OXFORD ECONOMICS

The use of business services by UK industries and the impact on economic performance

Report prepared by Oxford Economics for the Business Services Association

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Executive summary

This report examines the use of business services in the UK, by sector of client, and the relationship between this use and the economic performance of these sectors. This study further analyses the use of 'business services' in the UK, as defined in a previous Oxford Economics report for the Business Services Association[1]. The activities covered include provision by UK businesses to other UK businesses of telecommunications and IT services, facilities management, business process outsourcing and construction-related services. The full definition also includes provision of these services, and of outsourced frontline public services, to UK government bodies, although government sector clients had to be excluded from the analysis of economic performance here. In this analysis, the relationship examined is between a sector's economic performance (variously measured) and its 'intensity of use' of business services, by which is meant the share of the total value of sector output accounted for by the cost of inputs of business services.

There are reasons to believe that higher intensity in the use of business services can improve economic performance. There are a number of ways in which productivity growth might be expected to be improved by more intensive use of business services. For example, where the level of intensity of business services use is high, we might expect to see productivity improvements related to faster adaptability to changes in demand or technological innovation. Equally, where intensity in the use of business services is growing over time, we might expect to see productivity gains related to greater specialisation. And we might, in turn, expect export performance to be enhanced by the competitive advantage of improved productivity growth.

Intensive users of business services have indeed enjoyed above-average productivity growth. Looking at performance over the period 1995-2013, there is clear evidence of a positive relationship between the level of intensity of use of business services and productivity growth. Across the 12 non-oil, non-public-type UK sectors, the five most intensive users of business services (in both 1995 and 2013) all exhibited above-average growth in productivity. There is also some more tentative evidence that productivity growth may be supported by a combination of high and rising intensity of business services use. The two sectors seeing the greatest rise in intensity over the 18 years – professional services and information & communication – also achieved productivity growth rates that were well above the average.

Faster productivity growth amongst intensive users of business services has driven faster GDP growth and has not been at the expense of jobs. The evidence does not, however, support the proposition, possibly believed by some, that productivity gains related to intensive use of business services can be achieved only at the expense of jobs. In fact there is strong positive correlation between intensity of use of business services and growth in total sector GDP, with the five most intensive users also being the five fastest-growing sectors. Indeed in four of these five, employment as well as productivity grew at an above-average pace over the 18 year period examined (with the number of jobs unchanged in the

[1] Oxford Economics for the Business Services Association, *The UK market for business services: the national, regional and constituency picture in 2013*, January 2015.

fifth). In addition, the two sectors exhibiting the greatest increase in intensity of use also achieved well above-average rates of GDP growth.

Improved export performance is part of this GDP growth story. The analysis also found evidence of a positive correlation between intensity in the use of business services and export performance. Out of the eight non-oil, non-public-type sectors with exports of some significance, the four most intensive users of business services were also the four sectors seeing the fastest growth in exports by value. In this case, there is clear evidence of a positive correlation between growth in intensity of use of business services and export performance, as well as between the level of intensity of use and export performance.

Government and business sectors have been increasing their use of business services, at a fairly similar pace. Before examining the relationship with economic performance, this report first examines basic patterns and trends in the use of business services, across clients of all kinds including government. It shows how, over the 18 years to 2013, both private and public sector organisations increased their use of business services, at a rate that outpaced wider economic growth. Total purchases of business services grew by 4.5% per annum, after adjusting for inflation, across the economy as a whole. Despite what might be expected given the apparent trend in the outsourcing of government functions, the split in the total market between private and public clients has remained broadly steady. In 2013, some 30.5% of business services were purchased by the government sector, and 69.5% by business sector clients. In 1995, the split had been 28.8%: 71.2%.

With a few exceptions, the pattern of use by business sector clients has also remained steady over time. Across the non-government sectors, there has also been only a limited variation in market shares, with the share taken in 2013 being similar to that taken in 1995 in the majority of cases. Exceptions to this include the professional services sector, which saw its share of total business service purchases grow from 5.9% to 10.6% between 1995 and 2013, and the manufacturing sector, whose share fell from 9.5% to 4.7%. In real terms, each of the 14 non-government sectors saw some increase in purchases of these services, with the fastest rates of growth seen by professional services clients (up 8.0% per annum), and information and communication sector clients (7.3%). By contrast, growth amongst manufacturers (0.5%) and in the agriculture and mining sector (0.9%) was slower than elsewhere.

Intensity of use of business services has risen over time for most sectors. Intensity of use of business services – purchases of these services as a share of total sector output – increased from 5.8% in 1995 to 8.9% in 2013 for the UK a whole. This intensity is markedly higher in the government sector than across the business sector, a disparity that has been reinforced over time. In 2013 this ratio was 19.4% for government (up from 13.7% in 1995) compared to 7.3% for businesses (from 4.8%). Amongst business sector clients, most industries shared in the rise in intensity, and the majority of those seeing only modest or no growth were already highly intensive users of these services in 1995. But two sectors were exceptional: professional services and information & communication were amongst the most intensive users in 1995 yet also saw the greatest rises in intensity subsequently. These two sectors, together with support services, financial services and real estate services, formed the ‘top five’ non-government intensive users in both 1995 and 2013.

1 Introduction

Over the past two decades use of business services[2] in the UK, by businesses and government, has increased at a significant pace, well ahead of growth across the economy as a whole. As a result, intensity in the use of business services – i.e. the ratio of inputs of business services to total output – has increased in most business sectors as well as across government service providers.

In principle, both a high level of intensity and increases in intensity might be expected to improve the economic performance of a sector of the economy, as measured by its productivity growth rate. A high level of intensity might, for example, make it easier for firms to adapt their ways of working to new developments – whether changes in the pattern of demand or supply-side changes such as the availability of new technology. Likewise, increases in intensity in the use of business services might bring additional advantages, for example, by allowing increased specialisation and associated efficiency gains.

This report examines whether such positive relationships between intensity in the use of business services and economic performance can be demonstrated in practice. It looks at how the use of business services varied between industrial sectors in 1995 and in 2013, and at how the pattern of use changed between those years, and then at the consequences of that for the pattern of intensity in the use of business services. It then examines whether there is a positive correlation between intensity of use and productivity growth performance across the sectors. Finally, it explores whether any productivity growth associated with business services use comes simply at the expense of jobs, or rather whether benefits to overall economic growth can be identified for the more intense users of business services.

[2] For the purposes of this report 'business services' has the same specific meaning as in a previous Oxford Economics report for the BSA (*The UK Market for business services: The national, regional and constituency picture in 2013*). See Annex 2.

Glossary and abbreviations used

ABS – Annual Business Survey – an official survey giving the turnover of UK industries at a detailed level.

Basic prices – a valuation net of taxes on products such as VAT.

Business services – the range of select service activities covered by this report, as set out in Table A2.1 in Annex 2.

Client sector – the sector of purchasers of business services. This report splits out government and business sectors, and splits the latter into 14 industrial sectors, as set out in Table A2.2 in Annex 2.

Employment – the 'workforce jobs' measure of employment, on a straightforward headcount basis.

GDP – gross domestic product – the total net value of goods and services produced by the economy or by an industrial sector. All GDP values in this report are measured at basic prices (a measure also known as gross value added (GVA) at basic prices). This is a little different to the 'headline' measure of GDP which is at market prices.

Industry or industrial sector – businesses and other providers of goods and services classified by type of output.

Input-output table – a table showing transactions between different sectors of an economy as well as the value of final outputs and consumption.

Inputs of business services – business services purchased by businesses and government for use in the production of other goods and services. Inputs of business services include all activities classified as business services for the purposes of this report, with the exception of local public transport services which are typically purchased by private households.

Institutional sector – providers of goods and services classified by ownership (private / public sector) and/or pricing practices (market / non-market / NPISH sector).

Intensity of use of business services – purchases of business services inputs by an industrial sector, as a percentage of the total value of that sector's output.

Intermediate consumption or intermediate demand – goods and services bought by one producer from another and then used up in the production process.

Market prices – a valuation inclusive of taxes on products such as VAT.

Market providers – businesses and other entities producing goods and/or services and selling them on a commercial basis.

