful comparisons can be made. However, weighting makes the numbers less easy to interpret, so on this basis we have constructed an index number.

Essentially, the higher the number, the greater is the strength of linkage between the two sectors. We have colour-coded the table to highlight the relationships between the sectors – a darker shaded cell indicates that there is a higher inter-linkage between the two corresponding sectors in the table.

**Table 2: Economic linkages between sectors**

Product	Final Demand						
	Mining & agriculture	Manufacturing	Utilities	Construction	Retail	Transport	Service
Mining and agriculture	5.9	2.1	6.4	0.4	0.1	0.0	0.1
Manufacturing	1.1	2.2	0.3	0.9	0.7	0.6	0.8
Utilities	0.8	1.0	8.7	0.2	0.4	0.3	0.6
Construction	0.7	0.1	0.2	6.2	1.1	0.4	0.3
Retail	2.2	0.1	0.9	1.2	2.3	2.6	0.7
Transport	0.9	0.6	0.4	0.2	3.2	5.1	0.5
Services	0.3	0.3	0.2	0.4	0.9	0.9	1.9
Accommodation	0.1	0.2	0.2	0.2	2.0	1.0	1.6
Entertainment and media	0.1	0.6	0.3	0.1	0.4	0.4	1.1
Telecoms	0.4	0.2	0.2	0.1	1.2	0.9	1.0
Financial services	0.8	0.5	0.3	0.4	0.5	0.4	0.4
Insurance	1.1	0.5	0.6	0.5	1.0	1.2	0.6
Auxiliary financial services	0.1	0.1	0.1	0.2	0.4	0.4	0.3
Catering	0.2	0.2	0.2	0.7	4.0	0.9	0.8
Real estate	1.9	0.6	0.9	3.2	0.6	2.8	0.6
Tourism	0.0	0.2	0.1	0.0	0.8	3.5	0.5

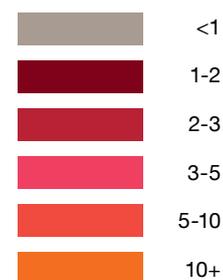
The table can be read two ways:

1. Reading the columns downwards shows the purchases of different products that the FS industry makes. For example, reading down the 'financial services' column, we can see that it buys transport sector related inputs (index value is 1.0, these products could be train fares/ flights to clients, company cars etc), but that it buys twice the amount of service sector related inputs (index value is 2.0, products might include advertising, marketing or consultancy services).

2. Reading across the rows, the table shows which sectors buy FS related products. For instance, the index number for the Utilities industries purchases of insurance products is 0.6, significantly larger than its purchases of auxiliary financial sector products, 0.1.

**Table 2**

Colour key



Source: Office of National Statistics, PwC analysis

Accommodation	Entertainment & media	Telecoms	Financial services	Insurance	Auxiliary financial services	Catering	Real estate	Tourism
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
2.1	0.8	1.0	0.2	0.2	0.2	0.0	0.6	0.2
0.4	0.3	0.4	0.2	0.1	0.5	0.0	0.6	0.1
0.3	0.1	0.9	0.4	1.0	0.1	2.0	0.2	0.3
0.8	1.2	0.7	0.8	2.2	0.3	0.2	9.6	0.7
0.4	0.7	0.5	1.0	0.8	0.5	0.1	1.2	0.9
0.6	1.3	0.8	2.0	1.3	1.3	0.5	1.4	0.7
3.5	0.5	0.6	2.3	2.0	3.0	0.1	0.1	0.4
1.0	24.9	0.2	0.5	0.1	1.1	0.1	0.2	0.1
1.0	1.7	13.1	2.9	1.8	6.8	0.3	1.2	0.8
0.5	0.3	0.5	1.2	0.6	0.8	10.9	0.7	0.7
0.7	0.5	0.5	1.5	10.1	0.7	1.3	1.3	0.7
0.1	0.3	0.5	4.9	11.0	32.8	0.1	0.6	0.2
0.6	0.4	1.5	1.7	2.3	0.2	0.7	0.3	1.6
0.1	0.7	0.3	0.2	0.6	0.5	0.1	6.1	1.7
1.1	0.2	0.8	0.7	0.7	1.2	0.1	0.7	54.2

### 2.3. Measurement issues and the policy dilemma

The above analysis shows that the rapid growth of the FS sector and its links to the wider economy are clearly important for the UK economy. However, its output is difficult to measure and we flag two of the most prominent problems as set out by Haldane *et al.* (2011):

1. **Mismeasurement of the level of activity:** it is conceptually difficult for the government to measure the output of some components of the FS sector. Output data is sampled from a range of companies, but within which there are many services offered to customers. For instance, banks provide services such as automated payment facilities, deposit facilities, financial advice, etc. for which they do not charge in direct proportion to the scale of activity.
2. **Risk not fully accounted for:** historically, Haldane *et al.* (2011) note that some of the data supplied to the government is not properly adjusted for risk, which then in turn may imply that returns and hence output are higher than they actually are. The higher levels of volatility that have been observed in recent years have contributed to additional uncertainty regarding the true level of output in the financial sector.

Haldane *et al.* suggest that the combination of these effects mean that risks, rates of return and benefits associated with the FS sector have been overestimated. The implication of this is that that FS sector GVA is perhaps lower than published estimates. While there is evidence that this is the case, the evidence presented does not suggest that findings along the lines of those presented above should be discounted.

