How the UK economy's key sectors link to the EU's Single Market

Report for Open Britain

November 2016

Cebr

Authorship and acknowledgements

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The report does not necessarily reflect the views of Open Britain

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Contents

Executive Summary

The following are the key findings of this report:

- The report investigates the relative importance of main sectors of the UK economy and their dependence both direct and indirect on trading with the Single Market. The biggest sector in the UK is retail/wholesale trade, totalling £178 billion in 2014. This was followed closely by manufacturing on £165 billion, while financial services came in came in third at £122 billion. Other important sectors include the (non-market) areas of healthcare and education.
- Energy supply came through as the fastest growing segment on 22% average growth in the period 2012-2014. This picture may have changed somewhat recently though in light of the sharp decline in energy prices in 2015 and 2016. This level of growth could thus be merely cyclical.
- Other industries that grew rapidly over the period include the digital and broader creative industries, accommodation and food and administrative and support services. Mining experienced the biggest decline during this timeframe, seeing through a 9% contraction. Importantly, the decline in mined commodities started earlier than energy, so decreases here may again not be a permanent feature.
- At an economy-wide level, Cebr estimates that in 2014 exports to the EU contributed £187 billion in GVA to the UK economy (including multiplier effects), equivalent to about 10.3% of UK GDP. In terms of EU trade dependence, we estimate that 3.25 million UK jobs are directly and indirectly linked to EU trade.
- The manufacturing sector is heavily dependent on exporting to the EU and would certainly suffer significantly if access is restricted or held back by tariff barriers. Despite the statistics, the retail and wholesale sectors do not export very much directly (roughly £36bn of services in 2014[1]) but because of the specialism inherent in modern logistics, the distribution sector is intimately involved in the supply chain for both exports and imports, which would appear to account for the bulk of the estimated jobs affected by the links between the sector and trade with the EU. If this trade were to diminish, there would certainly be a knock on effect on the sector.
- The two other sectors with a very strong link to exporting to the EU are banking and insurance and professional services. For other sectors, their direct links to trade with the EU are less, but nevertheless they are indirectly linked, since in a modern economy most sectors depend in some way on other sectors.
- It is important here to mention another sector which has a different dependence on the EU. Currently the UK's third largest sector at 9% of GDP is the so-called Flat White Economy, which combines technology with the creative sector. This sector has accounted directly and indirectly for more than 40% of UK GDP growth in the past 4 years and is forecast to account for 15.7% of UK GDP by 2015 making it by then the largest sector in the UK economy. This sector, currently heavily based in London but spreading rapidly to other major parts of the UK[2] is critically dependent on labour from the EU and elsewhere. The main book describing the sector describes immigration especially from the rest of the

[1] Source: Supply and Use Tables 2014 ONS https://www.ons.gov.uk/economy/nationalaccounts/supplyandusetables/datasets/inputoutputsupplyandusetablessummarytables

[2] Cebr forecasts that by 2020 there will be more Flat White Economy jobs in the north of the UK than in London alone.

EU as 'the UK's secret economic weapon'. Any move to cut immigration from the EU would be a body blow to this sector and would have a significant impact on UK GDP growth.

- Agriculture and fisheries have their own links with trade with the EU which depend on the Common Agricultural Policy and the Common Fisheries Policy. These sectors would suffer from withdrawal from these policies unless these policies were replaced by alternatives that provided equivalent access.

- Using different indicators - size (GVA), growth (GVA growth) and existing trading relationships (captured by trade, trade growth and employment linked to trade with the EU) – Cebr shows how the major sectors of the economy are linked to the EU single market. These measures show a considerable amount of variation in rankings but all are linked in some way. The value of the above indicators can also be seen when considering composite rankings. Manufacturing, retail and wholesale, financial services and professional services come though strongly on most measures, but there is considerable variation in terms of other segments depending on the approach undertaken.

- Although it might seem theoretically possible to cherry pick a number of sectors and negotiate trade agreements for the sectors, there is considerable linkage between the sectors. It has taken a quarter of a century to negotiate the single market as it exists today and could take nearly as long to renegotiate a new arrangement on a sectoral basis. The practical problems of negotiating agreements that cover the majority of our trade would not only take years but the uncertainty thus generated would hold back investment and damage the economy.

- Whether the UK is inside or outside the single market, EU regulations cannot be avoided if Britain wishes to trade with the European Union. What can potentially be decided is the form of compliance, either though EEA rules, FTA equivalence or firms individually complying with standards for their exports. The more regulatory independence the UK tries to carve out, the more difficult it is likely to be for British firms to export to the EU without facing trade barriers.

- The broader economic impact of having more restricted market access also has to consider secondary effects. Industries such as real estate could be affected if the landscape for foreign direct investment changes. Furthermore, foreign investment into key British industries such as manufacturing may also be affected by restricted access if investors end up having less certainty in the ability of their assets to generate income domestically and abroad.

- While EEA single market membership would provide Britain with continuing and dynamic access for key industries, the current model does entail members having to settle for only a relatively modest amount of influence on single market rules. Given the size of the British economy compared to other EEA countries and uncertainty regarding the future framework of the EU, these terms of membership may change over time.

- If the UK ends up outside of the single market and without a free trade arrangement, importers and exporters would face tariffs and possible regulatory divergence problems. Meanwhile, being outside the customs union, exporters and importers could be hindered by rules of origin, even if the UK opts to remain in the EEA single market.

- EU negotiations will also need to strategically consider the unregulated services sector, covering areas such as digital, the creative industries, the arts, technology, research and consultancy (among others). While current EU trade in these industries could prove more difficult to restrict, it may be subject to a number of indirect impacts given the industry's reliance on EU/EEA workers, in addition to the opportunity cost of not being able to take full advantage of future single market deepening measures that could enhance future access.

- In conclusion, the central finding is that most, if not all, sectors are linked to the EU. There appears to be no single sector whose economic characteristics – whether GVA, growth potential of trade density – do not link closely to and benefit from trading within the EU's single market today. A sector-by-sector approach, which seeks to prioritise or choose 'winners' in isolation of others, therefore, cannot be achieved without the risk of creating 'losers' through reduced access and reduced future mutual benefits.

1 Introduction

The Centre for Economics and Business Research (Cebr) has been commissioned by Open Britain to produce a report on the importance of the various industrial sectors to the UK economy, and their reliance on being able to trade within the EU's single market.

1.1 Purpose and objectives of the research

The UK government currently faces what many consider to be the challenge of a generation - negotiating Britain's withdrawal from the European Union. As a member of the EU single market, the British economy and its main sectors currently enjoy unfettered market access and every alternative to this full access is highly likely to raise trade barriers between the UK and the EU.

Recently, it was reported that the Government might go for a sector-by-sector approach to negotiating a Free Trade Agreement between the UK and EU. This report highlights which sectors of the UK economy could be impacted the most if the UK Government, in the upcoming negotiations with the EU, does not secure equivalent market access to that which is currently enjoyed through membership of the single market. The analysis demonstrates that every major sector is linked to the EU single market and could be harmed through an arrangement that prioritises one sector over another.

1.2 Report structure and outline

Section 2 considers the relative importance of the various industrial sectors to the UK economy. We consider size, as measured by gross value added (GVA), and annual average growth because it is also necessary to consider what will be sizeable in the future. For this section, to provide a richer picture, we have drilled into the sub-sector level to consider, for example, different categories of manufacturing (from food to micro-processors) or types of professional services (from architectural to legal).

Section 3 identifies the sectors that have benefitted the most from single market access up to now and which have the most to lose from not being part of the single market over the next 10-15 years. These are sectors for which exports to and/or imports (as inputs or competing products) from the EU are important but also those sectors that were expected to benefit from EU institutional efforts to deepen the workings of the single market, particularly in the area of services. Through individual and composite ranking schemes, we provide insights on the relationship between the UK economy's main industry sectors and the EU single market and the difficulty in prioritising one sector over another.

Section 4 provides a high-level review of some of the regulatory frameworks with which UK industry is likely to need to remain compliant if equivalent market access is to be secured in the negotiations. We consider existing frameworks and some of the new frameworks being introduced as part of efforts to deepen the workings of the single market, as outlined in the Cost of Non-Europe reports produced by the European Parliament. Compliance with these frameworks could likewise be a pre-requisite in any substantial future trading relationship between the UK and the EU.

2 UK industry: review of size and recent growth performance

This section analyses the relative importance of the various industrial sectors of the UK economy. Our analysis is based on size and growth because, while size matters, keeping in mind what is likely to grow to a significant size in the future is also of vital importance. An example of this are some of the digital and creative industries, which have been the fastest growing for several years and have overtaken other more traditional industries in terms of size. This is partly a function, for example, of the UK being the largest online shopping marketplace in the world (based on spend per head measures).

2.1 How do the UK's broad sectors compare by size and growth?

Table 1 provides a ranking, according to size, of the 20 broad sectors of the economy. They are ranked according to their GVA contribution to GDP in 2014. Retail and wholesale is the largest sector, with a GVA contribution of over £177 billion. This is followed by manufacturing and financial services, which are followed by the non-market sectors of health and education.

We have isolated the so-called creative industries by using economic estimates for these industries provided by the UK Department for Culture, Media and Sport (DCMS), which has defined the creative industries for the purposes of producing these estimates.[3] Excluding the two non-market sectors, the creative industries rank in 6th place (8th place including those sectors) in terms of size, after professional services and construction. But they are growing fast, with some of the different categories of creative industry experiencing staggering growth rates over the six-year period 2008-2014.[4]

Table 1: Sector Sizes in GVA terms, £m, by year, 2012-2014

Rank	Sector	2012	2013	2014
1	Retail & wholesale	159,861	166,415	177,510
2	Manufacturing	148,286	159,063	164,768
3	Financial services	112,870	118,047	121,904
4	Health and social care	114,972	114,103	118,732
5	Education	96,733	97,962	98,765
6	Professional services	89,491	93,376	97,876
7	Construction	86,436	90,810	96,756
8	Creative Industries	73,203	80,608	87,417
9	Public admin & defence	80,314	80,654	81,325
10	Admin & support services	67,988	71,807	76,510
11	Transport and storage	62,778	67,443	74,014
12	Real estate	52,960	52,248	55,851
13	Accommodation & food	40,911	44,830	46,957
14	Information and comms	43,260	43,564	43,647
15	Other service activities	31,515	33,109	34,476
16	Energy	20,341	23,741	24,811

[3] This involved adjusting the data for some of the other broad sectors – like information and communications, which includes publishing, TV and film production and computer programming and the professional services sector, which includes elements of design and advertising. To do so, we extracted from the GVA of the standard sectors the GVA of the individual creative industries, in order to reconcile to the UK total.