Non-market providers – government sector entities producing services to be provided free at the point of use to final consumers.

NPISH sector – non-profit institutions serving households – private entities providing goods and services to households on a free or non-commercial basis, including charities, clubs and universities amongst others.

Output – the gross value of activity attributed to an industry, essentially the same as turnover.

Outsourced services – services typically undertaken 'in-house' in the past, but now provided by a separate private business. This can include services provided by one business to another as well as services provided by a business to a government body.

Public-type services – services classified to the 'public administration and defence', 'education', 'human health', 'residential care' and 'social work' industrial sectors. Most references in this report relate to provision of these services by private businesses rather than government bodies.

SIC – standard industrial classification. An official system for classifying businesses and other providers of goods and services into industries, at both broad and detailed levels, with each industry being given a numerical identifier. For example, 'services to buildings and landscape activities' form SIC sector 81 in the latest (2007) classification, while 'cleaning activities' within that form SIC sector 81.2. 'Services to buildings and landscape activities' form a 'two digit-level' industry while 'cleaning activities' form a 'three digit-level' industry.

Supply and use table – a more limited version of an input-output table.

Turnover – the value of an industry's sales.

Workforce jobs – the total number of jobs in the economy including self-employed jobs as well as employee jobs. The number of workforce jobs is a little higher than the headline 'employment' figure, which refers to the total number of people in employment (including self-employment), as some individuals have more than one job.

2 Trends in business services use by sector of client

In this chapter we set out how the turnover of the UK business services sector broke down in 2013, by sector of client, and how that position had changed since 1995.

Table 2.1 gives an overview of the results.

Table 2.1: Sales of business services by industrial sector of client

	£ billion at 2013 prices			As % of total		
	1995	2013	Annual % change	1995	2013	Change, percentage points
Total sales	119.0	262.9	4.5%			
Sales to government[1]	34.2	80.1	4.8%	28.8%	30.5%	1.7%
Sales to business	84.8	182.8	4.4%	71.2%	69.5%	-1.7%
Of which, by industry of client:						
Agriculture & mining	1.4	1.7	0.9%	1.2%	0.6%	-0.6%
Manufacturing	11.4	12.4	0.5%	9.5%	4.7%	-4.8%
Utilities	1.1	3.0	5.5%	0.9%	1.1%	0.2%
Construction	9.3	19.6	4.3%	7.8%	7.5%	-0.3%
Wholesale & retail	9.4	20.9	4.6%	7.9%	8.0%	0.1%
Transport services	6.7	11.5	3.1%	5.6%	4.4%	-1.2%
Accommodation & food	1.9	4.6	5.0%	1.6%	1.8%	0.2%
Information & communication	5.1	18.2	7.3%	4.3%	6.9%	2.6%
Financial services	13.3	27.2	4.0%	11.2%	10.3%	-0.8%
Real estate services	3.3	7.9	5.0%	2.7%	3.0%	0.3%
Professional services	7.0	27.8	8.0%	5.9%	10.6%	4.7%
Support services	9.0	17.4	3.7%	7.6%	6.6%	-0.9%
Public-type services[2]	3.0	5.3	3.2%	2.6%	2.0%	-0.5%
Recreational & other	2.9	5.2	3.3%	2.4%	2.0%	-0.4%

[1] Including the turnover of private providers of public transport services, although this mainly comprises sales to private households. This is in line with the previous treatment of these services as being part of the 'public realm'. [2] Private providers of services classified to the public administration, education, health, residential care and social work sectors.

2.1 Breakdown of sales by sector of client in 1995 and 2013

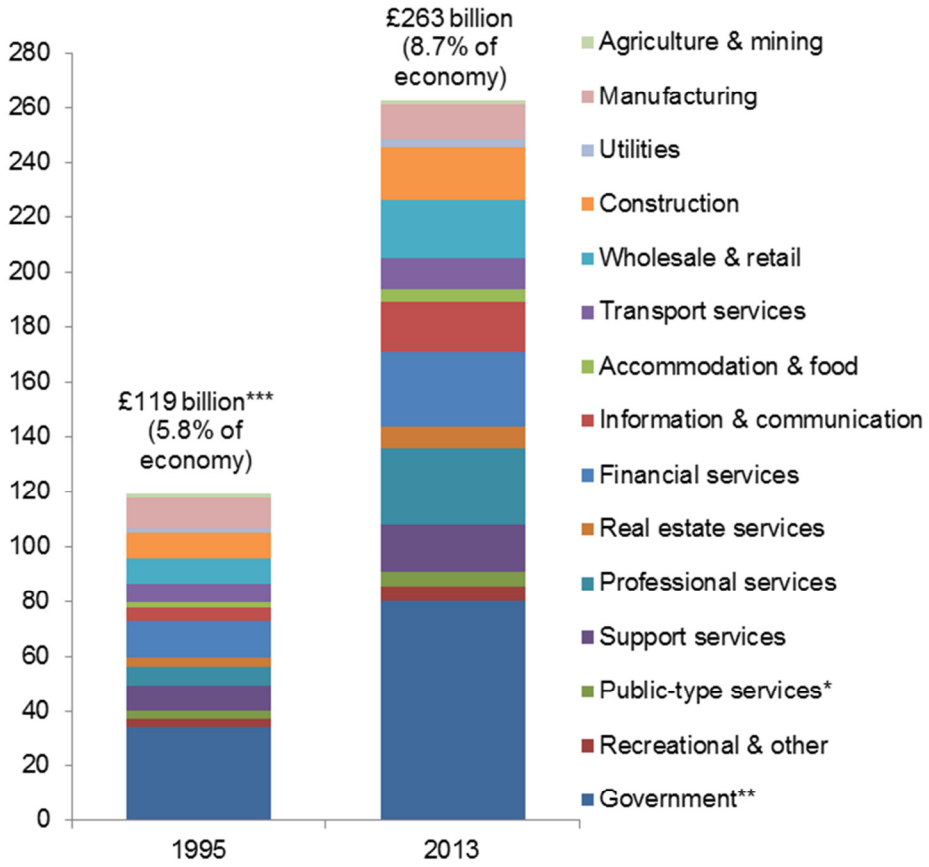
Chart 2.1 shows how the turnover of the business services sector broke down in 1995 and 2013, in terms of the industrial sector of the client, while Chart 2.2 shows how that translates into market shares.

In 1995, government sector clients accounted for 28.8% of business service purchases, and business sector clients for 71.2%. The most important business client sectors at that time were financial services (11.2% of total business services sales), followed by manufacturing (9.5%), wholesale & retail (7.9%), construction (7.8%), support services (7.6%) and

professional services (5.9%) The remaining eight business client sectors accounted for 21.4% of the market.