Regardless of the size of the financial sector its performance is clearly important. The 2007/08 financial crisis has shown clearly that **adverse FS Sector performance can cause disproportionate damage to the wider economy** – for example, in the case of the US economy (which provides a useful case study for the UK), the IMF has estimated that a decrease in the bank capital/asset ratio by 1% point reduces real GDP by around 1.5% through its effect on credit availability. Furthermore, deterioration in credit availability and subsequently higher process negatively affects private spending in the wider economy, which further worsens bank capital adequacy and credit availability. The IMF has estimated that a fall of 1% in GDP is gradually magnified to around 2% through these financial feedback effects<sup>9</sup>. These issues are explored in more detail in the later sections.

The factors listed above reflect the dilemma for policy makers: the FS sector is a fundamental driver of UK economic growth, but when it contracts, the UK economy is negatively affected in a disproportionate way relative to its international competitors.

<sup>9</sup>Bayoumi, T. and Melander, O., 2008, "Credit Matters: Empirical Evidence on U.S. Macro-Financial Linkages", Working Paper, IMF

*Adverse FS Sector performance  
can cause disproportionate  
damage to the wider economy*





***3. Modelling different scenarios for Financial Services sector growth***

*It is important for policy makers and regulators to balance the whole economy growth agenda against the need for regulatory reform in the FS sector.*

### **3.1. Considering growth scenarios**

It is important for policy makers and regulators to balance the whole economy growth agenda against the need for regulatory reform in the FS sector. For the purpose of this report, we construct two scenarios that are designed to represent potential futures for the FS sector and the wider economy:

**Scenario 1:** combines an effective regulatory regime that facilitates FS sector growth coupled with economic conditions that are also beneficial to the FS sector. The FS sector grows at a substantial, but more sustainable rate than it did before the 2007 crises.

**Scenario 2:** provides an alternative view of the FS sector which is constrained by weaker economic conditions both domestically and globally, as well as a regulatory environment that facilitates less growth than that specified in Scenario 1.

We analyse these scenarios using a large scale economic model of the UK economy. This section describes the structure of the model used, the scenarios constructed and the key results and conclusions we draw from our analysis. Of course there are too many individual factors that might potentially act as drivers for FS sector growth to be considered in a single paper. Therefore this paper seeks to bring together some of the most important drivers for analysis in the macro context; we believe this is the first time this exercise has been conducted.

### **3.2. PwC's economic model**

For the purposes of this report we have used our Computable General Equilibrium model (CGE). This is a dynamic multi-sector model of the UK economy that has been built specifically to conduct scenario analysis. The model estimates how the UK economy would react to changes in policy, technology and other external factors. Our model is consistent with similar methodologies used by the IMF, World Bank, OECD and the European Commission as well as major governments.

The model looks at the interactions between different industrial sectors, households, the Government and the rest of the world. In this case, we use the sectors listed in table 2, in particular banking and finance, insurance and auxiliary financial services.

The model measures how much of an impact different scenarios have on the UK economy relative to an assumed baseline. This baseline comprises a short to medium-term forecast of UK economic growth and then a longer-term projection that assumes that the economy grows in line with an assumed trend. For the purposes of this analysis we project a baseline out until 2020.

Our model produces multiple outputs – for example, the effect of a change in a particular component of the financial sector can be traced through such elements as its impact on GDP, investment, trade, job creation, house prices, government expenditure and tax receipts.

*The key variables that we adjust in order to construct our scenario remain constant in the baseline and are calibrated to the long-term growth rate of the UK economy*

### 3.3. Building our scenarios

We could use more than 600 different variables in the CGE model for the purposes of scenario analysis. These variables relate to the different households and sectors in the model and their varying economic components. Even so, the CGE model cannot capture all features of the FS sector. We must, therefore, align the variables in the model to reflect key developments in the FS sector.

There are three key steps in the scenario design process, outlined in Figure 2.

Each variable adjusted in the model reflects a core feature of the FS sector which in turn is linked to the wider UK economy. All results from the model are presented relative the long-term growth rate, which effectively forms a baseline for comparison of the different scenarios.<sup>10</sup>

We chose the following variables:

#### 1. The ease of which capital can move through the economy

This variable has been chosen because it determines how quickly capital can move within the economy in the CGE model. In technical terms it is an adjustment cost parameter that is calibrated to the medium-term patterns of capital movements in the UK economy.

Figure 2

Key steps in Scenario design

#### Define issue

- Consider issue to be modelled.
- Identify key factors associated with the financial crisis and the strong growth exhibited by the sector prior to the crisis.

#### Choose variable

- Relate causal factors identified in the first stage to model variables.
- Not always possible to directly align model variables to defined issue. But range of variables in the model makes it possible to achieve plausible approximations.

#### Adjust model

- Adjust chosen model variables relative to the evidence collated as part of the “Define Issue” step.

<sup>10</sup>In the baseline scenario the FS sector share of GVA remains constant at around 8.5 percent (referring back to Table 1, it is shown that between 2000 and 2007 the FS sector share of total GVA rose from around 5.5 percent to 8 percent, and from 5.5 to around 9.5 percent if the most recent data for 2011 are factored in).