[4] For instance, amongst the larger of the creative industries, the contribution of advertising agencies grew 44% and media representation by 117% over the period 2008-2014, Some of the smaller creative industries, like publishing of computer games, is estimated to have grown by over 270% and sound recording and music publishing by nearly 220%

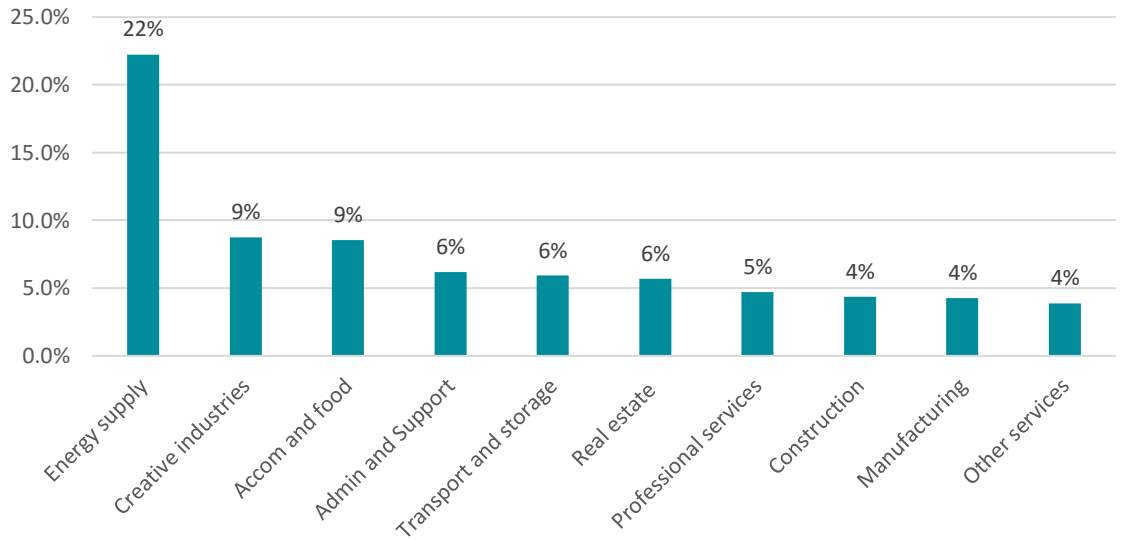
Rank	Sector	2012	2013	2014
17	Mining and quarrying	28,398	27,370	23,806
18	Water utilities	17,604	16,984	16,848
19	Arts and culture	15,427	14,735	15,341
20	Agriculture	9,973	11,093	10,998

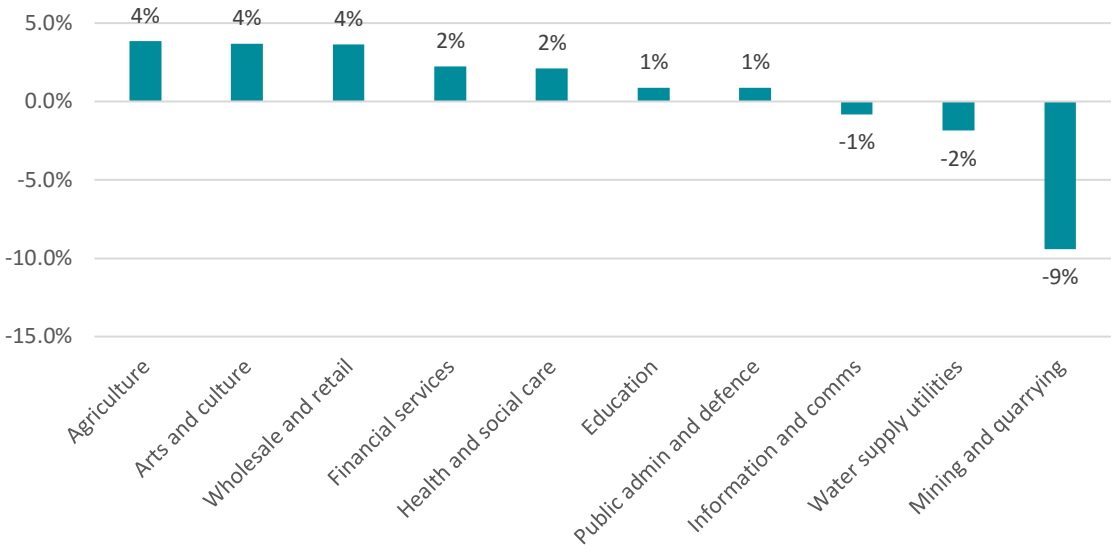
Source: ONS, DCMS, Cebr analysis

As noted above, it is also important to consider growth rates, which can give us an idea of which sectors will be the largest in the future. Figure 1 below demonstrates, in two graphs, the average annual growth rates of the same set of sectors between 2012 and 2014.

The energy sector is recorded as the fastest growing in the period 2012-2014, with average annual growth of 22.3%, but it can be volatile given the global influences on the sector's performance. The next fastest growing sector is the creative industries at 8.7% per annum, closely followed by accommodation and food at 8.6%. At the other end of the spectrum, mining and quarrying saw the largest decline of any sector, with a negative annual average growth rate of -9.4%. This no doubt reflects the structural decline of the UK oil and gas industry operating in the North Sea. Only one other sector saw negative growth, but on a smaller scale, that being water utilities at -1.9% per annum. Information and communications also presents in negative territory but this is due to the extraction of the fast-growing creative industries, which account for a large share of the broader information and communications sector, as defined under normal SIC classification rules.

Figure 1: Average annual growth of sectors between 2012 and 2014





Source: ONS, DCMS, Cebr analysis

To provide a richer picture, the next sub-section drills deeper into the sub-sector level to consider, for example, different categories of manufacturing, different types of professional services and the different creative industries.

2.2 A closer look at the sectors within the sectors

Some of the broad sectors consist of a variety of different types of activity with very different types of goods and services being delivered from those activities. Prime examples are manufacturing, the creative industries and professional services.

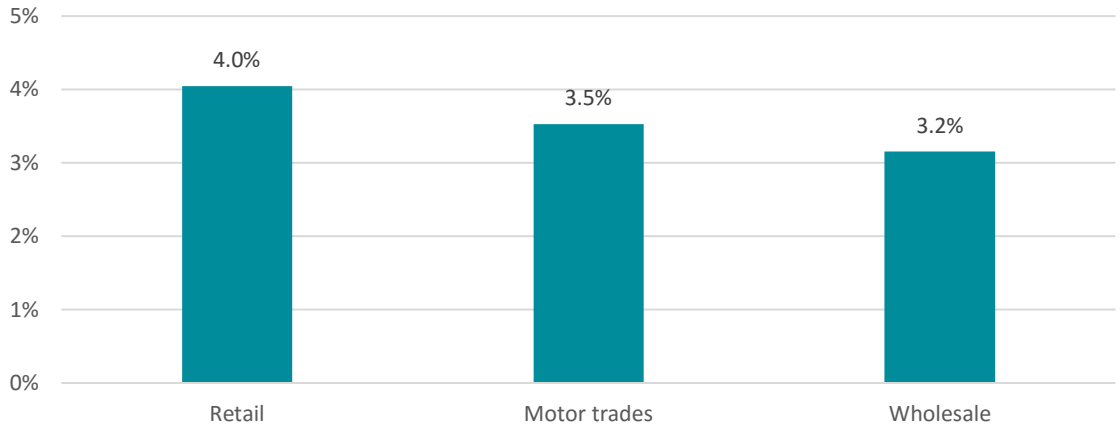
This sub-section takes a closer look at a selection of the top 10 sectors by size identified in Table 1 above. We have excluded the three non-market sectors (health, education and public administration) and construction (due to the arguably lesser reliance of this sector on the UK's relationship with the EU). The purpose (as with the broad sectors above) is to distinguish between those activities that are large or growing fast from those that are small or in decline, and to identify trends that might not be apparent from the broad sector data.

Sub-sector analysis of wholesale and retail

Of the £177.5 billion GVA contribution made by wholesale and retail in 2014, £30 billion can be attributed to the wholesale and retail of motor vehicles. The non-motor wholesale trade accounted for £57 billion, with retail accounting for £91 billion. This is shown in Table 7 in the Appendix.

Figure 2 illustrates how broader (non-motor) retail has been growing the fastest, at 4% per annum on average between 2012 and 2014. Growth in the motor trades averaged 3.5% while the wholesale trade has been a bit slower at 3.2%.

Figure 2: Average annual growth of wholesale and retail sub-sectors between 2012 and 2014



Source: ONS, Cebr analysis

Sub-sector analysis of manufacturing

There are many manufacturing industries but they can be categorised into about 12 segments. Table 8 in the Appendix shows that, in 2014, the manufacture of transport equipment was the largest sub-sector at £26.8 billion, closely followed by food products, beverages and tobacco at £26.6 billion. The production of metals is also significant, generating GVA in excess of £24 billion in 2014. The following sub-sectors are also significant:

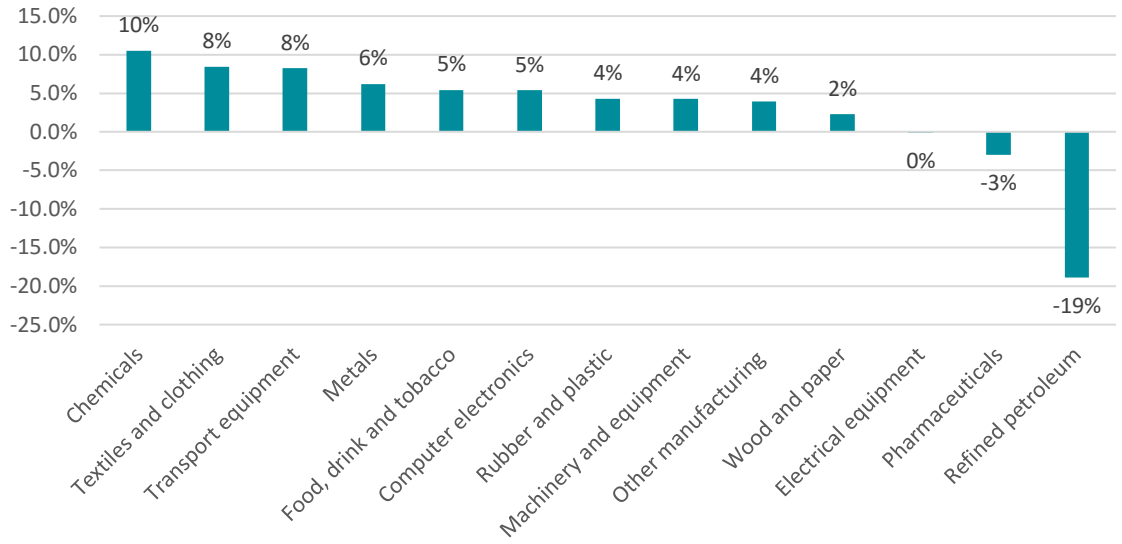
- Pharmaceuticals (£12.8 billion GVA in 2014);
- Machinery and equipment (£12.4 billion);
- Wood, paper and printing (£11.5 billion);
- Chemicals (£9.8 billion);
- Electronics (£8.6 billion); and
- Rubber and plastic (£8.2 billion).

Some of the smaller manufacturing sub-sectors include:

- Textiles and clothing (£6 billion);
- Electrical equipment (£4.6 billion); and
- Refined petroleum (£2 billion).

We also consider the average annual growth rate of these sub-sectors, as illustrated in Figure 3 below. There is some correspondence between size and growth, in that transport equipment is the largest but also one of the fastest growing, at an average rate of 8.3% per annum. The fastest growing sub-sector was chemicals, with average annual growth of 10.5%, followed by textiles and clothing at 8.4%. The production of metals has also witnessed significant growth. Pharmaceuticals and refined petroleum show declines over the period, most likely related to patents and global oil prices, respectively.

Figure 3: Average annual growth of manufacturing sub-sectors between 2012 and 2014

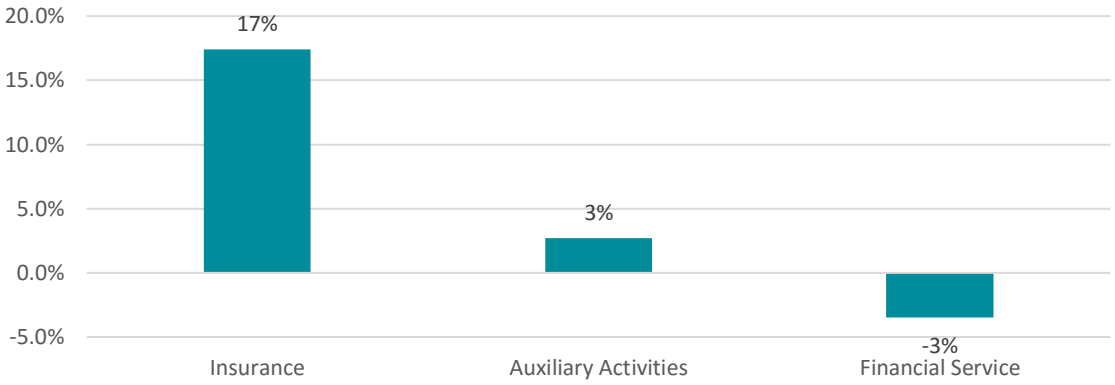


Source: ONS, Cebr analysis

Sub-sector analysis of financial services

Data on financial services remains patchy and, as such, the sub-sector breakdowns are not particularly interesting. But given the size of the sector, we though it worthwhile to note that insurance activities have been the fastest growing by far, at an average rate of 17% per annum between 2012 and 2014. Financial services – consisting mainly of banking – has shrunk by an average 3% per annum over the same period. This can be seen in Figure 4 below. However, they are still almost twice as large in terms of GVA contribution (£65 billion) as insurance (£36 billion) in 2014.