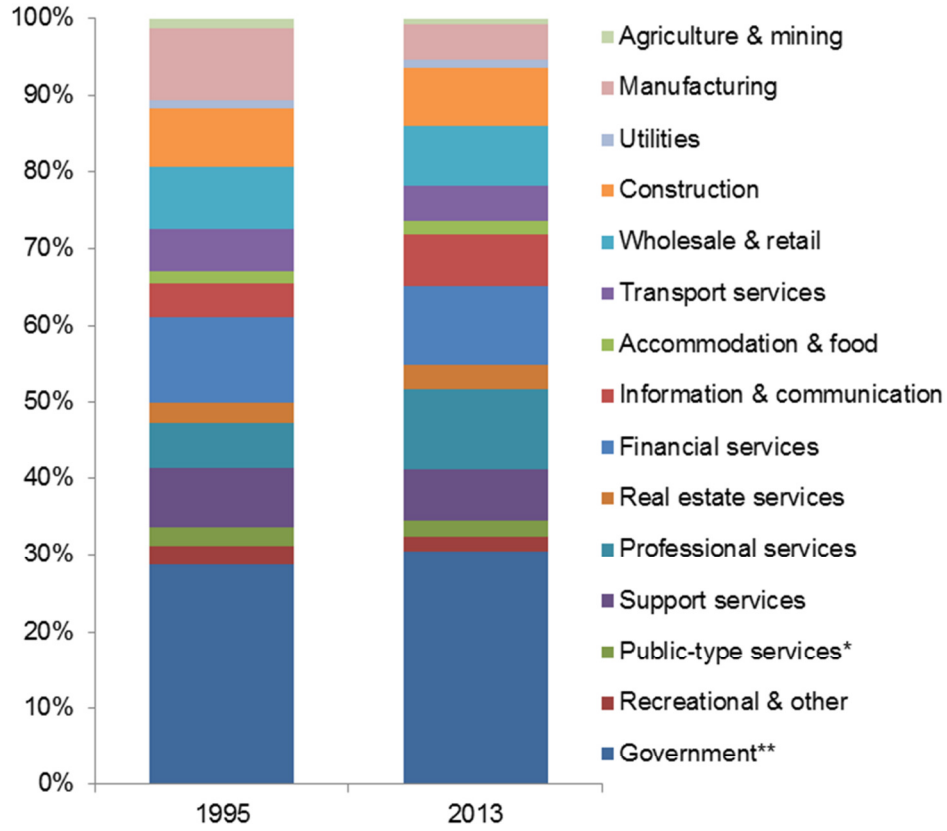
By 2013 the total size of the market was considerably higher, both in absolute real terms and as a share of the economy. But with the exception of professional services and manufacturing (and to a lesser extent information & communication), the pattern across the sectors was not dissimilar to that 18 years earlier. Government sector clients accounted for 30.5% of business services purchases in that year, and business sector clients for 69.5%. The most important business client sector was now professional services (10.6% of total business services sales), followed by financial services (10.3%), wholesale & retail (8.0%), construction (7.5%), information & communication (6.9%) and support services (6.6%). The remaining eight business client sectors accounted for 19.6% of the market, including manufacturing – the share of which had fallen to 4.7%.

Chart 2.1: Purchases of business services in 1995 and 2013 by sector of client



* Private providers of education, health, care and public administration services.
** Including local public transport services.
*** Valued at 2013 prices.

Chart 2.2: Purchases of business services in 1995 and 2013: sector shares



* Private providers of education, health, care and public administration services.

** Including local public transport services.

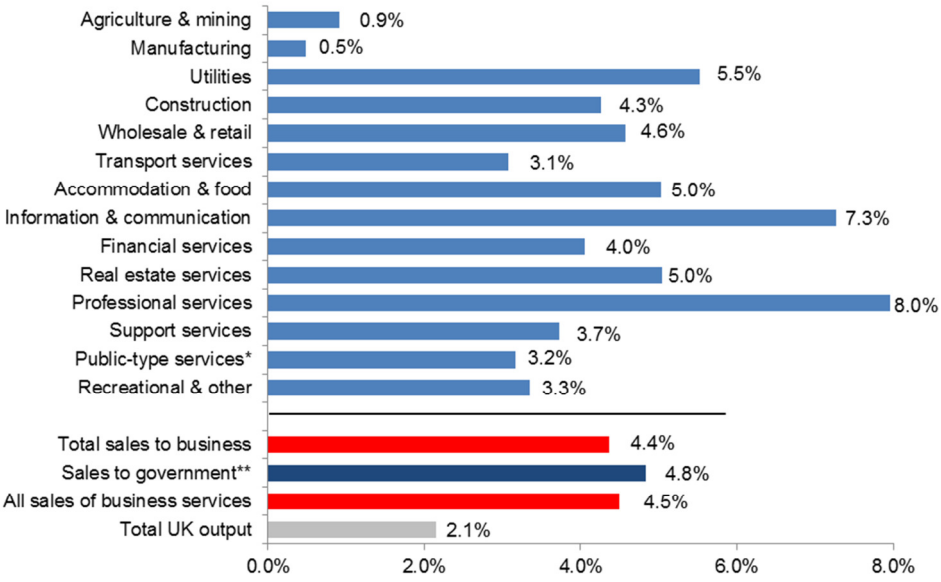
2.2 Changes and trends in business services use, 1995-2013

Chart 2.3 shows the annual percentage change in purchases of business services by client sector. The 1995 figures were revalued to 2013 prices using a measure of economy-wide inflation[3], so that the measure of overall growth is in 'real terms'.

Total sales of business services increased by 4.5% per annum in inflation-adjusted terms, well ahead of growth in economy-wide output of 2.1% per year. Sales to government grew faster than sales to business, at 4.8% versus 4.4%, although this difference is not particularly significant and possibly less than might be expected given the publicity surrounding the trend for outsourcing by public sector bodies.

[3] The deflator for economy-wide gross domestic product at basic prices ('gross value added at basic prices') was used. Changes in market shares shown may still, therefore, partly reflect shifts in relative prices, not just shifts in the share of activity in true 'volume' terms.

Chart 2.3: Real annual % growth in purchases of business services, 1995-2013



* Private providers of education, health, care and public administration services.

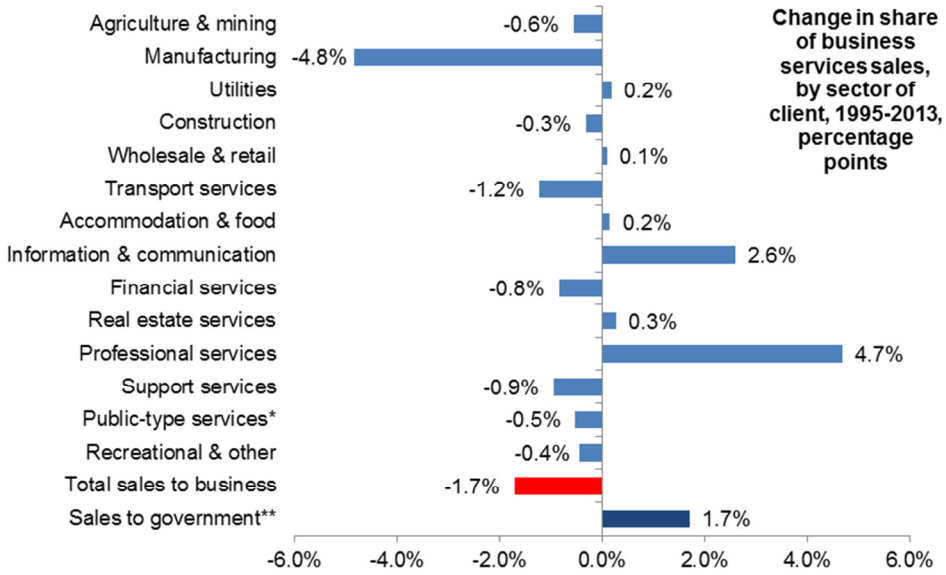
** Including local public transport services.

Amongst business clients the fastest rates of growth are to be seen in professional services (8.0% per annum), followed by information & communication (7.3%), utilities (5.5%), real estate services (5.0%) and accommodation & food services (5.0%). All 14 business client sectors saw some increase in purchases of business services in real terms, although growth amongst manufacturers (0.5% per year) and for agriculture & mining (0.9% per year) was markedly slower than elsewhere.

Chart 2.4 meanwhile shows the change in the share of the market resulting from these differential trends, measured by the absolute percentage point difference between the share in 1995 and that in 2013. It can be seen that the share of sales to government increased by 1.7 percentage points, at the expense of sales to businesses in aggregate. Strong growth in purchases by the professional services and information & communication sectors resulted in significant increases in those industries' share of the total market. But other than that there were no significant increases in share, with the growth rates for real estate services and accommodation & food services being only a little above the average, and utilities having seen above-average growth but from a very low starting point.

The very modest growth rate for manufacturing resulted in a significant reduction in that industry's share of the market, taking the sector down from the second most important non-government purchaser of business services in 1995 to the seventh in 2013. Transport services' share also dipped, as did that of support services and financial services – although in the last case this was from a high starting point and the sector was still the second most important non-government client in 2013.

Chart 2.4: Change in market share in percentage points, 2013 versus 1995



* Private providers of education, health, care and public administration services.

** Including local public transport services.

3 Trends in intensity of use of business services

In this chapter we analyse the intensity of use of business services, by which we mean the share of business services inputs in the total output of each client sector. For this analysis local public transport services are excluded from the measure of inputs into the government sector[4].