During the recent financial crises, capital flows slowed significantly and lending volumes fell. ‘Friction’ in capital movements emerged due to investor and lender uncertainty. This meant that capital did not reach the people or businesses that needed it and the economy contracted as a result. Chart 4 illustrates how lending has changed over the last 12 years. Household lending fell first, followed by a decrease in financial lending in 2009. The former has recovered and has remained fairly stable, while financial lending continues to decline.

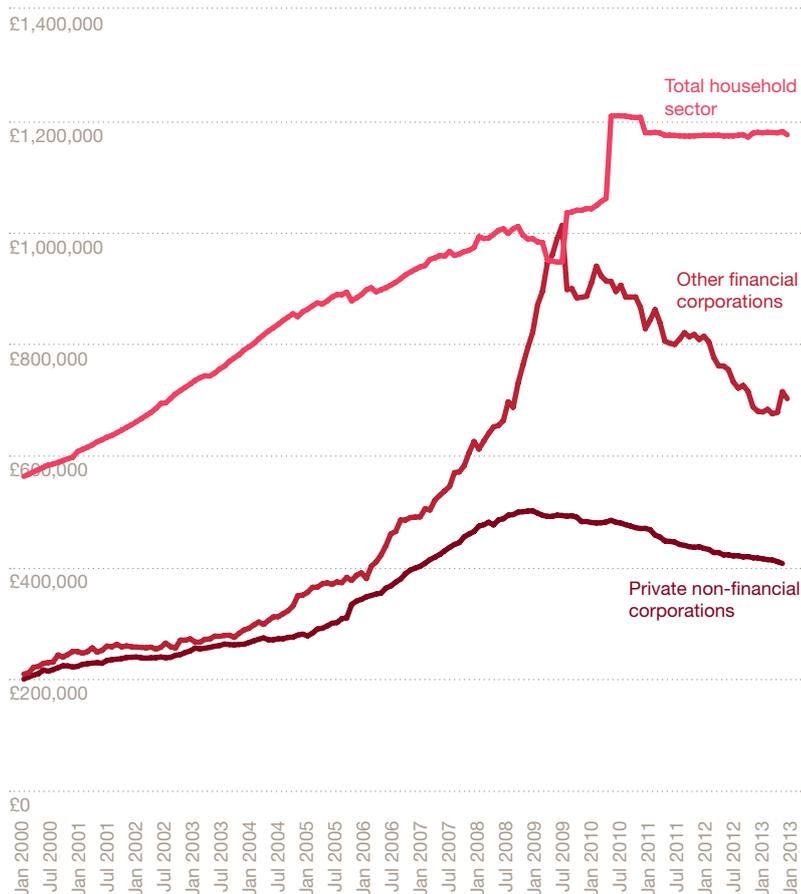
In Scenario 1 we assume that both household and corporate lending grow on an upward trajectory that is equivalent to around two-thirds of their pre-crisis growth rate from 2015 onwards. It takes almost five years FS lending to reach its pre-crisis level. In Scenario 2, we assume no further deterioration in the volume of lending and no real terms decline. Current lending levels remain broadly fixed as a share of GDP.

## 2. The return on capital

In our CGE model, each sector of the economy has its own risk adjusted rate of return for both debt and equity products. If the FS sector can help generate greater capital returns to all users of capital then this will boost growth in both the FS sector and the non-FS sector. Households will also benefit as returns to their savings increase.

**Chart 4**

Sector analysis of M4 lending (net lending, amounts outstanding)



Source: Bank of England, PwC analysis

*In the CGE model better capital efficiency boosts GDP as firms and businesses require less capital to produce each unit of their goods and services.*

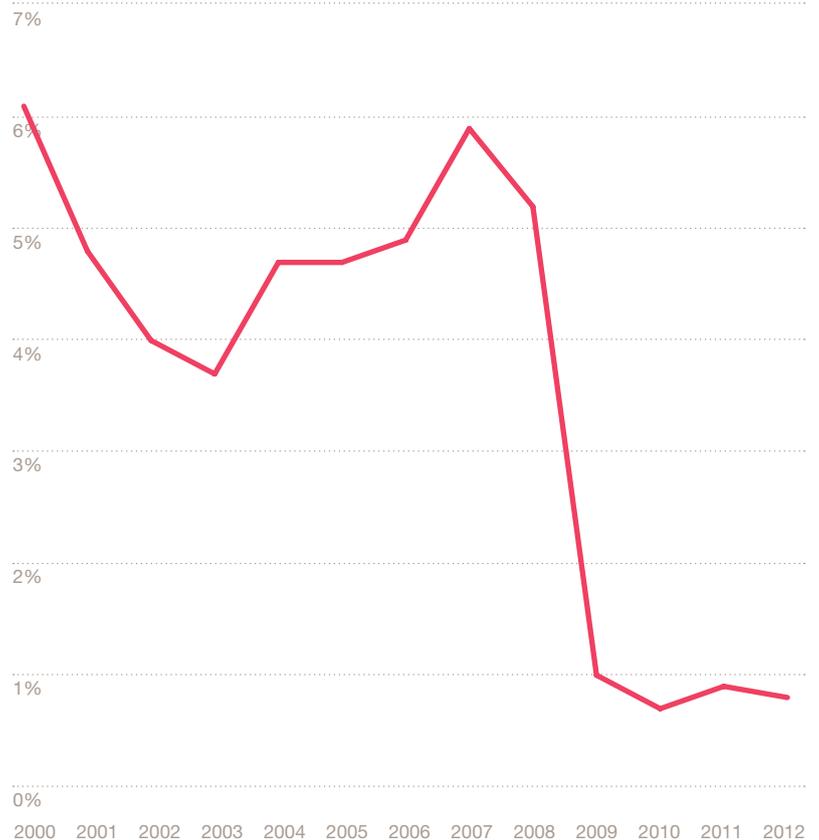
A useful indicator for capital returns is the LIBOR rate. Chart 5 shows its movements since 2000. Following the financial crises real returns have fallen as investors and markets have reassessed the riskiness of some financial products. Between 2000 and 2007 the LIBOR rate fluctuated between around 4% and 6%. However, during the financial crises it fell sharply to around 1% in 2009 and has not moved substantially from this level ever since.