Figure 4: Average annual growth of financial services sub-sectors between 2012 and 2014



Source: ONS, Cebr analysis

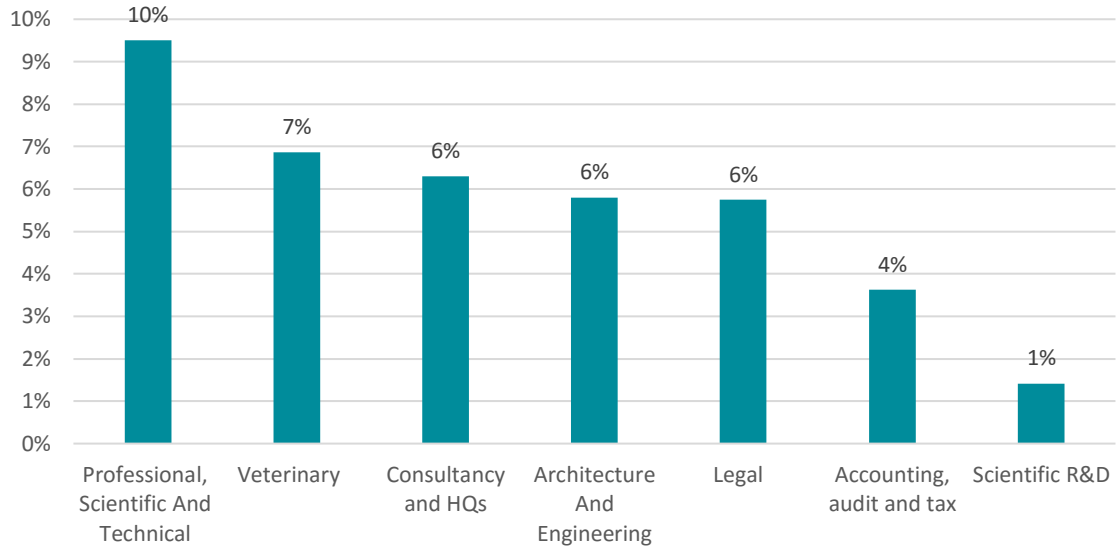
Sub-sector analysis of professional services

Table 10 in the appendix and Figure 5 below reveals the diverse range of activities included in the broad professional services sector. The **largest in 2014 was legal services**, with a £23 billion GVA contribution. This is **closely followed by architecture and engineering**, worth a £22.5 billion GVA contribution to GDP. The other contributors are:

- Activities of head offices (providing shared services for globalised businesses) and management consultancy (£18.3 billion GVA);
- Accountancy (16.8 billion);
- Scientific R&D (£8.8 billion); and
- Professional scientific and technical activities (£5.9 billion).
- Veterinary services (£2.8 billion).

Figure 5 illustrates the annual average growth rates experienced by these different categories of professional service activities. The two smallest sub-sectors (as listed above) have grown the strongest. Head offices, architecture and engineering and legal services have all maintained strong growth of 6% per annum. Growth in accounting and (especially) in scientific R&D has been more modest, at 4% and 1%, respectively.

Figure 5: Average annual growth of professional services sub-sectors between 2012 and 2014



Source: ONS, Cebr analysis

Sub-sector analysis of the creative industries

Table 11 in the annex provides GVA data for the individual categories of creative industry. **IT, software and computer services is the largest** with a £37 billion GVA contribution in 2014. The other more significant categories include:

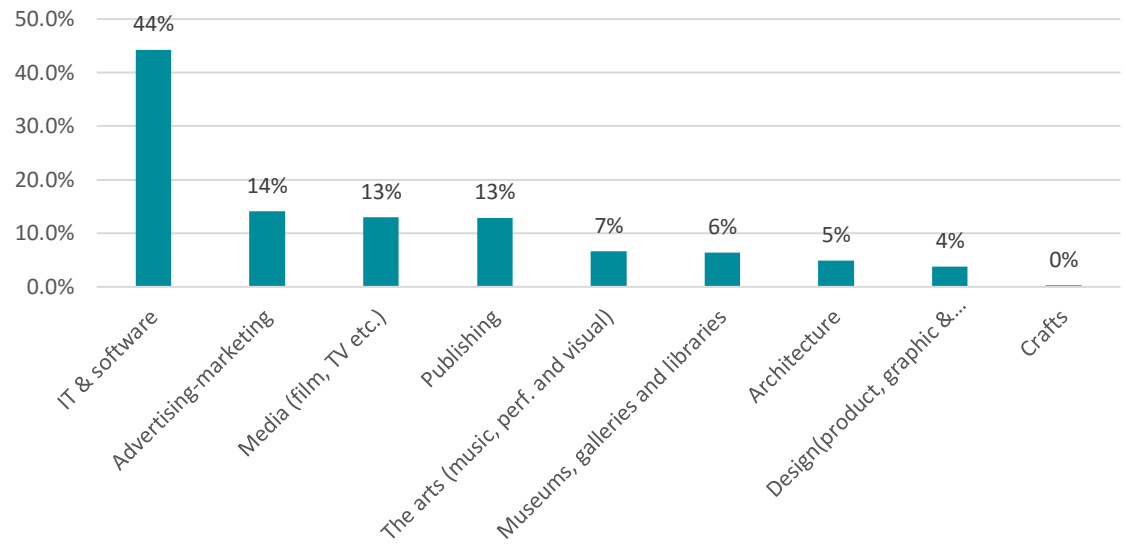
- Advertising and marketing (£13.3 billion GVA);
- TV and film production (£10.8 billion); and
- Publishing (£10.2 billion).

However, none of the creative industries can be ignored with many, although small, making important contributions to exports (the subject of the next section). The other categories of creative industry include:

- Architecture (£4.3 billion GVA);
- Design (3.2 billion).

The arts and cultural creative industries (museums, libraries and galleries and music, performing and visual arts), while making not insignificant GVA contributions, are probably more important as part of the UK's tourism offer, attracting visitors who spend much more in the UK than the price of engaging in these activities.[5]

Figure 6: Average annual growth of creative industries sub-sectors between 2012 and 2014



Source: ONS, DCMS, Cebr analysis

Sub-sector analysis of administrative and support services

Administrative and support services is another broad sector with a diverse range of activities. Table 12 shows office administration and support as the largest sub-sector at approximately £21 billion in 2014. It has also grown the fastest at 8% per annum between 2012 and 2014 (as shown below in Figure 7). This is an undoubtedly crucial industry for domestic and international businesses that want to establish a presence in the UK.

The sector also includes:

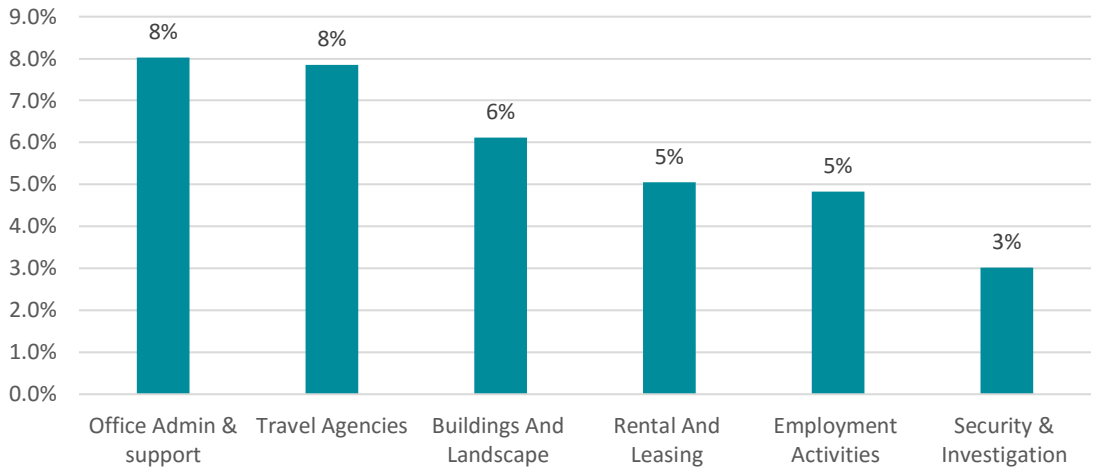
- Employment activities (£16.5 billion GVA in 2014);
- Rental and leasing activities (£15.5 billion);
- Travel agencies (£10.5 billion);
- Buildings maintenance and landscaping (£9.9 billion); and
- Security and investigation (£3.3 billion).

[5] The £3.3 billion estimate for museums, libraries and galleries is unique in that it did not come from DCMS. Rather, it is taken from the ONS supply-use tables, which provides GVA data for 'non-market' sectors.

Many of these sub-sectors are likewise vital in supporting exporting industries who need to travel, international businesses that want to invest in the UK, by establishing global HQs, locating offices or building factories here, all of which requires employment activities (to support recruitment of staff), rental and leasing activities, travel agencies, buildings maintenance and landscaping and security services (such as the porter of the office block or the night watchman on a building site).

The annual average growth rates of these sub-sectors are presented in Figure 7 below. Office admin and support services and travel agencies have been growing the strongest in the period 2012-2014. The other sectors have also demonstrated solid growth.

Figure 7: Average annual growth of admin and support services sub-sectors between 2012 and 2014



Source: ONS, Cebr analysis

2.3 The Flat White Economy

A few years ago Cebr identified a different cut for the UK economy. We could see a new component of the economy emerging – by chance just on our doorstep in EC1. It was an unexpected mix of the cultural and the creative sectors which cross-fertilised and drove each other. Because there was no SIC code classification we called it the Flat White Economy.

Virtually every tallying of the jobs associated with the Flat White Economy disagrees with the next because of inconsistent definitions. But my colleagues at Cebr have defined the sectors in the FWE as the "MIC": media, information and communications. These in turn comprise:

- Software publishing
- Computer programming and consultancy
- Data processing and websites
- "Other information services"
- Advertising
- Market research
- Television and film post-production

This sector accounted for 7.6% of GDP in 2012 and 8.7% of GDP in 2013. We estimate that the sector continued growing at an annual rate of 8% to 2015 but has grown more slowly – perhaps 5% in total this

year. On these estimates, the sector alone accounts for about 30% of GDP growth directly over the period and if knock on effects are taken into account, not far short of half the growth. We forecast that the sector will comprise 15.7% of GDP by 2025 which if it happens will make the sector the single largest sector of the UK economy. And if knock on effects are taken into account, the sector will drive about a third of the economy by then, or half the private sector of the economy.

2.4 Conclusions

This section began by ranking the broad sectors of the economy in terms of the size of their GVA contributions to UK GDP. We highlighted retail and wholesale, manufacturing and financial services as the top 3 broad sectors by size. After the non-market sectors of health and education, the next largest broad sectors are professional services, construction and the creative industries. After public administration (incl. defence), and ignoring for a moment all three non-market sectors, the top 10 market sectors are completed by administrative and support services, transportation and storage, real estate and food and accommodation.