We again look at the situation in 2013 and compare it with that in 1995. Table 3.1 gives an overview of the results.

Table 3.1: Intensity of use of business services in 1995 and 2013

Inputs of business services as % of total output				
	1995	2013	Change in percentage points	Annual % change in intensity
Whole economy[1,2]	5.8%	8.9%	3.1%	2.4%
Government sector[2]	13.7%	19.4%	5.6%	1.9%
Business sector[1]	4.8%	7.3%	2.5%	2.4%
Of which, by industry of client:				
Agriculture & mining	1.9%	2.3%	0.5%	1.2%
Manufacturing	2.0%	2.7%	0.7%	1.7%
Utilities	1.6%	2.2%	0.6%	1.7%
Construction	7.1%	9.1%	1.9%	1.4%
Wholesale & retail	4.5%	6.6%	2.1%	2.2%
Transport services	5.3%	7.6%	2.3%	2.0%
Accommodation & food	4.3%	5.4%	1.1%	1.3%
Information & communication	7.3%	11.2%	3.8%	2.4%
Financial services	10.1%	10.7%	0.6%	0.3%
Real estate services[1]	8.6%	9.4%	0.7%	0.4%
Professional services	9.1%	14.6%	5.6%	2.7%
Support services	15.4%	14.6%	-0.9%	-0.3%
Public-type services[3]	2.9%	3.5%	0.6%	1.1%
Recreational & other	5.5%	5.8%	0.4%	0.4%

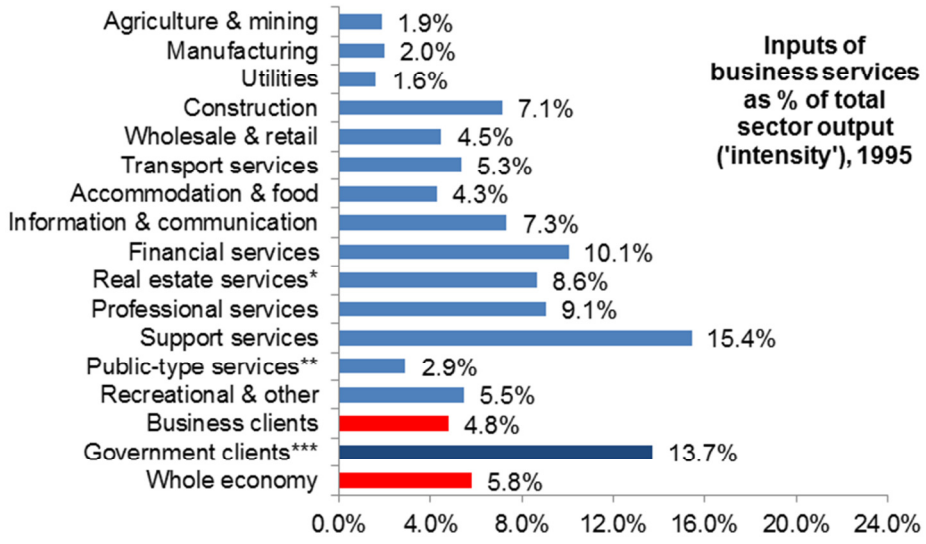
[1] Output excludes that imputed to owner-occupiers. [2] Local public transport services are excluded from inputs. [3] Private providers of services classified to the public administration, education, health, residential care and social work sectors.

[4] In addition, output imputed to owner occupiers is excluded from all measures of output, so that the measure of intensity in the real estate sector is not 'diluted' as would otherwise be the case.

3.1 Intensity of use in 1995 and 2013

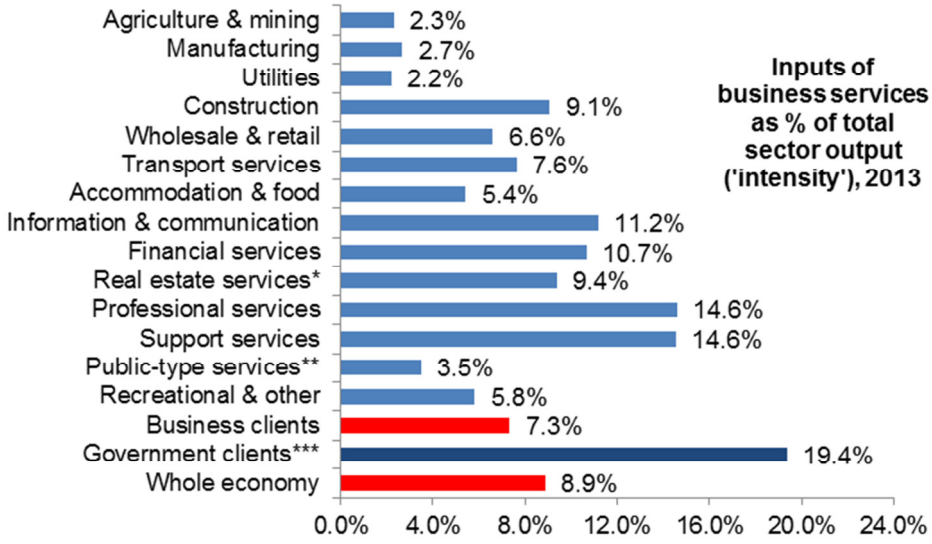
Chart 3.1 shows intensity of use in 1995 while Chart 3.2 shows the more recent, 2013 picture.

Chart 3.1: Intensity of use of business services in 1995, by sector



* Output excludes that imputed to owner-occupiers. ** Private providers of education, health, care and public administration services. *** Inputs exclude local public transport services.

Chart 3.2: Intensity of use of business services in 2013, by sector



* Output excludes that imputed to owner-occupiers. ** Private providers of education, health, care and public administration services. *** Inputs exclude local public transport services.

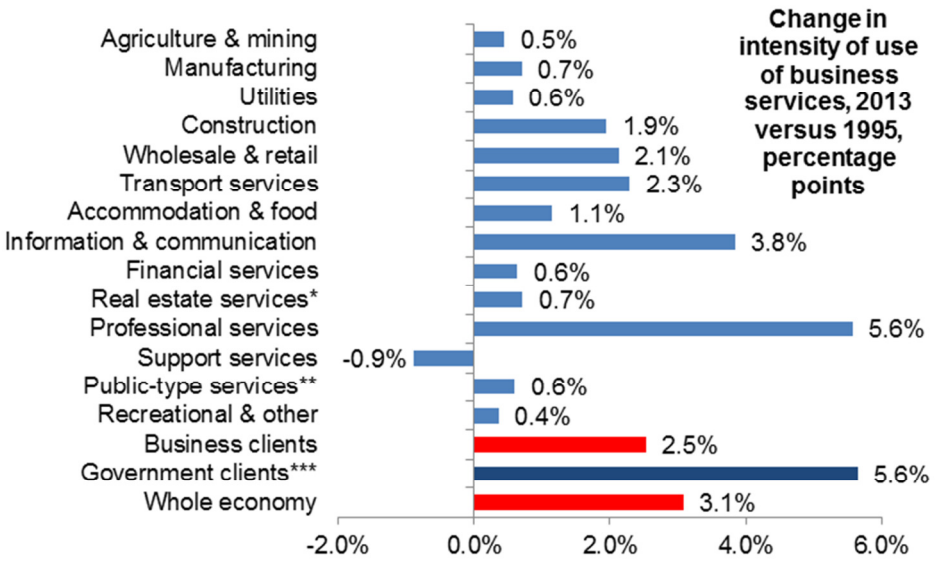
In 1995, business service inputs accounted for 5.8% of economy-wide output, with intensity in the government sector at 13.7% and that across the business sector as a whole at 7.3%. Within the business sector, intensity of use of business services was highest amongst support services (15.4%), followed by financial services (10.1%), professional services (9.1%), real estate services (8.6%) and information and communication (7.3%).

By 2013, business services inputs accounted for a significantly higher 8.9% of total UK output, with intensity in the government sector (19.4%) remaining clearly higher than that across the business sector as a whole (7.3%). Within the business sector, intensity of use of business services was highest amongst professional services and support services (both 14.6%), followed by information and communication (11.2%), financial services (10.7%) and real estate services (9.4%). The five most intensive business sector users of business services were, therefore, the same as 18 years earlier, although there were some changes in ranking amongst them.