### 3. Capital efficiency

In the CGE model better capital efficiency boosts GDP as firms and businesses require less capital to produce each unit of their goods and services. Our model assumes that there is higher capital efficiency in Scenario 1 alongside a supportive economic environment and regulatory regime should enable innovation of quality financial products and services. This is measured through changes in capital productivity in the model; the adjustments made are described later in this report. Again, we assume the opposite in Scenario 2.

**Chart 5**

3-month LIBOR, annual average



Source: Bank of England, PwC analysis

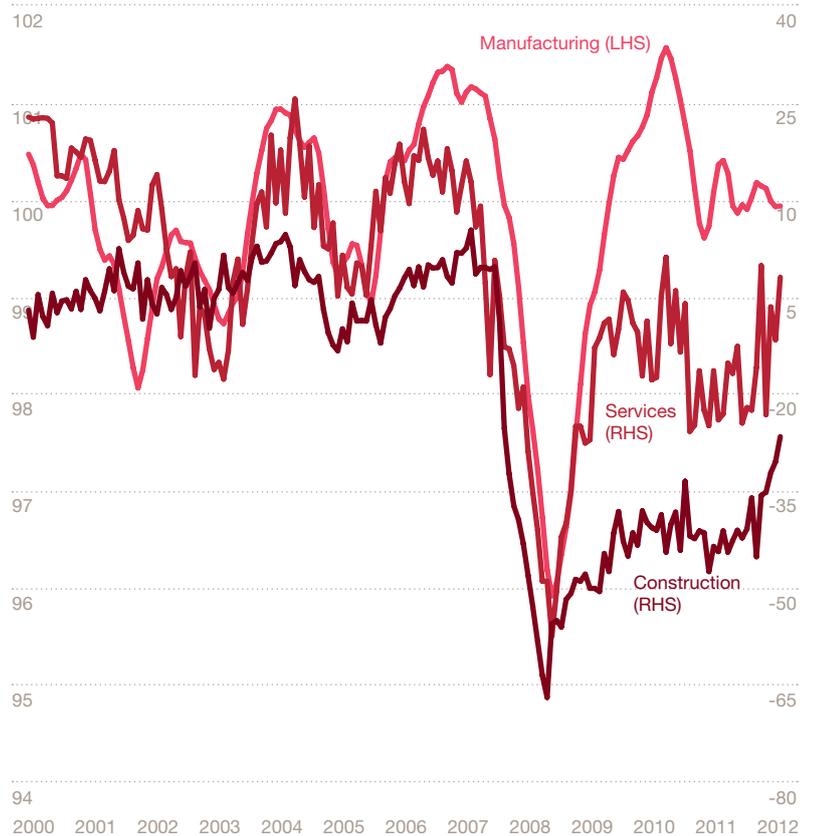
#### 4. Spillovers from a well-functioning FS sector to UK productivity and demand

As can be seen in Section 2, the FS sector is a very important part of the UK economy. If the FS sector is doing well, then business decision makers will know that they will be able to secure the finance that they require to grow; this, in turn, boosts confidence. In Chart 6 we see that business confidence falls sharply across all sectors 2009, reflecting the uncertainty associated with economic conditions at the time. Confidence has recovered from this low, but has varied significantly by sector and in construction and services remains below 2009 levels.

In Scenario 1, we assume that a well functioning FS sector leads to an increase in whole economy demand through the channel of greater business confidence. The reverse is assumed in Scenario 2. In Scenario 1, confidence returns to its long-run level, but in Scenario 2, demand falls and reflecting a fall in confidence that is equivalent to a permanent 1% reduction in demand. In Scenarios 1 and 2, prices will adjust accordingly to dampen or amplify this change in demand.

In the next section we look at the impact of changes in each of these variables on FS GVA, GDP and job creation.