The remaining market sectors include information and communications (excl. the creative industry elements), other service activities (like gambling, sporting events etc.), energy, mining, water utilities, arts and culture (excl. the creative industry elements) and agriculture.

However, we also suggested that, because some broad sectors include many diverse activities producing very different goods or services, it is worthwhile delving a bit deeper into these sectors. This was the purpose of the sub-sector analysis that followed. This, as expected, revealed interesting insights into the specific elements of the broad sectors that are the largest and the fastest growing and how data at the broad sector level can mask varying rates of growth at the sub-sector level.

Other than the non-market sectors - health, education and public administration and defence – all of the broad sectors featured in Table 1 above involve the production or provision of tradeable goods and services. However, some involve goods or services that it is not feasible or sensible to trade across borders, such as utilities, large parts of transport and personal services like hairdressing. The same is largely true of retailing and wholesaling, but the rapid growth of online retail has made things less clear-cut for at least the retail element of this broad sector.

Others are particularly conducive to trade across borders, in particular manufactured goods and creative, professional and financial services. This is another reason for the sub-sector analysis presented in this section, which provides background for the analysis of the various sectors' relationship with the EU, through trade specifically. However, some sectors are also dependent on different aspects of our relationship with the EU and the rest of the world. For example, the head offices sub-sector is driven by domestic and foreign direct investment by businesses looking to locate their global HQs in the UK. Likewise, several of the administrative and support service sub-sectors can be identified with staffing, maintaining and securing the office blocks and other premises that come with such HQ and other domestic and foreign direct investments. We also pointed to the importance of the arts and culture in attracting tourism spend to the UK from the EU and beyond.

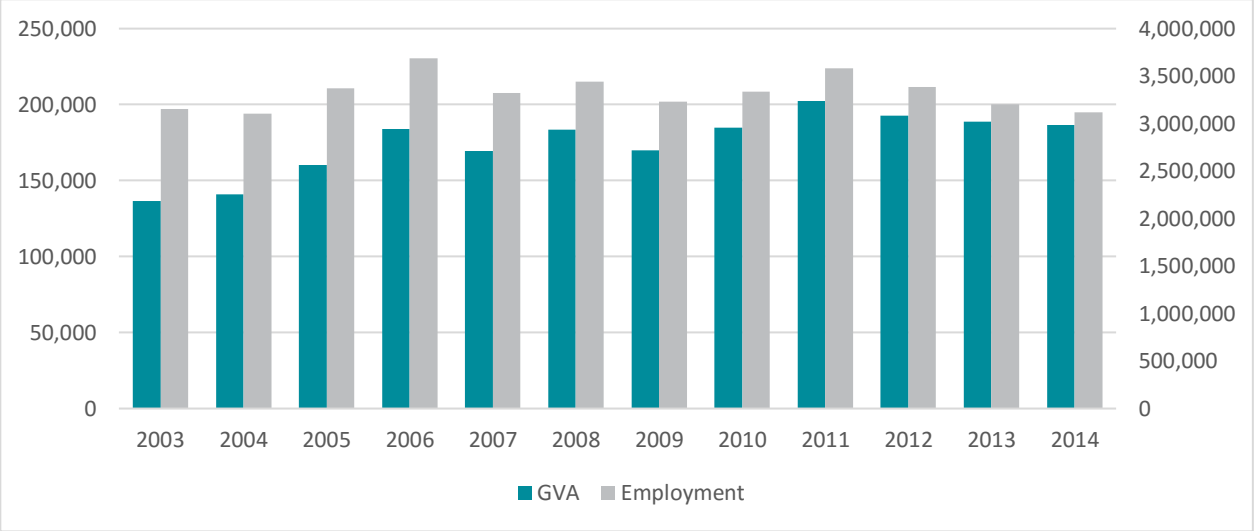
3 UK industry: review of relationship with and reliance on the EU

This section identifies the sectors that have benefitted the most from single market access up to now and which have the most to lose if equivalent market access is not secured in the upcoming negotiations. These are sectors for which exports to and/or imports (as inputs or competing products) from the EU are important but also those sectors that were expected to benefit from EU institutional efforts to deepen the workings of the single market, particularly in the area of services.

3.1 International trade with the EU

At an economy-wide level, Cebr estimates that in 2014 exports to the EU contributed £187 billion of GVA (including multiplier effects), equivalent to about 10.3% of UK GDP. This, we found, is sufficient to support an estimated 3.1 million jobs. The below graph demonstrates these numbers, and how they have evolved over time.

Figure 8: Annual GVA (left axis, £m current prices) and employment (right axis, employment) supported by exports to the EU-28, 2003-14



Source: HM Treasury, Cebr analysis

HM Treasury produced its own estimate of jobs that could be linked to trade with the EU in 2015, amounting to 3.25 million including direct jobs (1.90 million) and indirect jobs (1.35 million). We established an approximate breakdown of these jobs by broad sector, as presented in Table 2 below. This was informed by Cebr's modelling of the economic impacts of exporting to the EU in October 2015. We applied Cebr's industry sector shares of direct jobs linked to trade with the EU to HMT's estimates of direct jobs. We then used Cebr's input-output models to produce estimates of indirect jobs by mapping the supply chain links between the directly exporting sectors and the other sectors of the economy.

Manufacturing quite clearly has the largest number of jobs linked to trade with the EU in direct and in total terms. In terms of direct jobs, this is followed by wholesale and retail (which, according to the trade data in the supply-use tables, captures mostly the motor trades), financial services and professional services.

Table 2: Jobs linked to UK exports to EU countries, by sector

Sector	Direct jobs	Indirect jobs	Total jobs
Agriculture, forestry and fishing	42,410	42,880	85,290
Mining and quarrying	40,100	34,090	74,190
Manufacturing	565,500	376,210	941,710
Electricity, gas, steam and air-conditioning supply	140	6,590	6,730
Water supply; sewerage, waste management	20,950	10,580	31,530
Construction	2,870	20,470	23,340
Wholesale and retail trade, repair of motor vehicles	344,340	10,540	354,880
Transportation and storage	68,350	165,320	233,670
Accommodation and food service activities	101,000	27,440	128,440
Information and communication	95,080	86,720	181,800
Financial and insurance activities	216,730	60,500	277,230
Real estate activities	2,850	9,700	12,550
Professional, scientific and technical activities	180,840	219,800	400,640
Administrative and support service activities	139,000	223,490	362,490
Public administration and defence; compulsory social security	5,760	8,200	13,960
Education	22,480	23,460	45,940
Human health and social work activities	1,420	2,240	3,660
Arts, entertainment and recreation	43,350	9,890	53,240
Other service activities	6,830	11,880	18,710
TOTALS	**1,900,000**	**1,350,000**	**3,250,000**

Source: HM Treasury, Cebr analysis

The latter table and figure have been produced previously, but in this context, provides two useful indicators of the importance of exports to the EU – namely, the GVA contributions to GDP and the jobs supported by these exports. It is also useful to look directly at the value of this trade.

Table 3 provides estimates of the value of exports to and imports from the EU in each of the broad categories of goods and services, with these categories corresponding to the broad sectors of the economy. This is because trade data is only really provided at the product level. In the case of exports it is reasonable to assume that (most, if not all) exports of a particular good or service are produced by the corresponding sector, which has in the first place been identified as such because it specialises in the production of that category of good or service.

Imports of goods and services are a little less straightforward. They include the intermediate input demands of UK industry (about 60%) as well as the final demands of UK households, investors and government (the remaining 40%). Therefore, only a share of aggregate imports can be directly linked to the activities of UK sectors. The rest are the result of the demands of consumers for variety and choice, as well as the tendency for open economies like the UK to specialise in industrial activities in which they hold a comparative advantage.

Table 3: Exports and imports to the EU, by sector, £m

Product (≈ sector for exports)	Exports to the EU, 2014	Imports from the EU, 2014
Manufacturing	81,177	130,252
Wholesale and retail	24,610	209

Product (≈ sector for exports)	Exports to the EU, 2014	Imports from the EU, 2014
Real estate	24,610	526
Financial services	23,638	3,980
Mining and quarrying	10,873	21,924
Professional services	10,813	8,192
Information and communications	9,666	7,462
Transport	9,111	13,519
Admin and support	8,978	11,497
Accommodation and food	3,135	1,315
Water utilities	2,246	1,496
Arts, entertainment and recreation	2,019	2,344
Agriculture	1,288	5,370
Education	756	317
Other service activities	398	165
Construction	338	1,880
Public admin and defence	279	2
Energy	93	164
Health and social care	66	956

Source: ONS Pink Book and supply-use tables, Cebr analysis

The product categories are ranked according to the value of estimated exports to the EU in the table above. The table can be analysed by reading across the various product categories:

- The data suggest that the UK runs a fairly substantial trade deficit with the EU in manufactured products. However, it is also clear that the manufacturing sector, through the exports it sends to the EU, makes a substantial 16% contribution to aggregate UK exports, without which the UK's overall balance of trade and payments deficit would be significantly worse than it is today. But what is also clear is that the UK economy as a whole (including all its consumers, investors and industries) is heavily reliant on imports of manufactured products. The aggregate volume of trade (the sum of exports and imports) clearly points to a substantial trade relationship with the EU.

- The data also suggest that the UK runs sizeable trade surpluses with the EU in some other product categories, like wholesale and retail[6], real estate and financial services. It can likewise be concluded that without the exports sent by these sectors to the EU, the UK's overall balance of trade deficit would be a lot worse than it is today.

- The data also suggest trade surpluses with the EU in professional services and information and communications (both of which include significant segments of the creative industries), while deficits can be observed in mining and quarrying (likely driven by fossil fuel imports), transportation (likely driven by air travel) and agriculture.

However, whilst the analysis of trade surpluses and deficits with the EU across product categories is useful, the key points to take from the analysis are that:

[6] We suspect that surplus in wholesale and retail is likely driven by how motor vehicle exports and imports are recorded in the supply-use tables. Motor vehicle exports appear to be recorded under the motor trades (wholesale and retail), whilst motor vehicle imports are recorded against the motor vehicle manufacturing industry. These amounted to £48 billion in 2014, a good chunk of which will have come from the EU. If these motor vehicle imports from the EU were recorded against the motor trades, as with exports, the balance between exports and imports for both manufacturing and wholesale and retail would look a little different.

- The total volumes and value of trade with the EU are substantial, with an estimated 44% of aggregate exports going to and 53% of aggregate imports coming from the EU in 2015.[7]
- Large shares of the aggregate Gross Value Added (GVA) contributions (the subject of Section 2 above) of the key export sectors to UK GDP can be attributed to exports to the EU.
- UK industry relies on imported intermediate inputs from the EU, because they can be sourced cheaper there or because the UK does not hold a comparative advantage in their production (and is consequently specialised elsewhere).
- UK households and other purchasers of final goods and services (government, investors) are also quite heavily reliant on imports of these goods and services from the EU.

It is already apparent that there are close links between the broad sectors that matter the most to the UK economy in terms of size and growth (as presented in Section 2) and the sectors for which exporting to the EU is of vital importance. The purpose of the next section is to explore this in a bit more detail.

But it is also true that most, if not all, sectors (including the key exporting ones) rely to some extent on imported intermediate inputs (including from the EU) and that UK households, government and investors are also heavily reliant on imported final goods and services. Whatever the basis on which the UK and its sectors will be able to trade with the EU, if there is a change from the current situation, the effects can be expected to reverberate throughout the economy.

While some of this shock could be offset over time, through intermediate goods sourced from elsewhere in the world under new trading arrangements, the direction of UK trade policy outside of the EU customs union would also be uncertain. Importers and exporters could face tariffs regulatory divergence issues outside of the single market, while outside the customs union, exporters and importers could be hindered by rules of origin and border checks, even if the UK stays in the EEA single market. This could be expected to make both exporting and importing more difficult.