3.2 Changes and trends in intensity of use, 1995-2013

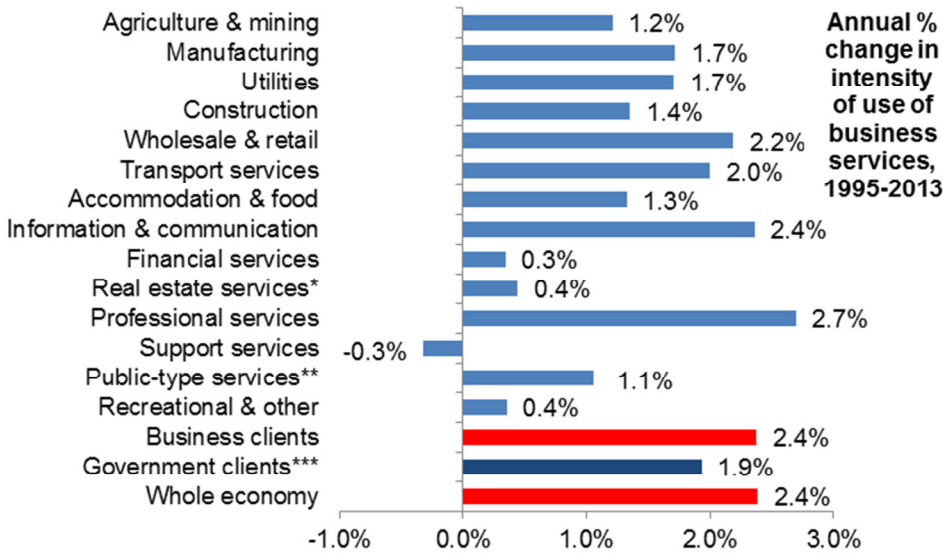
Chart 3.3 shows the absolute change in intensity of use for each sector between 1995 and 2013, in percentage point terms, while Chart 3.4 shows the proportionate change in intensity, set out in per cent per annum terms. The absolute increase in intensity is shown to be greater amongst government clients than amongst business sector clients, although intensity increased at a slightly faster rate amongst business sector users, for whom the starting point was much lower.

Chart 3.3: Absolute change in intensity of use, 1995-2013, percentage points



* Output excludes that imputed to owner-occupiers. ** Private providers of education, health, care and public administration services. *** Inputs exclude local public transport services.

Chart 3.4: Proportionate change in intensity of use, 1995-2013, % per annum



* Output excludes that imputed to owner-occupiers. ** Private providers of education, health, care and public administration services. *** Inputs exclude local public transport services.

Within the business sector, the fastest rates of increase in intensity can be seen in professional services and information and communication, with this being sufficient to ensure that these two sectors also enjoyed the greatest increase in intensity in absolute percentage point terms. The support services sector was the only industry to see a fall in intensity, although this was from a high starting position. Intensity increased at a very modest pace for financial services, real estate services and recreational & other services, although the first two of these sectors started from a comparatively strong position and they have remained in the 'top five'. For the remaining eight sectors, intensity increased at rates in the 1.1%-2.2% per annum range, resulting in absolute increases in intensity of between 0.5 and 2.3 percentage points.

In conclusion, there has been a significant increase in intensity of use of business services since the mid-1990s. Most sectors have shared in that increase, while the majority of those seeing only modest or no growth were already highly-intensive users. Two sectors stand out, however, namely professional services and information & communication. These were already amongst the most intensive users of business services in 1995. But they also saw the fastest and greatest increases in intensity, out of the non-government sectors, over the following 18 years.

This pattern of change meant that the five most intensive non-government users of business services in 1995 remained so in 2013. The next chapter sets out to examine the impact of this pattern on the relative economic performance of the various industrial sectors.

4 Intensity in the use of business services and economic performance

This chapter sets out the economic performance of the 12 non-oil, non-public-type sectors in terms of productivity growth and GDP growth over the 18 year period, and assesses whether this is correlated with intensity of use of business services at the start of the period, intensity of use at the end of the period, the proportionate rate of growth in intensity over that time, and/or the absolute change in intensity recorded.

It also derives some conclusions for the apparent impact on jobs, and assesses – based on an analysis of eight of these sectors – the correlation between intensity and export performance.

Three sectors were excluded from this part of the analysis:

- Government clients, due to the lack of separation in the by-industry real GDP and jobs datasets used between government and business service providers, plus other known difficulties in terms of measuring real GDP and productivity growth for these non-market activities.
- Private providers of public-type services, for the first of the reasons above.
- Agriculture and mining, due to the overwhelming influence of the long-term decline in oil production on that sector's GDP performance.

In addition, four further sectors were excluded from the export performance analysis:

- Utilities, construction, wholesale & retail and real estate services, as exports are not significant for any of these sectors due to their intrinsic nature.

4.1 Intensity and productivity growth performance

Chart 4.1 shows the correlation between intensity of use of business services in 1995 and productivity growth over the subsequent 18 years (where productivity is real GDP per workforce job in each sector). A positive relationship is apparent, with the five most intensive users of business services in 1995 all being amongst the six sectors subsequently enjoying the fastest productivity growth. The line on the chart shows the simplest statistical relationship between the two measures across the 12 industries. It suggests that, for every percentage point by which intensity of use of business services was higher in 1995, productivity grew 0.12% per annum faster over the subsequent 18 years.

This is consistent with the view that high intensity of use of business services, in level terms, facilitates faster productivity growth subsequently, for example by making it easier to reconfigure the business operating model in response to shifts in the pattern of demand, or to make the best use of technological advances.

Further statistical analysis suggests that – as might be expected – intensity in the use of business services at the start of the period can only explain a comparatively modest amount of the variation in productivity growth between the sectors. But the relationship between the two measures alone is still judged to have some significance.

Chart 4.1: Intensity of use in 1995 and subsequent productivity growth

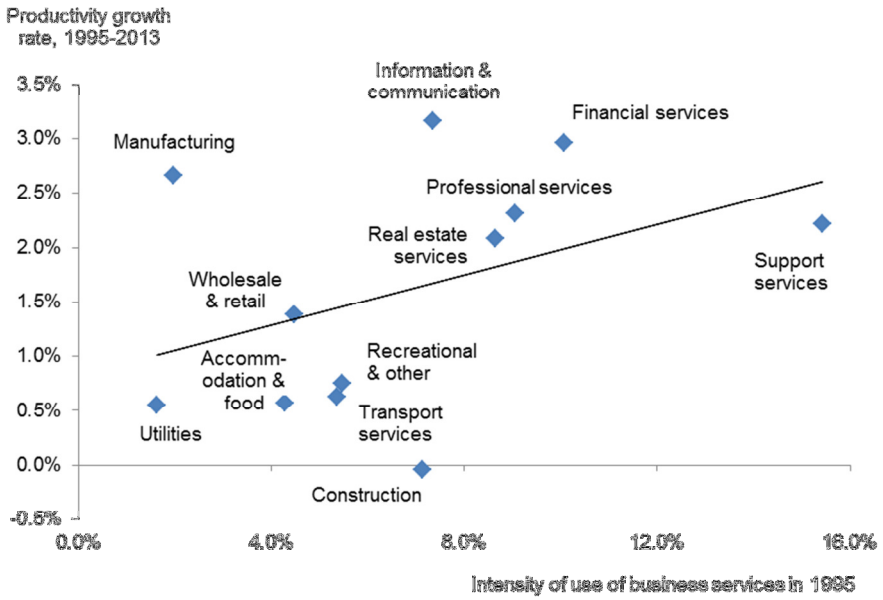
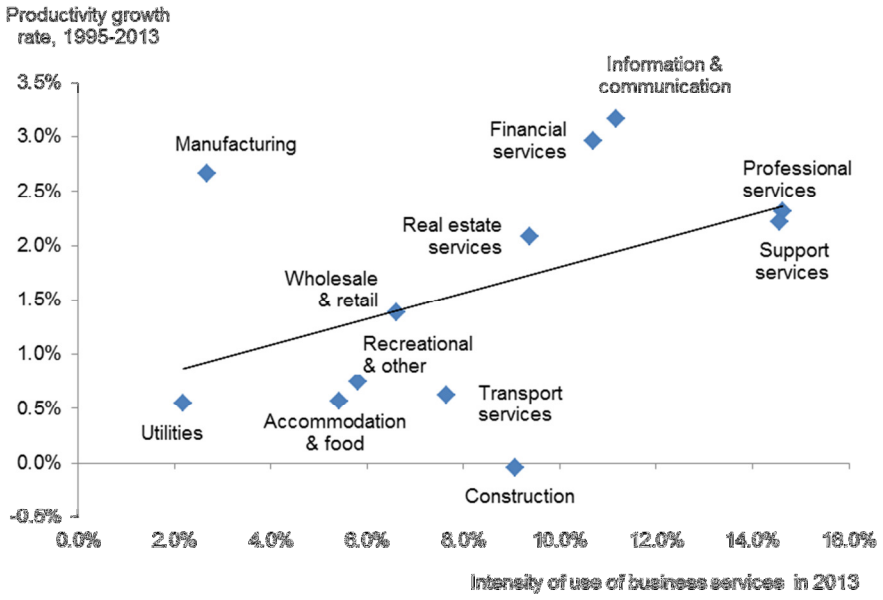