**Chart 6**  
Monthly Business confidence



Source: Bank of England, PwC analysis

### 3.4. Impact of alternative regulatory regime changes on the FS sectors economic contribution

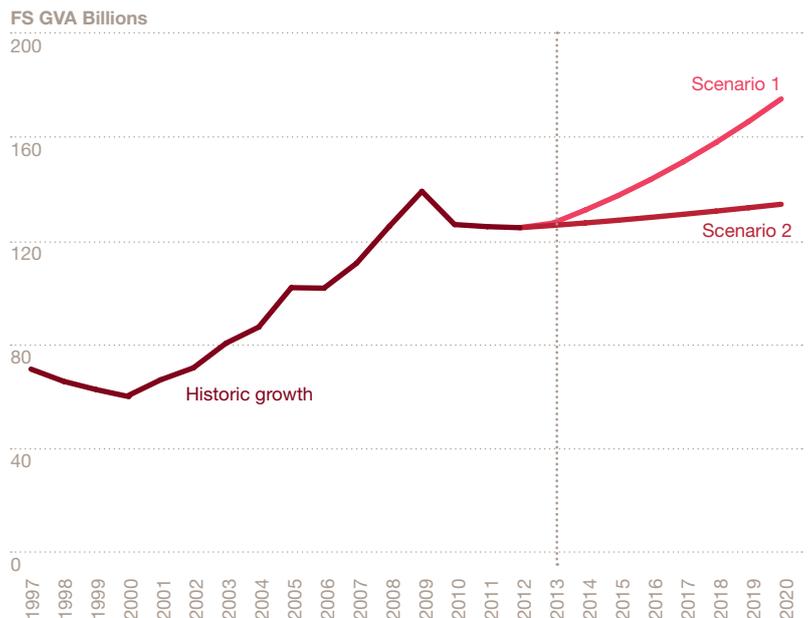
The main outputs from our CGE model of the UK economy are shown in Charts 7 and 8 below. Chart 7 shows FS sector GVA in our two scenarios between 2013/14 and 2020/21. Between 1997 and 2007 FS GVA grew on average by 5.7% per annum – this was a period of unprecedented growth in the sector that is unlikely to be replicated again in the medium-term. In Scenario 1 following the steps outlined in Figure 2 we adjust the four drivers described in section 3.3 to produce an average growth rate of 75% of the 1997/2007 growth rate between 2013 and 2020. This is just one possible future outcome for the FS sector and demonstrates what could be achieved for the UK economy through effective regulation and a level of economic performance, that while not as strong as observed in previous years, still positions the FS sector as a future driver of UK growth in line with the UK's comparative advantage in FS products.

In Scenario 1 the modelling process is the same, but the contribution that the FS sector makes to the economy is more heavily constrained by regulation and weaker economic conditions that cause lending and returns to capital to fall. It also takes into account that the flow of money around the UK economy is heavily restricted and the benefits of a well functioning financial sector are not felt by the wider economy.

In Scenario 1 FS sector GVA rises from an estimated £126bn in 2013 to £175bn in 2020 (in terms of percentages of total UK GVA the sector contributes around 10% in 2013 rising to 13% in 2020). In Scenario 1 the rate of growth of FS sector GVA has been restricted to 0.5% per annum meaning that the contribution of the FS sector rises from £126bn in 2013 to £135bn in 2020.

**Chart 7**

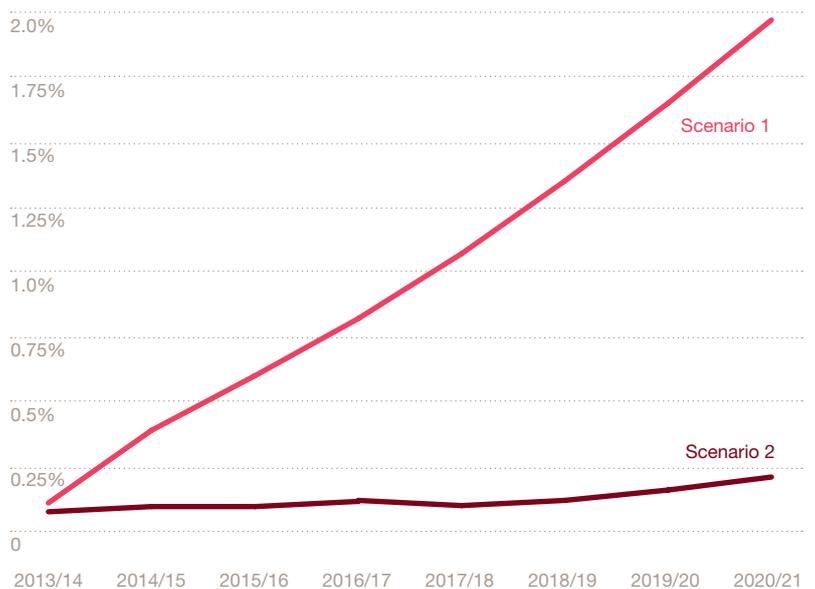
Output from CGE model: Impact of Scenario 1 and 2 on FS GVA (1997-2020)



Source: PwC analysis

**Chart 8**

Impact of Scenarios 1 and 2 on the level of nominal GDP. All figures presented as % change from baseline



Source: PwC analysis

*The rate of return on capital experienced by the FS sector and the wider economy is critical to the future success of the financial sector.*

The model outputs shown in Chart 8 illustrate the impact of the two scenarios on the UK economy. In Scenario 1, the UK economy is nearly 2% bigger than in the baseline scenario by 2020/21. However, in Scenario 1, GDP falls by approximately 0.5% over the same period. It is worth noting that the adjustments in GDP are smaller in magnitude than the adjustments in the size of FS sector output in both scenarios. This is because the impacts of the changes in the FS sector (either upwards or downwards) are “diffused”. In the case of FS sector expansion, this can mean that as the sector grows it draws in resources from other parts of the economy and drives up prices.