The analysis of trade at deeper levels of product categorisation is more involved, but suffice it to say, we have identified clear links between trade volumes in different product sub-categories and the size and growth performance of the important sub-sectors identified in Section 2.2 above. For instance, in manufacturing:

- Transport equipment manufacturing was identified as the largest of 12 manufacturing sub-sectors. This is also the case for exports of products in this category, with exports of transport equipment from the UK being valued at £61 billion in 2014.
- All of the other significant manufacturing sub-sectors correspond with strong export contributions, including food etc. (£19.6 billion exports in 2014), metals (£26.3 billion), pharmaceuticals (£21.4 billion) and machinery and equipment (£27.6 billion exports). But some of the smaller manufacturing sub-sectors are also important exporters, such as refined petroleum (£16.5 billion exports) and textiles and clothing (with £14.1 billion exports in 2014).
- Chemicals (£25.4 billion exports in 2014) and electronics (£23.1 billion) manufacturing are also significant exporters, which is consistent with their importance as sub-sectors to the economy (as outlined in Section 2).

[7] Aggregate data are timelier than the product-level trade data.

Likewise with the creative industries, for instance, with the most important sub-sectors also contributing strongly on exports, such as IT and software, advertising and marketing and publishing.

3.2 Sectors that were expected to benefit from single market deepening

In our previous reports, Cebr projected that the direct and indirect GVA contributions from exports to the EU would grow from £187 billion in 2014 to £234 billion by 2020 and to £277 billion by 2030. This was based on the assumption of continued single market access. If some equivalent form of market access is not secured in the process of negotiating the UK's new relationship with the EU, it is less likely that these projections would be realised due to the trade barriers that could define that new relationship.

And exports are just one example of the mechanisms through which the economy could be impacted, given the necessity of also considering imports (as above), tourism and foreign direct investment. For a foreign-owned business, after exporting to a new market like the UK, establishing a presence in that market through foreign direct investment is often the next logical step in establishing a presence in that new market. This is even more important when one considers the use of the UK as a launch pad for exporting to the much larger EU market.

Most, if not all, of the broad sectors of the economy were also expected to benefit – either directly or indirectly – through the various programmes that are being devised by the European Parliament to deepen the workings of the single market, particularly in the area of services. The nature and scale of these economic benefits (in terms of economic growth and job creation) were analysed in previous Cebr reports. Here, we summarise the programmes that have implications across many or all sectors, before identifying the sectors for which specific programmes have been devised. The more significant programmes with cross-sectoral implications include:

- The digital single market (DSM), the goal of which is to reduce transaction costs and improve consumer confidence and trust in cross-border e-commerce thus broadening its scope and extent. The beneficiary sectors were expected to include online retail, the manufacturers of the goods sold online as well as the producers and providers of digital goods and services. The latter includes large chunks of the creative industries, which were identified as a large, fast-growing and therefore important sector for the future of the UK economy. The boost in cross-border e-commerce was also likely to benefit the transportation and storage sector, given the distributional, logistical and postal services required for the delivery of the physical goods.

- Completion of the existing single market aims to boost cross-border trade in services, to dismantle remaining barriers to the free movement of goods, harmonising consumer law, improving information flows and cross-border public procurement. The key beneficiary sectors were expected to be those providing services that are tradeable across borders and that are already making significant contributions to UK exports, such as real estate, financial services, professional services and the creative industries. The manufacturing, retail, wholesale, transport and storage sectors might all have benefited from measures to remove remaining barriers to the free movement of goods. Harmonising information flows and cross-border public procurement could have helped level the playing field for UK businesses tendering for work abroad, in sectors as wide-ranging as construction, IT, professional services and artistic creation.

Specific programmes have been devised for:

- Completion of financial services sector reforms, including coordinated regulation and harmonisation of standards and the combined elimination of barriers and asymmetric costs was expected to yield

economic benefits through an increase in competition in the financial services sector itself and indirectly through all that use it (whether intermediate or final users).

- Deepening the single market in transport and tourism through transport route optimisation across the various modes, by improving the mobility of citizens and goods, by harmonising safety certification and increasing the efficiency of tourism sectors.

- Energy market reforms, which would have created the conditions necessary to facilitate the optimal allocation of generation and back-up capacity, through balancing supply and demand across the entire EU instead of separately within each nation.

Other programmes reflect priorities as diverse as common security and defence policies; a banking union and common deposit guarantee scheme; a capital markets union; optimal fiscal co-ordination; VAT reform and the tackling of tax evasion; and addressing the gender pay gap.

3.3 Linking sectors of economic importance to those reliant on our relationship with the EU

This subsection seeks to link data on how sectors of the economy rely on Britain's current EU single market membership with what was presented in Section 2 on the broad sectors of greatest economic importance. This is done with a view to providing insight in terms of the needs of which sectors should prioritised in any sector-by-sector approach to negotiating an FTA between the UK and EU.

We begin by summarising how the sectors rank on individual size measures – using aggregate GVA contributions to GDP, the value of trade with the EU and the amount of employment linked to exporting to the EU. We have excluded the non-market segments from our rankings (namely health and social care, education and public admin/defence).

It is clear from Table 4 that wholesale and retail, manufacturing, financial services and professional services all rank highly. We also note the importance of several other sectors such as construction, admin & support services and transport and storage. While manufacturing ranks highly in terms of trade given the high volume of goods flows between the UK and EU, mining and quarrying ranks highly on size of trade measure but less so on the trade growth measure, a picture that is likely to deteriorate further given the structural decline of North Sea oil and gas.

Otherwise we also observe the very strong presence of financial services in terms of trade volume, pointing to London's role in the EU financial economy. When looking at employment linked to EU trade, manufacturing once again scores highly, as do professional services and admin and support services, scoring higher than they did on the other size measures. But what is also apparent is that the rankings can change depending on the indicator being examined.

Table 4: Sector rankings by size

	GVA	Trade	Employment
1	Retail & wholesale	Manufacturing	Manufacturing
2	Manufacturing	Mining and quarrying	Professional services
3	Financial Services	Financial services	Admin & support services
4	Professional services	Real estate	Retail & wholesale
5	Construction	Retail & wholesale	Financial services
6	Admin & support services	Transport and storage	Transport and storage
7	Transport and storage	Admin & support services	Information and comms
8	Real Estate	Professional services	Accom. & food

	GVA	Trade	Employment
9	Accommodation & food	Information and comms	Agriculture
10	Information and comms	Agriculture	Mining and quarrying
11	Other service activities	Accom. & food	Water utilities
12	Energy	Other service activities	Construction
13	Mining and quarrying	Water utilities	Other service activities
14	Water utilities	Construction	Real estate
15	Agriculture	Energy	Energy

Source: Cebr analysis

Table 5 presents sector rankings by growth in GVA and by growth in trade with the EU. Manufacturing scores lower on these growth rankings, but this is more a reflection of the relatively high starting baseline levels (of manufacturing GVA and trade with the EU in manufactured products). We do however note that some of the lower performers in terms of trade volume do rather better on the trade growth indicator, notable in the case of energy and information and communications.

Table 5: Sector rankings by growth

	GVA	Trade
1	Energy	Admin & support services
2	Accom. & food	Professional services
3	Admin & support services	Information and comms
4	Transport and storage	Real estate
5	Real estate	Mining and quarrying
6	Professional services	Financial services
7	Construction	Other service activities
8	Manufacturing	Energy
9	Other service activities	Manufacturing
10	Agriculture	Agriculture
11	Retail & wholesale	Retail & wholesale
12	Financial services	Water utilities
13	Information and comms	Transport and storage
14	Water utilities	Construction
15	Mining and quarrying	Accom. & food

Source: Cebr analysis

Figure 9 below provides a high level overview of the relationship between the EU trade volume ranks of the different sectors versus their EU trade growth ranks. The UK's priorities need to be focused on maintaining access for existing important sectors, catering for industries that have exhibited high growth potential and sectors where underlying developments (due to the programmes designed at single market deepening) are expected to provide future growth. Almost all industries examined fall into one of these categories.

The illustration suggests that it is difficult to see a cogent relationship between trade size rank and trade growth rank. Within well-established economic relationships, one may find a pattern whereby high volumes suggest slower growth and hence these industries get outpaced by smaller but higher growth segments. However, as seen below, the lack of a discernible relationship means that it is (again) difficult to prioritise sectors. High volume sectors may still have considerable room to grow while some sectors may stay small, or they may grow large. So, it is difficult to draw firm conclusions about which sectors

policy-makers would seek to prioritise since each Cebr have analysed would suffer from a reduction of the market access they have today from within the single market. Current trading flows should not be simply "ring-fenced" for existing large sectors, as these may grow in the future too and require full access. Similarly some small sectors may grow, suggesting the need for negotiations to focus on these areas too, where they might grow in the existing single market areas as well as in new deeper areas. All of this lengthens the priority list, thus making the full access currently delivered through membership of the single market more important to seek to maintain. Whether that is possible within a free trade agreement approach is again highly uncertain.

Figure 9: Illustration of our multi-criteria ranking system for overall value and growth of trade by sectors/product categories with the EU

		Trade Rank														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Size rank		Admin & support services	Professional services	Information and comms	Real estate	Mining and quarrying	Financial services	Other service activities	Energy	Manufacturing	Agriculture	Retail & wholesale	Water utilities	Transport and storage	Construction	Accom. & food
1	Manufacturing									■						
2	Mining and quarrying					■										
3	Financial services						■									
4	Real estate				■											
5	Retail & wholesale											■				
6	Transport and storage													■		
7	Admin & support services	■														
8	Professional services		■													
9	Information and comms			■												
10	Agriculture									■						
11	Accom. & food															■
12	Other service activities							■								
13	Water utilities												■			
14	Construction														■	
15	Energy								■							

Source: Cebr analysis

Nonetheless, having considered all the simple rankings, a few things become apparent:

- Given the large size of manufacturing, its high export value and the large number of jobs linked to the single market, this sector is both important to the UK economy and relies significantly upon EU trade. The sector also scores in the top 10 for GVA growth and trade growth. Consequently, the industry has potential to lose out if equivalent market access to what exists today under single market membership is not secured in the upcoming negotiations.

- Another sector which stands out is financial services. The financial services sector is perhaps an obvious candidate for careful consideration, given its high profile and prominence within London, not to mention its sensitivity to regulatory barriers. The economic data further backs this viewpoint, given that it contributed GVA of £122 billion to the UK in 2014, exported £68 billion worth of goods and services in 2014, and has 277,000 jobs linked to exports to the EU. Financial services is the third biggest component of GVA and scores the third highest in terms of trade volumes with the EU. It also has the fifth highest number of jobs linked to the EU and achieved a top 10 rank in terms of trade growth.

- Cebr also believes that the creative industries are of significant importance to the UK, given their contribution of £87 billion in 2014 but also their impressive growth rate of an average of 8.7% per annum. The sector is not shown in the above rankings because trade data for the creative industries has yet to be isolated by either the ONS or DCMS. Instead, the rankings for the creative industries are captured largely within the information and communications and professional services rankings. As

such, their export value is likely to consist of a share of the estimated £64 billion exports of information and communications products, along with small shares of the export value of the some of the other broad sectors from which the creative industries are drawn. Many of the individual firms in the creative industries are likely also to be reliant on integrated European labour market access to attract new and diverse talent.

- The retail and wholesale sector ranks highly in terms of GVA and EU linked employment, but it does lag other sectors in term of trade and GVA growth. While some of this growth performance has been slightly modest – the sector does potentially have strong value going forward as part of digital single market developments, so the future growth potential needs to be carefully considered as part of the negotiations in order to ensure that the conditions necessary to facilitate the continued strong growth of online retailing in particular.