Chart 4.2 meanwhile shows the correlation between intensity of use of business services in 2013 and productivity growth over the 1995-2013 period. A positive correlation is again apparent, with the five most intensive users of business services at the end of the period all being amongst the six industries with the fastest productivity growth. (They are the same five sectors as in 1995.) Here, for every percentage point by which intensity of use of business services was higher in 2013, productivity grew 0.12% per annum faster over the prior 18 years.

Chart 4.2: Intensity of use in 2013 and prior productivity grow



Although the apparent boost provided to productivity growth is almost exactly the same for intensity at the end of the period as for intensity at the start of the period, further analysis

shows the former relationship to be statistically slightly stronger. As intensity at the end of the period can be thought of as a combination of the level of intensity at the beginning and subsequent growth in intensity, this is potentially consistent with the view that productivity growth is supported by a combination of high and rising intensity. It may be that high intensity in level terms has at least one type of positive effect (such as that described above), and growth in intensity at least one other type of effect (e.g. by delivering efficiency gains, due to greater specialisation from the outsourcing of services previously carried out in-house).

When change in intensity over the period is looked at in isolation (on either measure), no statistically significant impact on productivity growth can be demonstrated across the 12 sectors as a whole. But the two industries with the greatest and fastest rises in intensity – professional services and information & communication – both enjoyed above-average productivity growth.

Table 4.1 summarises the results of the productivity growth analysis. The 12 sectors are listed in order of productivity growth performance and the top five in terms of intensity or change in intensity are highlighted.

Table 4.1: Intensity of use of business services and productivity growth

	Annual % change in GDP per job (productivity), 1995-2013	Intensity of use of business services in 1995	Intensity of use of business services in 2013	Absolute change in intensity, 1995-2013, % points	Annual % growth in intensity, 1995-2013
Information & communication	3.2%	7.3%	11.2%	3.8%	2.4%
Financial services	3.0%	10.1%	10.7%	0.6%	0.3%
Manufacturing	2.7%	2.0%	2.7%	0.7%	1.7%
Professional services	2.3%	9.1%	14.6%	5.6%	2.7%
Support services	2.2%	15.4%	14.6%	-0.9%	-0.3%
Real estate services	2.1%	8.6%	9.4%	0.7%	0.4%
Wholesale & retail	1.4%	4.5%	6.6%	2.1%	2.2%
Recreational & other	0.8%	5.5%	5.8%	0.4%	0.4%
Transport services	0.6%	5.3%	7.6%	2.3%	2.0%
Accommodation & food	0.6%	4.3%	5.4%	1.1%	1.3%
Utilities	0.6%	1.6%	2.2%	0.6%	1.7%
Construction	0.0%	7.1%	9.1%	1.9%	1.4%
Average of above sectors	*1.6%*	*5.1%*	*7.7%*	*2.7%*	*2.4%*

Five highest ranking sectors highlighted for each measure of intensity or change in intensity.

4.2 Intensity and GDP growth performance

This section assesses the relationship between intensity of use of business services and total sector GDP. Here, a positive correlation could be expected if the positive effect of intensive use of business services on productivity were not fully offset, at the industry level, by an accompanying reduction in employment.

Chart 4.3 shows the relationship between GDP growth over 1995-2013 and intensity in the use of business services in 1995, while Chart 4.4 shows the relationship between GDP growth and intensity at the end of the period. Here:

- There is a clear positive relationship in both cases, with GDP growth apparently boosted by intensity of use of business services by *more* than productivity growth in each case.
- The five most intensive users of business services, at both the start and end of the period, were also the five sectors seeing the fastest rate of GDP growth.
- For every percentage point higher that intensity of use was in 1995, GDP growth over the subsequent 18 years was faster by 0.37% per annum.
- For every percentage point higher that intensity of use was in 2013, GDP growth over the previous 18 years had been faster by 0.39% per annum.
- The former relationship was clearly more statistically significant than for either of the relationships in the productivity analysis, while the latter relationship was better still and very strong in statistical terms.

This is potentially consistent with GDP growth being supported by some combination of intensity of use of business services in level terms and growth in intensity over time, with faster productivity growth due to these factors driving GDP growth in the same industrial sector rather than being at the expense of sector-level employment on a net basis.

Chart 4.3: Intensity of use in 1995 and subsequent GDP growth

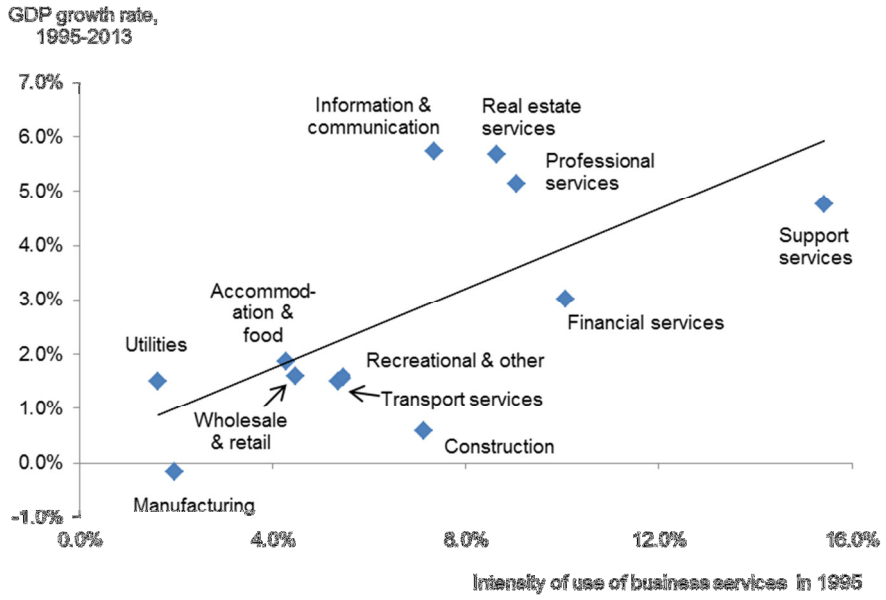
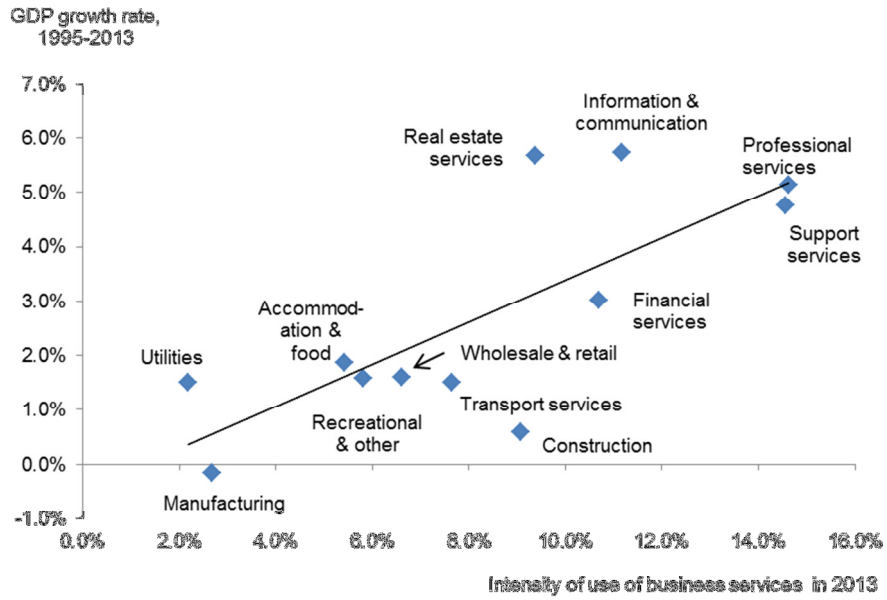