The GDP impacts can be explained in more detail by isolating the effects of the different variables we have changed in our scenarios the effects of each variable differ significantly and we compare these impacts using an “output elasticity”. An output elasticity can be interpreted as follows: for every 1% change in the parameter estimate, the whole economy moves by plus or minus “X”%.

### **1. The ease of which capital can move through the economy**

#### *How does the variable work in the model?*

During the credit crunch the movement of capital slowed significantly. In a credit crunch the link between interest rates and credit availability breaks and the rate of lending slows. There is in effect ‘friction’ or in economic modelling terms an ‘adjustment cost’. Larger volumes of credit at any given interest rate will facilitate more lending. However, if there is an excessive amount of credit available then unsustainable lending and borrowing will be encouraged, gearing ratios will rise and, then, longer term risk premia will rise and capital returns will fall.

<b>Model Variable</b>	<b>Output elasticity</b>	<b>Comment</b>
The ease at which capital can move through the economy	0.03%	If capital can move easily through the economy then this will support business growth. If interest rates are detached from risk then this will slow this movement down.
The return on capital	0.19%	Higher capital returns boost profitability and growth in both the FS sector and the wider economy.
Capital efficiency	7%	Financial product innovation is essential for UK FS sector growth.
Spillovers from a well-functioning FS sector to UK productivity and demand	0.6%	A well functioning FS sector boosts business confidence leading to increased productivity and demand.

#### *How much do we change it by?*

In our baseline we set the adjustment cost so that capital flows between the FS sector, the non-FS sector and households, are at a pace which supports the long-term growth rate of the economy. In Scenario 1 we reduce this adjustment cost by 40% to make capital flows more restrictive. We also do the reverse and increase adjustment costs by the same amount. These values are chosen so as to be substantial enough to test whether large detachments between interest rates and lending are substantial enough to augment GDP, but not large enough to create a scenario whereby a secondary financial crisis occurs.

*It is not only the FS sector that benefits from financial product innovation, it is the wider economy as well.*

### **What is its impact on UK GDP?**

This parameter has its largest impact on the model results in the short-term. It implies that if it becomes easier to move capital through the economy then in the short-term more investments will go ahead (both in the household sector and the business sector). Alternatively, if the adjustment cost is increased then borrowers will look to find alternative sources of capital from outside the banking sector. This outcome is consistent with the observed increases in share issues from the corporate sector since 2009.

The output elasticity associated with this parameter is very small at 0.003%. Even with a 40% detachment between interest rates and lending flows, changes in GDP are negligible. Nonetheless, as observed in the financial crisis, when this detachment does occur and economic uncertainty follows, the effects are seen to be more severe. Separate tests on the CGE model confirm this to be the case, but are only observed when the adjustment cost increases by nearly 80%.

### **2. The return on capital**

#### *How does the variable work in the model?*

The rate of return on capital experienced by the FS sector and the wider economy is critical to the future success of the financial sector. Within the FS sector there will be a broad range of rates of return that will vary between financial products. Usually this variance is correlated with risk (i.e. higher returns would be expected if investors take more risk). In Scenario 1 we assume that the level of risk remains unchanged, but that real returns increase by 1%. In Scenario 2 we assume the opposite.

Within the FS sector, the banking and finance component (as opposed to the auxiliary and insurance components) gains the most from an increase in capital returns. This is because of its direct links with the wider economy. Higher returns fuel demand for capital from the non-FS sector and in turn this boosts profitability and GVA. These linkages are less strong in the insurance and auxiliary financial services sectors, so the wider demand effects are not as pronounced.

If the FS sector is more profitable in terms of the products that it offers then there are various forms through which lower costs could be passed through to consumers (increased competition driving down prices, adjustments to risk premia, more capital available to lend).

#### *How much do we change it by?*

In Scenario 1 we assume that the real rate of return on capital (relative to baseline levels of risk adopted) increases by 3% and falls by the same amount in Scenario 1. This is in line with risk-related adjustments to the LIBOR rate through the crises.

#### *What is its impact on UK GDP?*

In conjunction with increased returns in the financial sector, the wider economy also benefits. Higher capital returns trigger new investment and productivity increases. The output elasticity associated with this parameter is 0.19% which is the second largest amongst the parameters that have been tested and reflects the relatively strong link between the FS sector and the wider economy.

### **3. Capital efficiency**

#### *How does the variable work in the model?*

The rate of innovation in financial products can lead to greater efficiency in the use of capital. Capital is a scarce resource, so increased efficiency in its usage will benefit both households and businesses that require it. The increased complexity of financial products and the associated innovations behind them has been cited both as a causal factor in the financial crises and a significant contributor to the financial boom prior to the crises.

Increasingly, the nature of these products is coming under detailed scrutiny by regulators. For instance, G-20 proposals for derivative market reforms will require Central Counterparties (CCPs) or clearing houses to be established which might help reduce the risk associated with peer to peer direct trades and lower costs. CCPs are also intended to increase the transparency of derivative products, which could in turn increase competition and drive down costs. However, another suggestion would be to ensure that banks have higher capital requirements to offset the potential losses associated with a derivative product. The range of regulation proposed will have both positive and negative consequences for the derivative market and for the wider range of financial products. Not all products will be covered by the regulations and many of the more profitable products have previously cross-subsidised more conventional banking activity.