- Real estate ranks relatively high in terms of GVA and picks up a top five ranking in terms of trade volumes and trade growth. Real estate is largely driven by property price developments. The strategic concern here is that a loss of comprehensive UK market access could start to affect FDI flows that are important for commercial and residential property markets. Thus, real estate could not only be impacted through the exports it sends to the EU, but also through any negative impacts on FDI. Moreover, a slowdown in real estate markets could have much broader impacts on the UK economy, thus potentially affecting trade in other sectors.

- We have excluded healthcare and education from the rankings due to their mostly "non-market" status. These industries are however not immune to EU developments given the importance of European workers and students to these sectors.

- Similar labour supply effects should also be considered for sectors such as professional services and construction. However, professional services is likely to be directly impacted as well given its high ranking in GVA, EU-linked employment and trade growth. There is a possibility however that some of these services may have continuing market access if they are unregulated or unmonitored activities.

- Meanwhile, the transport and storage sector shows some prominence in terms of overall size with a number four ranking, and it also comes through in terms of trade and employment linked to trade with the EU – which is fairly intuitive given that several modes of transportation cross the borders between the UK and the EU, namely air, rail and sea transport. Trade access and general free movement principles are therefore also important for this sector. Other issues may also matter, such as participation in the EU customs union and the operational aspects of crossing borders.

Otherwise, we also noted a few sectors that show growth:

- Administrative and support services ranks as the top EU trade growth performer, even though their trade and GVA linked ranks are more modest.

- This is also the case with information and communications, which ranks in third place on trade growth but is only ranked number ten according to GVA size. The sector ranks in number seven in terms of jobs linked to EU trade.

- Mining and quarrying has a trade growth rank of five and an impressive overall trade size rank of two, despite its relatively low and declining GVA contribution. The dynamics here may however be undergoing some structural shifts due to the current supply-glut, overall rebalancing in global commodity markets and the structural decline of North Sea oil and gas.

- There is also expected to be new significant potential for cross-border energy markets given single market deepening. Within the above rankings energy scored highest in terms of GVA growth, though this may have changed somewhat following the steep energy price falls witnessed since 2014. However, the benefits of increased European competition and market integration could still be substantial. However, it is also the case that Britain's island status would make some of this market integration more practically difficult (and expensive) to achieve.

Strategically speaking, agriculture could also emerge as being significant given its links into the retail sector and the overall food value chain. Additionally, accommodation may be affected by free movement restrictions, while food services also has important links with agriculture and retailing.

To complete the picture, we present below composite rankings that combine GVA, GVA growth, trade growth and EU-linked employment effects into a single indicator. To achieve the composite rankings, we applied simple linear weights to the individual indicators. The result is an illustrative barometer of how focusing on different priorities can change the rankings. We note below that a 45% weight on GVA, combined with 20% weight on GVA growth, 15% on EU-linked employment and EU trade and 5% on trade growth produces the GVA-heavy ranking. Alternative rankings are provided – corresponding to Growth Heavy and Trade Heavy assumptions.

In the size (GVA) heavy and the trade-heavy rankings, the rankings are topped by manufacturing, wholesale and retail, administrative and support services and professional services. This is somewhat intuitive give the size of these industries. The composite trade heavy and growth heavy rankings, as well as the individual trade size and growth rankings above, are interesting in that they take account of the importance of imports from the EU, as well as exports to the EU. Noting that any conclusions drawn from trade data must be linked to products rather than sectors, these rankings provide an alternative view when the wider reliance of the economy on the UK's trading relationship with the EU through imports is taken into account.

We also note that within the trade heavy scenario manufacturing is still at the top, while on a growth heavy basis it gets overtaken by energy. These rankings also show financial services staying in the top five for trade and GVA indicators, along with professional services for all scenarios.

Table 6: Composite rankings of sectors

Rank	Composite Sector Rank (GVA Heavy)	Composite Sector Rank (Trade Heavy)	Composite Sector Rank (Growth Heavy)
1	Manufacturing	Manufacturing	Energy
2	Retail & wholesale	Admin & support services	Manufacturing
3	Admin & support services	Professional services	Admin & support services
4	Professional services	Retail & wholesale	Professional services
5	Financial services	Financial services	Retail & wholesale
6	Energy	Energy	Real estate
7	Transport and storage	Real estate	Transport and storage
8	Construction	Information and comms	Accom. & food
9	Real estate	Transport and storage	Financial services
10	Accom. & food	Other service activities	Construction
11	Information and comms	Agriculture	Other service activities
12	Other service activities	Accom. & food	Agriculture
13	Agriculture	Mining and quarrying	Information and comms
14	Water utilities	Construction	Water utilities
15	Mining and quarrying	Water utilities	Mining and quarrying

Source: Cebr analysis

Differences between rankings illustrate the difficulty in terms of establishing clear sector priorities. Although rankings show some consistency in terms of the prominence given to manufacturing, the wholesale and retail trades and financial services, there is still considerable dispersion in other sectors, making them highly sensitive to the choice of lead indicator chosen for the composite index – size (GVA), trade or growth.

It is likewise problematic for industries to be siloed or considered individually given the mutual dependence of sectors on each other as part of the UK macroeconomic value chain. Even if only low-ranking sectors lose out directly, this could impose negative spill over impacts on the higher ranking industries under a scheme of sector prioritisation.

The difficulty for policymakers in picking winners and losers is apparent. While we can get an accurate assessment of the current structure of the UK economy, we cannot foretell what forces of creative destruction have in store for either new or well-established industries. The unpredictability of the sources of economic dynamism suggests that it may be necessary to seek to treat all sectors equally, so as to avoid picking winners and losers on the basis of a prescriptive outlook on where economic growth is anticipated to come from in the future, a prescription that could turn out to be entirely wrong.

In conclusion, the central finding is that most, if not all, sectors are linked to the EU. There appears to be no single sector whose economic characteristics – whether GVA, growth potential of trade density – do not link closely to and benefit from trading within the EU's single market today. A sector-by-sector approach, which seeks to prioritise or choose 'winners' in isolation of others, therefore, cannot be achieved without the risk of creating 'losers' through reduced access and reduced future mutual benefits.

3.4 The importance of the Flat White Economy

The Flat White economy trades down phone lines and other communications links and is rather less subject to trade restrictions than trade in goods. However it has been hoping to benefit from the completion of the Digital Single Market with improved standards of regulation and trust. It does appear, however, that cultural issues are often the main trade barrier.

What the sector does depend on, critically, however, is immigration. Whereas for some sectors immigration is a matter of filling in specific shortages, for the Flat White Economy it is intrinsic to the sector as a raw material. The key element in the sector that drives its growth is creativity. The book The Flat White Economy showed how creativity was heavily correlated with migration and hence with a diverse labour force. All the key areas of growth of such economies around the world and especially in the UK have depended critically on the creativity stimulated by people with different ways of looking at problems caused by their diverse backgrounds. It is therefore essential for the sector that a high level of migration from the EU member states continues.

4 Regulatory and legislative implications

This section provides a review, from an economist's perspective, of EU regulatory frameworks that UK industry will likely need to continue to operate within if equivalent European market access is to be secured. We consider existing constraints and some of the new frameworks being introduced as part of efforts to deepen the workings of the single market, as outlined in the Cost of Non-Europe reports produced by the European Parliament. We would note that Cebr does not offer or provide legal advice and that nothing in this section should be construed as such. Nonetheless, from an economic point of view, compliance with these norms could be a pre-requisite given the inevitable trade-off between the acceptance of EU rules and single market access.

The more regulatory independence the UK tries to carve out, the more difficult it is likely to be for British firms to export to the EU. Furthermore, although the section below is framed in the context of regulatory compliance, it is also very important to note the potential impact of more general EU principles. Compliance with regulatory norms is thus likely to be a necessary but insufficient condition for the present level of single market access to continue. Therefore, the link between regulatory compliance and EU market access cannot be avoided, alongside other single market principles.

Another matter requiring careful consideration relates to control over rule-making processes. With Britain leaving the European Union, it is unlikely that the UK will still have a formal vote or the same level of input on new EU regulations and general frameworks. Britain's influence in EU rulemaking will, therefore, likely diminish and the UK's role will change from being an active party in the rulemaking process to one where the UK has to deal with laws, rules and regulations that are decided on by the remaining EU members. Within this context, the architecture of Britain's future relationship with Europe becomes even more significant given the different approaches applicable to non-EU EEA members, compared to FTA counterparties and countries trading under WTO rules.

4.1 Conceptual issues

It is important to note the nuance between form of market access and scope of access. We are assuming heavy scope - thus full access for UK sectors that currently rely on single market access, have shown dynamic growth or had been expecting to benefit from future single market developments. Nonetheless, that still leaves open the question of form. As such, whatever model is chosen is likely to reflect a symmetry between the level of obligations and commitments undertaken versus the degree of market access granted.

To provide an example, although the regulatory freedom that would result from being outside the EEA would mean the UK could design its own food labels, we would still need to abide by EU food labelling requirements when trading with the EU anyway. In determining future trade arrangements, policy-makers need to consider the balance between the perceived benefits of regulatory freedom and the downsides of regulatory divergence, such as having multiple production lines if the sector is a major trader with the EU. The fact is that, to a varying degree, every sector relies on EU market access, so regulatory freedom could be a costly ideal.

The key conceptual issues are outlined as follows:

- Comprehensive access could (assuming the EU agrees) take place via a trade deal providing varying degrees of access. The depth of any trade deal would however be subject to considerable uncertainty. Simple agreements can be quite modest, aimed at reducing or eliminating tariff barriers across different sectors. Deeper agreements can however be more ambitious (and potentially more complicated and lengthy to negotiate) – providing for the removal of some non-tariff barriers through

the creation of dispute resolution mechanisms and equivalence procedures to ensure the mutual recognition of standards if they come to be recognised as equivalent. While such equivalence could indeed decrease regulatory barriers between countries, one does still face similar broad constraints as with the current EU single market. In order for rules to be recognised as being "equivalent" they need to comply with similar thresholds and frameworks that exist now within the single market, so effectively the industry constraints could be similar, albeit with some limited flexibility. Furthermore, a free trade regime is unlikely to provide for complete equivalence measures across all sectors, and may for instance not include areas like financial services and banking.

- Access to the EU single market could also take place via a more fundamental single market framework whereby domestic legislation incorporates (or maintains) existing rules in addition to a mechanism that incorporates new legislation for those selected sectors. This could be done incrementally as in the Swiss arrangement or dynamically as with the EEA (which the model that at present delivers the greatest degree of market access).

- A third approach would be for the UK to pursue a WTO model. While tariff and non-tariff barriers would apply, the UK would (in theory) also have more freedom to decide regulations on a domestic basis. This sort of regulatory autonomy would however also result in greater trade barriers as goods produced for the UK economy would not automatically be compatible with EU standards and hence may face restrictions. Although tariffed and restricted access could still be possible for goods, regulatory burdens would also make exporting much more difficult for many service sectors.

Additionally, assuming access takes place via a shallow trade deal or the WTO model, it still leaves the issue of UK industry having to comply with single market rules when they export. Therefore, rule compliance might have to take place at a firm level rather than nationally. This architecture highlights the issue of non-tariff barriers as the EU would have to certify/validate that UK exports comply with their standards. But even still, compliance may end up being a de facto national constraint as the country's exporters may not find it feasible to run two different sets of specifications and instead opt for the stricter one (which in this case could be EU law). Otherwise, standards and rules could end up being mutually exclusive (what is specified in one is forbidden in the other) - resulting in further de facto trade barriers for certain exporters where it is not feasible to produce parallel types of product.