Chart 4.4: Intensity of use in 2013 and prior GDP growth



As with productivity, the relationship between GDP growth and *growth* in intensity alone, looking across the 12 sectors as a whole, is weak. But the two sectors seeing the greatest and fastest increases in intensity enjoyed significantly faster-than-average GDP growth.

Table 4.2 summarises the results of the GDP growth analysis. The 12 sectors are listed in order of GDP growth performance and the top five in terms of intensity or change in intensity are again highlighted.

Table 4.2: Intensity of use of business services and GDP growth

	Annual % change in GDP, 1995-2013	Intensity of use of business services in 1995	Intensity of use of business services in 2013	Absolute change in intensity, 1995-2013, % points	Annual % growth in intensity, 1995-2013
Information & communication	5.7%	7.3%	11.2%	3.8%	2.4%
Real estate services	5.7%	8.6%	9.4%	0.7%	0.4%
Professional services	5.1%	9.1%	14.6%	5.6%	2.7%
Support services	4.7%	15.4%	14.6%	-0.9%	-0.3%
Financial services	3.0%	10.1%	10.7%	0.6%	0.3%
Accommodation & food	1.9%	4.3%	5.4%	1.1%	1.3%
Wholesale & retail	1.6%	4.5%	6.6%	2.1%	2.2%
Recreational & other	1.6%	5.5%	5.8%	0.4%	0.4%
Transport services	1.5%	5.3%	7.6%	2.3%	2.0%
Utilities	1.5%	1.6%	2.2%	0.6%	1.7%
Construction	0.6%	7.1%	9.1%	1.9%	1.4%
Manufacturing	-0.2%	2.0%	2.7%	0.7%	1.7%
Average of above sectors	*2.2%*	*5.1%*	*7.7%*	*2.7%*	*2.4%*

Five highest ranking sectors highlighted for each measure of intensity or change in intensity.

4.3 The net impact of business services use on jobs

Taking the results for GDP growth and productivity together, it can be seen that above-average productivity growth amongst the five most intensive users of business services has clearly *not* been at expense of employment (Table 4.3). In fact while employment was unchanged in one of these sectors (financial services), it grew at an above-average pace in the other four.

For support services, professional services, information & communication and real estate services, productivity growth in the 2.1%-3.2% per annum range was accompanied by employment growth in the 2.5%-3.5% per annum range, resulting in yearly GDP growth of 4.7%-5.7%. For comparison, across the 12 sectors as a whole, productivity, jobs and GDP grew at respective annual rates of 1.6%, 0.6% and 2.2%.

Table 4.3: Growth in productivity, GDP and jobs amongst intensive users

	Intensity of use of business services in 1995	Intensity of use of business services in 2013	Average of 1995 and 2013	Productivity growth % per annum	GDP growth % per annum	Jobs growth % per annum
Support services	15.4%	14.6%	15.0%	2.2%	4.7%	2.5%
Professional services	9.1%	14.6%	11.8%	2.3%	5.1%	2.8%
Financial services	10.1%	10.7%	10.4%	3.0%	3.0%	0.0%
Information & communication	7.3%	11.2%	9.3%	3.2%	5.7%	2.5%
Real estate services	8.6%	9.4%	9.0%	2.1%	5.7%	3.5%
Average across all 12 sectors	*5.1%*	*7.7%*	*6.4%*	*1.6%*	*2.2%*	*0.6%*

4.4 Intensity and export performance

Turning to export performance, Charts 4.5 and 4.6 show how growth in exports by value is also positively correlated with intensity of use of business services, across the eight non-oil, non-public-type sectors where exports were of some significance. (The data for export values is only available up to 2012, so annual growth here is for 1995-2012.) In this case:

- The four most intensive users of business services, at the start and end of the period, were also the four sectors seeing the fastest rate of growth in the value of exports in cash terms.
- For every percentage point by which intensity of use of business services was higher in 1995, growth in the value of exports was 0.46% per annum faster over the subsequent 17 years.
- For every percentage point by which intensity of use of business services was higher in 2013, growth in the value of exports had been 0.61% per annum faster over the period 1995-2012.
- The statistical relationship was of some significance in the former case but clearly stronger than that in the latter case.

Chart 4.5: Intensity of use in 1995 and subsequent export value growth

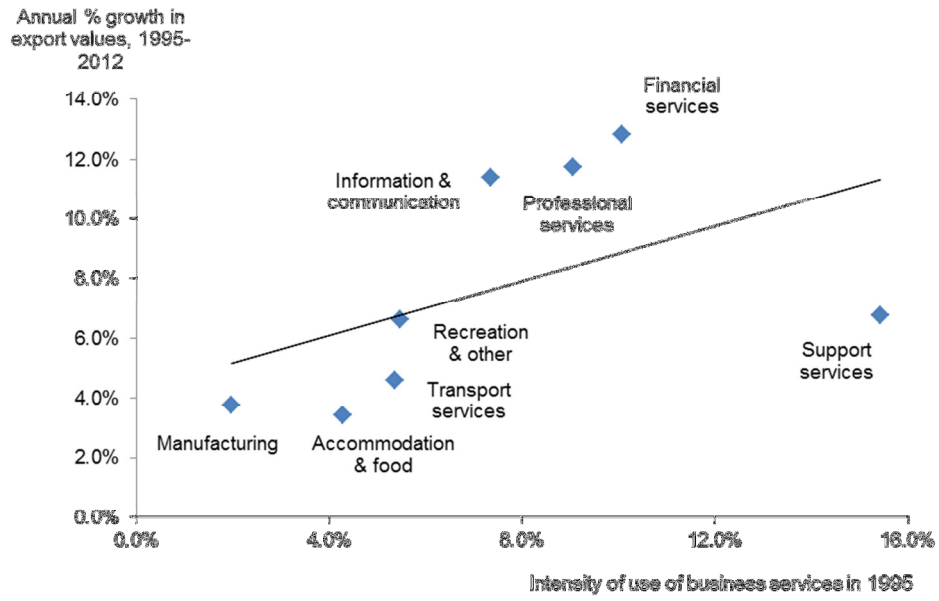
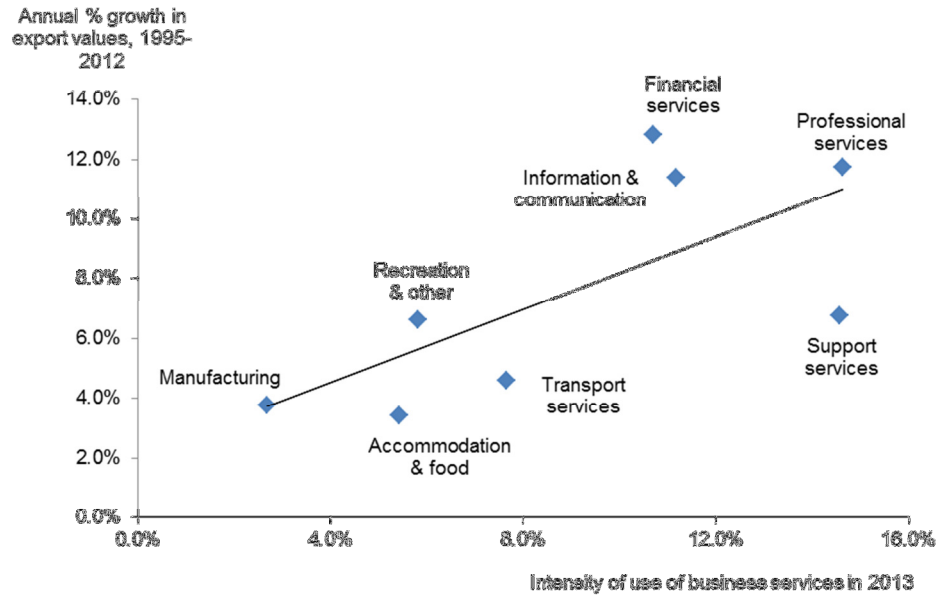
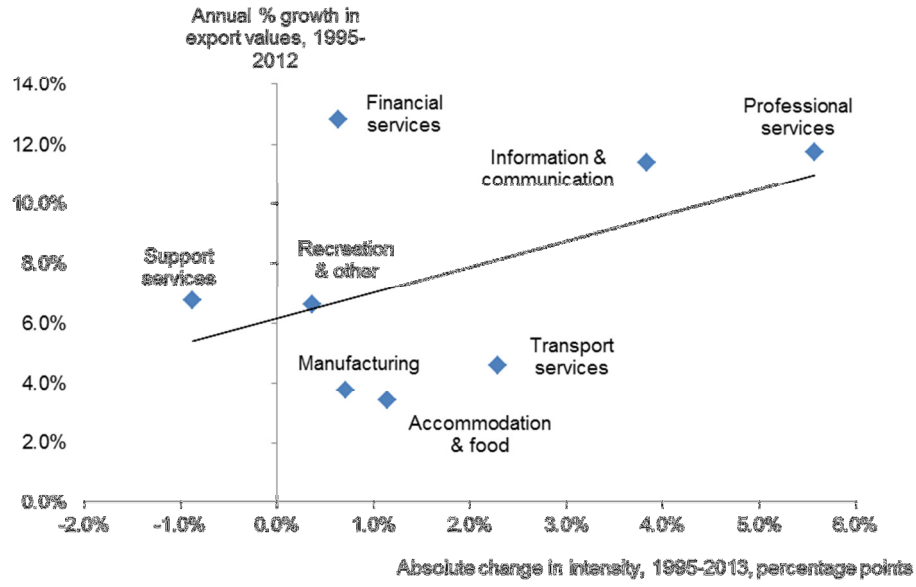