A question remains as to the contribution new financial products can make to the growth of the FS sector going forwards? The link between FS products and the wider economy needs to be factored in to our understanding of this scenario to account for the UK retaining its status as a global financial hub and innovating the products it sells.

It is not only the FS sector that benefits from financial product innovation, it is the wider economy as well. Households and non-FS sector businesses benefit from these financial products on a range of levels. Commodity hedging, management of cash reserves, debt leverage are prime examples.

#### *How much do we change it by?*

In Scenario 1 it is assumed that the productivity of capital usage by the whole economy increases by 1% (set against an average risk adjusted equity return of 7%). As with all other variables, the opposite is assumed in Scenario 2. The rationale for adjusting capital returns in this way relates to the scale changes in capital returns relative to the capital stock in the 10 years prior to the financial crises, which are observed to adjust in real terms by approximately 1.5% above the long-term trend growth rate. So, in keeping with a broader vision for a more sustainable FS sector in the future, we have chosen to build a lower estimate in to our scenarios.

#### *What is its impact on UK GDP?*

Given this range of products and the importance of financial innovation for the FS sector itself, the output elasticity produced by the models capital efficiency parameter is substantial. The model suggests that for each percentage point increase in whole economy capital usage, FS GVA will increase/decrease by 7%. It is difficult to disentangle the full impact of financial product innovation on GVA growth over the previous decade. However, the average growth rate of 6% per annum illustrated in chart 4 suggests a sustained long-term growth driver of the order of magnitude represented by this output elasticity. However, the risks associated with innovations of FS products should also be noted. Chui (2010) cites an initial critique of the derivative market and lists some of the complexities. The output elasticity impacts on the downside as well and a lack of transparency, poorly designed derivative products or products where risk is mis-specified will in turn have a substantial adverse impact on the economy.

#### **4. Spillovers from a well-functioning FS sector to UK productivity and demand**

##### *How does the variable work in the model?*

A range of spillover effects might be associated with a well functioning FS sector. In part, all of the different effects described above could be assigned this category. However, there are broader economic implications associated with the FS sector. The main channel that we focus on in this paper relates to the issue of business confidence. The greater confidence that businesses have that their future output or profitability will increase, the more likely it is that they will invest, leading to an increase in the different components of GDP such as consumption and exports.

A well-functioning FS sector would be able to judge the likely risk and return associated with new investments and lend at an appropriate level. This is the situation reflected in Scenario 1 which assumes that businesses do not believe that if they were able to invest that the required finance would be forthcoming. This lack of financial support might be due to reasons such as information constraints on behalf of lenders that mean they are unable to judge investment returns properly, or because they are experiencing wider economic difficulties that might affect their lending. The interaction of the FS sector with the current Government debt crises may also be a reason.

#### *How much do we change it by?*

The scale of these spillovers is inherently difficult to measure. While business confidence fell substantially through the financial crises, this is not the only channel that this variable acts as a proxy for. On this basis we opt for a scenario that is more easily interpretable, and adjust demand for all UK business products for business to business and business to consumer transactions upwards by 1 percent in Scenario 1 and downwards by 1% in Scenario 2.

#### *What is its impact on UK GDP?*

The output elasticity associated with this parameter is also substantial: at 0.6%: Implying that if the FS sector is well functioning and facilitates productivity gains, wider economic spillovers and increases in confidence and demand, then the UK economy will benefit. The scale of this result again reflects the strong linkages that the FS sector has with the wider economy.

*The sectors that gain the most are the services and manufacturing sectors*

**3.5. Impact of our scenarios on employment**

On its own, the FS sector currently employs around 1.2 million people in the UK.<sup>11</sup> In addition, as described above, other sectors also depend on it. The rapid growth in the FS sector was a key driver of the sustained economic growth observed in the UK in the last decade. Similarly, they are also a factor in the economic downturn following the financial crises. This section seeks to quantify the potential scale of this relationship and shows the employment impacts of Scenario 1 in Table 3.

In Scenario 1 our modelling suggests that sectors that gain most are the services and manufacturing sectors. The services sector benefits most from the downstream purchases of the FS sector, while the manufacturing is able to create jobs through increased growth associated with more effectively targeted lending and more suitable financial products. Overall in Scenario 1 more than 265,000 additional jobs could potentially be created by 2020 – more jobs are created in the wider economy (approximately 218,000) as opposed to the FS sector (more than 47,000)<sup>12</sup>.

In Scenario 1, we find that the amounts of jobs created in the FS sector are small relative to its contribution to GDP: the FS sector contributes around half of the GDP growth but less than one-fifth of the jobs. This is a pattern that is symptomatic of the financial sector in the UK, earnings from the sector have growth significantly over the past decade, but employment has been almost static. Wages have increased significantly in the sector and it has attracted more skilled workers. In Scenario1 we see this trend partially continue as the financial sector expands. However, implicit wage growth is slower and job creation is higher than observed in the past decade. It is also spread more evenly across the sector. I.E, more accrues to banking and insurance which has lower wage levels than auxiliary financial services sector which is associated with the riskier elements of banking.