In the case of a shallow FTA or WTO access, there is also the possibility of unilaterally implementing all relevant EU laws into domestic legislation. Doing so may facilitate easier single market access for certain sectors like manufacturing, but this would depend on the EU's willingness to cooperate and it would still likely be subject to the same constraints noted above. There are however arguments in favour of this alternative, such as avoiding issues of regulatory duplication by ensuring that domestic firms produce to one set of standards, whilst also making it difficult for the EU to deny market access on the basis of compliance recognition. Aside from adopting all EU rules and regulations into domestic law, the UK would have to mirror ongoing EU regulatory developments to secure future benefits for important growth industries. However, the EU itself may still impose barriers to single market access.

If market access takes place via the EEA single market framework, European regulations would apply to the UK in much the same way that EU legislation, rules and regulations apply today. This model can be considered to be dynamic because, while it would require the UK to automatically adopt entire chunks of EU law, this is the model that would automatically guarantee the UK maximum market access with the fewest barriers (though notably not in agriculture and fisheries). Market access would consequently also be easier to secure for new industries and new growth areas where "new deals" would not have to be incrementally negotiated or new regulations "equivalated". Within the EEA, EU rules and legislation are applied to EEA countries (except for agriculture, fisheries, the customs union, trade policy, common

foreign and security policy, justice and home affairs and monetary and economic union)[8] but they do have some limited input on applicable rules.

Feedback can be provided by EEA countries early on in the development of legislation [9] as part of preliminary discussions by EU bodies. Furthermore, EEA countries are consulted on new legislation through the EEA Joint Committee and representation on some working groups, while informal diplomatic channels are also utilised with existing member states. Although (EEA member) Norway does have a theoretical veto over the application of relevant single market rules, it has never used it due to concerns that doing so could lead to a loss of market access in the areas to which those rules apply.[10] EEA members are also represented within the EFTA court (that can rule on EEA disputes) and the EFTA Surveillance Authority, which monitors compliance with EEA regulations that have been passed down from the EU.

As a note of caution though, it is prudent to point out that the EEA framework itself may change depending on Britain's post-Brexit trajectory. It is conceivable that over time a large economy such as the UK could manage to carve out a more customised status within that institutional architecture. The limited amount of influence held by Norway, Iceland and Lichtenstein is perhaps better seen as a starting point in terms of the UK's eventual ability to manage and influence the application of EU rules. With the future structure of the European Union and the Eurozone still subject to much uncertainty, staying in the EEA single market may have some additional economic option value for the UK, subject to future negotiating opportunities when the EU's eventual constitutional structure is being settled.

Rule-taking cannot simply be avoided by opting for comprehensive bilateral trade either. On a de facto basis, under a deep FTA the UK could end up being a rule-taker for industries where it wishes to secure access, in that an equivalence regime would need to reflect changes to existing rules and new rules introduced by the EU. The impact of not following through with this would again most likely come back to a loss of access. Importantly though, even if a trade agreement specifies regulatory equivalence on a bilateral basis, there would be strong economic incentives for the smaller economy to adopt rules that are equivalent to the larger economy due to the scale effects of trade that are likely to disproportionately benefit smaller markets that have less critical mass. Under a shallow FTA, the UK would have more regulatory freedom and might be less of a rule-taker, but at the cost of its firms having to independently comply with single market rules when exporting.

4.2 Existing EU legislation and single market compliance

Product regulations/standards

These are most intuitively relevant for the manufacturing sector, which in 2014 made a £164 billion GVA contribution to the UK economy and had almost one million jobs linked (directly and indirectly) to EU trade. However, regulatory impacts also touch upon the retail sector which makes an even bigger contribution of £177bn to the UK economy and includes 354,000 UK jobs that are linked to EU trade. Other relevant sectors include transportation and storage, IT and communications as well as energy and digital services, the future implications for which are contingent on future EU single market developments. The Low Voltage Directive, the Electromagnetic Compatibility Directive and Motor Vehicle Safety Regulation are a

[8] http://www.europarl.europa.eu/atyourservice/en/displayFtu.html?ftuId=FTU_6.5.3.html

[9] http://www.eu-norway.org/Global/SiteFolders/webeu/MeldSt5_UD_ENG.PDF#page=9

[10] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/504661/Alternatives_to_membership_possible_models_for_the_UK_outside_the_EU_Accessible.pdf#page=20

few examples of EU regulatory frameworks that the UK would be likely to need to comply with if it was to seek via a free trade agreement equivalent market access to that which exists today.

Financial regulations

These are primarily relevant for financial services and banking – a sector that is extremely important to the UK economy and stands to benefit from the EU's Capital Markets Union initiative. Aside from the single market framework that allows for key elements such as financial passporting, regulations are also relevant as part of potential equivalence measures where the EU may allow some access provided that UK regulations are judged to be equivalent to EU standards based on outcomes achieved.

Although this mechanism would be unlikely as part of a free trade arrangement, there are provisions in new EU MIFID 2 regulations that allow the EU to grant some access if it determined the UK's financial regulations to be compatible with its own. However, the equivalence process itself could turn out to be lengthy and may even be subject to political dynamics. Additionally, the granting of equivalence would in itself still not provide the same level of access for financial services that the UK presently enjoys. Furthermore, the granting of equivalence may be revoked if compatibility is not maintained, which could be a concern as legislation evolves.

Therefore, one way or another, the UK will be required to have a close regulatory relationship with the EU if it wishes to maintain substantial economic links with the single market for financial services. Within the European internal market, the importance of regulatory harmonization is partly underscored by passporting, allowing financial services firms authorised in one EEA member state to operate across the European Economic Area.[11] Single market rules are also important for the standardisation of processes, in order to avoid some of the prior-mentioned duplication issues. It is also worth noting that, within financial services, regulations represent the largest potential barrier to entry. A few examples of current EU legislation in this area are the Capital Requirements Regulation Directive, MIFID/MIFID 2 (harmonising regulations for investment services), and upcoming Capital Markets Union regulations to facilitate the extension of the single market.

Process regulations

These can be described as rules which govern various production processes within the single market. While they do overlap with other areas and can also be classified differently, these types of rules basically try to level the playing field by regulating production norms for the purposes of achieving product standardisation, ensuring a framework for fair competition while also touching on other areas such as consumer safety, worker safety and social norms. They will typically apply across industries and specify minimum standards in the production of goods or the provision of services. The impacts on industries such as manufacturing, retail, healthcare and construction are most apparent, but would likely cut across industries if the UK succeeds in maintaining full access to the single market.

Social Rules

The impact of EU social legislation may still be relevant under a couple of scenarios. It will be applicable if the UK retains EEA-style single market access. Under various free trade deals however, the impacts could turn out to be more indirect. While shallow free trade or WTO options would likely result in the UK maintaining a considerable amount of autonomy over policy in these areas, one has to consider the inevitable symmetry between the depth of access and EU rule compliance. Aside from the EEA, this can be

[11] http://www.bankofengland.co.uk/pra/Pages/authorisations/passporting/default.aspx

illustrated with the issue of regulatory equivalence, in that regulations may touch on social elements. Furthermore, there is a trend among free trade agreements to incorporate labour and social provisions – as seen in CETA and the TPP – thus providing a framework that domestic rules would have to comply with. Nonetheless, these sometimes include general provisions on principles and tend to focus on outcomes.

Rules on market access

Similar to the background framework referenced above, these rules would have to substantially apply in order to facilitate a level playing field for any sectors that are granted substantial access. The scope for compliance is of course greater if the UK opts to remain part of the EEA single market, but is still likely to feature prominently given the current proliferation of state aid, public procurement and competition principles embedded within deep or comprehensive free trade agreements. This again hints at the prior mentioned symmetry between the level of trade access and rule compliance.

Rules on market access may also emerge as particularly relevant for new single market frameworks such as the digital single market, capital markets union and transport initiatives. Rules of access in these areas are particularly relevant given that it will be necessary to break down national barriers if the single market is to be extended beyond its current scope.

Environmental

This mostly touches directly upon the energy sector, where efforts are being made to integrate markets in conjunction with measures to fight climate change. Given that the UK energy supply sector recorded average annual growth of more than 20% between 2012 and 2014, this could be an area where Britain would want to ensure future privileged access. Given the EU has bundled "Energy Union" along with "Climate" as a priority area, energy market participation may have to come coupled with measures to control greenhouse gasses. Regulations here would apply as part of the EEA, although many FTA agreements also contain environmental policies. Examples of applicable rules and frameworks include the EU Emissions Trading System, the Renewable Energy Directive and the Energy Efficiency Directive.

Unregulated services

With roughly 75-80% of UK GDP coming through services, this sector is enormously important for Britain. While the services pillar of the single market remains incomplete, it is worth noting that some services are unregulated and those products could continue to flow relatively freely between the UK and mainland Europe even under some trade restrictions.

Services such as management consulting, research and those offered by the creative industries may continue to flow relatively unhindered given their mostly unregulated status. If one attempted to restrict exports in these areas it would be difficult to track the actual flows and distinguish them from normal transactions within the domestic economy, given the international geographic integration of many companies and their largescale presence in the UK, especially in London and surrounding regions.

This is however caveated by the fact that many such service sectors rely on the free movement of labour and could be hampered if restrictions come through in this area. However, it is also the case that future measures such as the digital single market could hamper current freedoms on the flow of unregulated services, especially if the DSM is an attempt by regulators to catch-up with the fast-paced creative and digital sectors, such as through measures like licensing. Symmetrically though, the creative and digital sectors would have been expected to perform better due to the barriers to trade that the DSM seeks to break down. This highlights the strategic importance of market access, even for some of these more trade-resilient service industries.

Interestingly, some of the UK's services trade within the single market actually takes place via the free movement of people – especially the free movement of self-employed individuals, who are able to offer services. Therefore, the political intention to reduce EU migration substantially and rapidly may actually curtail the extent to which the UK could expect to benefit from single market access for some service sectors.

4.3 Future legislation: single market deepening

As it currently stands, the EU single market is incomplete. Out of the four pillars (free movement of services, people, goods and capital), progress is required in all areas for complete integration to be achieved. New legislation will need to be formulated in order to break down remaining national barriers. However, the most embryonic and underdeveloped pillar at presented is the free movement of services.

Given that barriers to trade in services tend to be regulatory or legislative, new EU legislation will be required in order to achieve real competition at a European level. The amount of legislation required will also be a function of the pan-European architecture that gets adopted – which could range from the creation of new EU-level regulators for key sectors to more modest ambitions that will see existing national regulators exist alongside one another as part of a European passporting framework whereby a license granted in one country is tantamount to full access across the single market, as is already the case in many financial services.

These new regulations are designed to have a liberalising effect on EU trade (especially in services) by breaking down national barriers. Any trade regime that gives the UK meaningful access to these new single market features would require adherence to relevant regulations. This could take place through single market membership or through deep FTA equivalence measures in some sectors (though probably not all). Given that we are mainly considering services, it would be very difficult and unlikely for Britain to meaningfully participate in these new areas under other trade arrangements. Additionally, the UK would face similar trade-offs as outlined earlier between compliance and depth of market access. Britain could opt for more regulatory independence but would face restrictions, which would have negative impacts on the economy and main sectors, as has already been highlighted in earlier sections.

Financial services

As has already been noted, financial services is of critical importance to the UK economy and will rank highly on Britain's priority list. Coincidentally, it is also one of the few areas in which considerable progress has been made in services as a by-product of the MIFID and UCITS regulations (among others) that have opened up the industry at a continental level.

Nonetheless, more progress needs to be made in areas such as capital markets, banking regulation, deposit insurance, bankruptcy procedures, and some of these interact heavily with Eurozone reforms.

Capital Markets Union – an initiative to facilitate cross border lending in the EU by directly linking savings to lending and by-passing traditional bank lending channels, which are still fragile after the financial and fiscal crises of recent years. It will provide for deeper integration across financial markets, potentially leading to more readily available financing at lower cost. Outside of the regulatory framework linked to the CMU, the UK would not be able to benefit from the gains it will generate.