**Table 3: New jobs created in Scenario 1 as a result of financial sector expansion in the UK between 2013 and 2020. Level effects**

	2013	2015	2020
Mining and agriculture	0.0	0.0	0.0
Manufacturing	5.7	7.2	45.9
Utilities	0.8	1.1	2.8
Construction	2.3	2.8	17.4
Retail	17.1	21.6	41.6
Transport	3.6	5.0	34.0
Services	35.9	46.1	67.4
Hotels and accommodation	2.3	2.9	4.9
Financial services	2.3	2.7	16.5
Insurance	3.0	3.6	22.3
Auxiliary financial services	1.2	1.4	8.7
Restaurants and Leisure	0.6	0.7	4.0
Total	74.7	95.1	265.5
FS Total	6.4	7.7	47.5

<sup>11</sup> Source ONS Labour Force Survey (2013). Figures are for workforce jobs.

<sup>12</sup> Note: these figures are net and represent job creation that is specific only to this scenario.

Table 4 shows a breakdown of the impact of Scenario 1 by region. The majority of new jobs are created in London as this is where almost 50% of FS activity is generated. However, there are also significant regional gains. For instance, the North West, Yorkshire and The Humber, the West Midlands, the East of England, the South East and the South West all gain by more than 14,000 jobs each by 2020.

The numbers presented in this report are cautious in terms of the potential employment effects.<sup>13</sup> There is potential for future negative shocks to both the FS sector and the wider economy that might mean the full potential of FS growth mapped out in Scenario 1 might not materialise and our long-run modelling of the labour market is designed to reflect this.

These figures contrast with the employment results from Scenario 2 where only a net of 12,000 additional jobs are created by 2020/21 across the whole economy. In this scenario, the FS sector contracts in size and there are approximately 8,000 expected job losses. It has been shown that the wider economy gains by a small amount in GDP terms (0.5 percent by 2020) and so more than offsets the net job losses in the FS sector. However, this should not be considered as a job creation scenario as the economy is growing significantly below its potential.

**Table 4: New jobs created in Scenario1 as a result of financial sector expansion in the UK Scenario 1 on job creation in the UK between 2013 and 2020. Level effects**

	2013	2015	2020
North East	1.3	1.7	4.8
North West	5.5	6.9	19.4
Yorkshire and The Humber	4.2	5.4	15.1
East Midlands	2.2	2.8	7.9
West Midlands	3.9	5.0	14.0
East of England	4.3	5.5	15.4
London	37.3	47.6	132.8
South East	6.8	8.6	24.0
South West	4.7	6.0	16.8
Wales	1.5	1.9	5.2
Scotland	2.1	2.6	7.3
Northern Ireland	0.8	1.1	2.9
<b>Total jobs created</b>	<b>74.7</b>	<b>95.1</b>	<b>265.5</b>

<sup>13</sup> By this we mean we have used a whole economy labour supply elasticity of 0.5 in our modelling which is a mid-point of the various relevant estimates provided in the extensive review of Keane (2011). The UK economy has a considerable amount of spare capacity which would imply that vacancies created by FS sector growth are filled more rapidly than currently assumed in this analysis. Keane, M.P. (2011) "Labour Supply and Taxes: A Survey" Journal of Economic Literature, 49:4 pp. 961-1075.



## *4. Policy implications*

*This paper highlights the need for a shared vision of the future size and role for the FS sector between all stakeholder groups.*

Our analysis points to some of the key drivers of FS sector output. Each driver presents its own particular challenge for policy makers and the importance of the FS sector's interaction with the wider economy should not be overlooked. The conclusions we draw from the analysis of the different FS drivers are as follows:

**1. The strong links between the FS sector and the wider economy mean that it has a disproportionate impact on GDP growth.** This is a pattern observed in virtually all economies, and Aghion et al. (2004) show that the provision of a well function financial system is critical for growth. Specifically to the UK, the particular importance of innovation through the provision of products has been highlighted as having both the potential for substantial upside gain for the UK economy and downside risk. Given these risks it is important that any new regulatory measures provide capacity for FS innovations to provide further enhancement to the efficient provision of capital. Such innovations will become increasingly important, for example as firms in the FS sector comply with more stringent holding capital regulations through Basel III.

In essence, the FS sector needs to continue to innovate to sustain growth. Previous growth was generated from low debt levels and new financial products. If the pace of existing product innovation dries up either through the market becoming saturated, poor regulation or the unregulated components of these product markets fail, then it is more likely that the FS sector will be unable to contribute as substantively to future UK economic growth as outlined in our Scenario 1.

**2. Sustainable growth in the financial sector will be an important driver of value and job creation over the next decade.** If the £50bn additional FS GVA is realised in our scenario 1 then this would imply a 2 to 3 percentage point higher level of GDP in 2020 and 265,000 jobs created in the wider economy.

Throughout this report we have stressed that it is important for the reforms to be balanced against the performance of the FS sector, and its contribution to the overall UK economy. The combined impact of recent national and international government and institutional reforms targeted at the FS sector are unknown and these will go a long way in determining the future economic contribution of the FS sector and the performance of the wider UK economy.

This paper highlights the need for a shared vision of the future size and role for the FS sector between regulators, policy makers and the industry itself. If its stakeholders do not share a vision, then this will have economic consequences with the UK ending up with a smaller FS sector than desirable.

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