MIFID 2 – legislation has already been passed, but is only set to be implemented in 2018. It is aimed at updating rules for regulating the operation of financial markets. Among other things, it is targeted at reducing systemic risk, tacking financial instability and increasing transparency within markets, especially Over the Counter (OTC) markets that are widespread outside of public stock exchanges and in financial

clusters like London. The framework includes further standardisation of instrument trading, investor protection, transparency, governance and third country access, thus helping to improve and deepen the single market for financial services. While the rules have mostly been ironed out and the legislation is currently being implemented, the UK may find itself without any say on how the legislation is tweaked, enforced or modified in future, but reliant on these rules to guarantee the market access our financial services sector requires. This could be especially true if the UK attempts, for example, to maintain London's access through equivalence measures.

Other Legislative Implications

- Shadow Banking Regulations – new regulations for money market funds specifying the institutional structures allowed in order to manage systemic banking risk. This is of acute concern for the UK funds management sector and also for the UK real economy given their widespread use versus traditional bank deposits. Therefore, the implications of applying new EU regulations could have far reaching impacts on the domestic UK economy. While much work has already been done on the framework for new regulations, the adoption and enforcement of new rules is still to take place and may even emerge after Britain's EU exit.

- Consumer Protection – the European Parliament has stated, "Consumer protection in the area of financial services should be strengthened and consumers' financial capabilities should be raised, given the significant potential detriment that financial services can cause to individual consumers and to the single market. Improved transparency and better informed transactions will result in better solutions for consumers and greater market efficiency." Therefore, this could be the framework for incoming legislative and regulatory changes, especially within retail finance.

- Pensions – future legislation in this area may have implications for the asset management sector and their respective investment strategies.

Digital Single Market

This relates to measures that would look at eliminating geographic fragmentation in digital markets. This sort of fragmentation primarily exists because of different licensing requirements across member states for the provision of key services such as media, subscriptions and communications. Furthermore, fragmentation is also aided by barriers in areas such as data protection, e-payments, VAT payments and e-privacy. Additionally, the sector is an economic priority for the EU as it seeks to find new growth industries for young people following recent economic difficulties across the Eurozone. We have listed below a few examples of legislative developments that could take place:

- Market access – setting out a framework whereby firms can operate on an EU-wide basis either through the creation of centralised licencing or some sort of passporting or regulatory equivalence mechanism.

- Development of digital standards that will even the playing field and facilitate intra-EU trade by eliminating non-tariff barriers

- Single market rules will need development for cheaper and less cumbersome cross border payments, intellectual property, privacy, security, VAT administration, delivery logistics and cloud computing.

- Furthermore, consumer protection legislation may come to be adopted - dealing with such things after sales care, reimbursement policies, complete information on products bought, online rights etc.

Energy

For historic and structural economic reasons, the EU energy single market remains incomplete. A large part of the reason for this comes back to the national privatisation policies, structural reforms and regulatory frameworks applied in energy markets, but the barriers to trade also run deeper. Given that European energy markets initially developed on a national basis, actual transmission and distribution infrastructure remains fragmented with interconnections between countries still lagging national grid developments.

Furthermore, market liberalisation remains uneven, with different countries applying inconsistent privatisation and market access policies. Policy fragmentation also occurs in other areas, such as renewables and the diversification of upstream energy production sources. Furthermore, EU member states still engage in national level thinking on issues such as security of supply and capacity margins, which may discourage integration initiatives. Therefore, legislative steps taken by the EU could be wide ranging – perhaps requiring not only compliance but actual strategic coordination and funding of new infrastructure. This is especially true when considering the EU's Energy Union in a strategic light as part of attempts to diversify supply away from Russia. Future legislation could also take place via additional environmental initiatives.

Transport and Tourism

Much like with energy, the historic development of European transport networks took place at nation state level. Furthermore the regulatory approach taken to key transport industries like railways tends to differ across member states, with different policies on issues such as privatisation, structural and regulatory reform or national infrastructure investment. Moreover, transport infrastructure sometimes faces hard border constraints where existing rail or road infrastructure ends or is inconsistently followed through by neighbouring countries. New standards for transport infrastructure interoperability, optimisation of EU air traffic control to save time and money (due to its current fragmented and duplicative structure) and the standardisation of statistics/information for European transport in order to facilitate investment planning are among the measures that could be introduced.

Appendix I: Sub-sector GVA data

Table 7: Size of retail and wholesale sub-sectors £m, by year

Sub-sector	2008	2009	2010	2011	2012	2013	2014
Retail	77,127	76,416	79,978	80,466	84,051	87,010	90,641
Wholesale	52,934	53,403	53,965	51,990	49,251	51,224	56,712
Motor trades	26,074	22,788	25,775	27,247	26,559	28,181	30,157

Source: ONS, Cebr analysis

Table 8: Size of manufacturing sub-sectors £m, by year

Sub-sector	2008	2009	2010	2011	2012	2013	2014
Transport equipment	18,573	16,493	18,231	21,351	20,658	24,519	26,804
Food, drink and tobacco	21,249	24,522	22,534	22,760	23,886	25,964	26,641
Metals	23,234	17,713	19,291	20,313	21,794	23,174	24,334
Pharmaceuticals	12,704	13,613	14,249	14,059	13,088	13,335	12,810
Machinery and equipment	10,630	6,694	9,262	10,995	11,016	11,509	12,437
Wood and paper	12,028	10,538	10,797	10,712	11,078	11,581	11,453
Other manufacturing	8,927	8,709	9,663	9,847	9,788	10,887	11,013
Chemicals	9,626	7,686	8,779	7,286	8,035	9,047	9,822
Computer electronics	6,988	7,049	7,568	7,379	7,916	8,218	8,630
Rubber and plastic	7,160	7,039	7,096	7,237	7,733	8,208	8,190
Textiles and clothing	4,230	3,412	4,601	4,707	4,844	5,775	5,956
Electrical equipment	4,887	4,097	4,517	4,648	4,681	4,752	4,624
Refined petroleum	2,536	5,854	4,446	4,207	3,769	2,094	2,054

Source: ONS, Cebr analysis

Table 9: Size of financial services sub-sectors £m, by year

Sub-sector	2008	2009	2010	2011	2012	2013	2014
Financial Service	67,998	82,529	75,941	72,290	66,833	68,095	64,802
Insurance	22,770	23,967	20,201	22,320	27,106	29,815	36,003
Auxiliary Activities	17,634	19,428	19,531	19,518	18,931	20,137	21,099

Source: ONS, Cebr analysis

Table 10: Size of professional services sub-sectors £m, by year

Sub-sector	2008	2009	2010	2011	2012	2013	2014
Legal	18,592	18,250	18,930	19,428	20,917	21,832	22,964
Architecture And Engineering	18,344	18,578	19,527	19,014	20,847	22,292	22,478
Consultancy and HQs	14,548	14,161	14,434	15,371	14,634	16,645	18,303
Accounting, audit and tax	13,664	14,097	14,568	15,092	15,713	16,358	16,791
Scientific R&D	9,844	7,933	8,266	8,479	8,713	8,375	8,825
Professional, Scientific And Technical	4,279	4,183	4,853	4,461	5,073	5,406	5,852
Veterinary	2,189	2,354	2,388	2,309	2,543	2,661	2,816

Source: ONS, Cebr analysis

Table 11: Size of creative industries sub-sectors £m, by year

Sub-sector	2008	2009	2010	2011	2012	2013	2014
Advertising and marketing	8,347	6,967	6,840	8,128	9,268	11,946	13,250
Architecture	3,565	3,205	2,638	3,235	3,480	3,718	4,326
Crafts	195	218	268	264	248	135	288

Sub-sector	2008	2009	2010	2011	2012	2013	2014
Design: product, graphic and fashion design	1,856	1,886	2,049	2,504	2,502	2,775	3,235
Film, TV, video, radio and photography	8,222	6,296	7,973	9,987	9,792	9,500	10,807
IT, software and computer services	26,018	26,403	26,991	27,672	30,713	34,055	36,578
Publishing	9,255	8,968	9,580	9,286	9,504	9,902	10,180
Museums, galleries and libraries	-	-	-	2,769	3,204	3,414	3,309
Music, performing and visual arts	3,740	3,779	3,434	4,184	4,492	5,163	5,444

Source: ONS, DCMS, Cebr analysis

Table 12: Size of administrative and support services sub-sectors £m, by year

Sub-sector	2008	2009	2010	2011	2012	2013	2014
Office Admin & support	14,329	14,580	15,015	16,465	17,696	19,243	20,753
Employment Activities	16,633	15,374	15,171	14,361	14,718	15,518	16,540
Rental And Leasing	13,099	12,770	13,434	13,357	13,905	14,169	15,467
Travel Agencies	6,943	7,170	7,241	8,396	9,399	9,823	10,522
Buildings And Landscape	7,571	7,451	7,958	8,295	8,959	9,683	9,901
Security & Investigation	2,575	2,618	2,825	3,050	3,311	3,371	3,327

Source: ONS, Cebr analysis

Table 13: All other sectors by sub-sector £m, by year

Sector	Sub-sector	2008	2009	2010	2011	2012	2013	2014
Agriculture	Crops & animals	9,037	7,500	9,406	9,054	9,141	10,341	10,211
	Fishing	468	472	582	489	506	529	615
	Forestry & logging	354	365	344	315	326	223	172
Mining and quarrying	Extraction of crude petroleum & natural gas & mining of metal ores	29,846	21,466	25,134	26,528	22,151	21,861	18,534
	Other	2,399	2,351	2,128	2,524	3,077	2,903	2,861
	Support services	2,889	3,211	2,134	2,669	2,811	2,406	2,286
	Coal & lignite	433	205	993	399	359	200	125
Energy	Electric power	10,754	17,152	9,795	9,032	14,591	16,786	17,821
	Gaseous fuels	3,938	5,144	5,513	4,945	5,750	6,955	6,990
Water utilities	Waste treatment	7,182	6,355	7,806	8,450	8,120	7,155	6,863
	Water supply	4,481	4,283	4,281	4,456	4,593	4,995	5,129
	Sewerage	4,469	4,602	4,614	4,842	4,815	4,683	4,712
	Other waste management	55	109	78	85	76	151	144
Construction	Construction	89,586	77,097	80,742	85,173	86,436	90,810	96,756
Accom. & food	Food and drinks	26,650	25,294	25,942	27,747	30,577	33,016	34,137
	Accommodation	9,794	9,624	9,085	8,982	10,334	11,814	12,820
Information and Comms	Telecommunications	25,882	26,295	24,738	25,436	25,986	27,976	29,094
	Information Services	4,466	4,359	4,675	4,855	5,062	5,331	5,697
	Computer programmeming & consultancy	8,938	6,601	7,321	10,812	7,639	5,652	5,608
	Media and entertainment	4,126	5,859	4,598	3,019	3,824	4,530	3,182
	Publishing activities	1,171	1,041	706	625	749	75	66
Real estate	Buying, selling, renting and operating	28,856	30,157	34,050	39,602	44,812	44,017	47,121
	Activities on a fee or contract basis	6,348	6,949	7,630	7,906	8,148	8,231	8,730

Sector	Sub-sector	2008	2009	2010	2011	2012	2013	2014
Public admin & defence	Public Admin & defence	73,347	76,702	79,337	79,249	80,314	80,654	81,325
Education	Education	89,157	92,603	94,766	96,169	96,733	97,962	98,765
Health & social care	Human Health	74,522	77,397	81,760	84,156	87,031	85,304	89,001
	Social Work	27,076	29,895	28,145	27,409	27,941	28,799	29,731
Other service activities	Gambling	10,172	9,097	8,407	9,268	9,800	9,950	10,212
	Sports & recreation	4,219	4,181	4,173	3,990	4,868	4,288	4,430
	Arts & entertainment	-376	337	1,190	589	759	497	699

Source: ONS, Cebr analysis