Chart 4.6: Intensity of use in 2013 and prior export value growth



A positive (and not statistically insignificant) relationship was also found between export growth and the absolute change in intensity over the period, with the two sectors seeing the greatest increase in intensity also enjoying above-average growth in export values. In fact for every percentage point by which a sector's intensity was pushed up over the period, annual growth in the value of exports was boosted by 0.86% per annum (Chart 4.7).

Chart 4.7: Growth over time in intensity of use and export value growth



This is consistent with the view that export growth is boosted both by the *level* of intensity of use of business services, and *growth* in the use of business services, as the productivity and efficiency gains associated with both of these factors help to drive up competitiveness in international markets. The positive role played by *increases* in intensity of use of business services, as opposed to just the *level* of intensity, is much clearer for export growth than for productivity or GDP growth.

Table 4.4 summarises the results of the export value growth analysis.

Table 4.4: Intensity of use of business services and export value growth

	Annual % change in value of exports, 1995-2012	Intensity of use of business services in 1995	Intensity of use of business services in 2013	Absolute change in intensity, 1995-2013, % points	Annual % growth in intensity, 1995-2013
Financial services	12.8%	10.1%	10.7%	0.6%	0.3%
Professional services	11.8%	9.1%	14.6%	5.6%	2.7%
Information & communication	11.4%	7.3%	11.2%	3.8%	2.4%
Support services	6.8%	15.4%	14.6%	-0.9%	-0.3%
Recreational & other	6.6%	5.5%	5.8%	0.4%	0.4%
Transport services	4.6%	5.3%	7.6%	2.3%	2.0%
Manufacturing	3.8%	2.0%	2.7%	0.7%	1.7%
Accommodation & food	3.4%	4.3%	5.4%	1.1%	1.3%
Average of above sectors	*5.3%*	*5.0%*	*8.2%*	*3.2%*	*2.7%*

Four highest ranking sectors highlighted for each measure of intensity or change in intensity.

The impact of intensity in the use of business services on export growth is not independent of its impact on GDP growth. Rather, improved export performance is a part of the GDP growth story. Further analysis suggests that, on average across the four most intensive users of business services with exports of some significance, growth in exports accounted for broadly half of the total growth in GDP between 1995 and 2013.

4.5 Conclusions

There is a clear positive relationship between the level of intensity of use of business services and productivity growth, and more tentative evidence that strong productivity growth is associated with a combination of high and rising intensity.

But this begs a further question. Is strong productivity growth associated with business services use simply at the expense of jobs, with no benefit to overall economic growth? Some may believe that to be the case. But by examining the relationship between intensity and GDP growth across the sectors, this report shows the opposite to have occurred.

The five most intensive users of business services, in both 1995 and 2013, were also the five sectors with the fastest rates of GDP growth (helped by a strong export performance in four cases). And while employment was unchanged in one of these sectors (financial services), it grew at a clearly above-average pace in the other four (support services, professional services, information & communication and real estate services), alongside the above-average productivity growth achieved.

Annex 1: Detail of underlying data

Table A1.1: Purchases of business services and intensity of use

	2013			1995			
	Purch-ases of business services, £ billion	Output, £ billion	Purch-ases of business services as % output	Purch-ases of business services, £ billion at 2013 prices[5]	Purch-ases of business services, £ billion	Output, £ billion	Purch-ases of business services as % output
Whole economy	262.9	3,019.4	8.7%	119.0	78.8	1,363.5	5.8%
Whole economy ex. transport use[1]	254.6	3,019.4	8.4%	115.7	76.6	1,363.5	5.6%
Whole economy ex. transport use and owner occupation[1,2,3]	254.6	2,864.5	8.9%	115.7	76.6	1,319.3	5.8%
Government sector	80.1	-	-	34.2	22.7	-	-
Government ex. transport use[1]	71.8	370.5	19.4%	30.9	20.5	149.1	13.7%
Total business sector	182.8	2,494.0	7.3%	84.8	56.2	1,170.2	4.8%
Of which:							
Agriculture & mining	1.7	73.3	2.3%	1.4	1.0	51.1	1.9%
Manufacturing	12.4	463.5	2.7%	11.4	7.5	382.5	2.0%
Utilities	3.0	135.5	2.2%	1.1	0.7	46.3	1.6%
Construction	19.6	216.4	9.1%	9.3	6.1	86.1	7.1%
Wholesale & retail	20.9	317.1	6.6%	9.4	6.2	138.7	4.5%
Transport services	11.5	150.8	7.6%	6.7	4.4	82.7	5.3%
Accommodation & food	4.6	85.4	5.4%	1.9	1.3	29.7	4.3%
Information & communication	18.2	162.5	11.2%	5.1	3.4	46.4	7.3%
Financial services	27.2	253.8	10.7%	13.3	8.8	87.5	10.1%
Real estate services[2]	7.9	84.5	9.4%	3.3	2.2	25.0	8.6%
Professional services	27.8	190.4	14.6%	7.0	4.7	51.3	9.1%
Support services	17.4	119.6	14.6%	9.0	6.0	38.7	15.4%
Public-type services[4]	5.3	152.0	3.5%	3.0	2.0	69.4	2.9%
Recreational & other	5.2	89.2	5.8%	2.9	1.9	34.8	5.5%

[1] Excluding the value of local public transport services included in the total measure of business services turnover. [2] Excluding output imputed to the owner-occupied housing sector. [3] The figures for purchases as a percentage of output in this row provide our preferred measure of 'intensity of use of business services' across the economy as a whole. [4] Private providers classified to the public administration, education, health and care sectors. [5] All sectors inflated using the deflator for economy-wide GDP at basic prices.

Table A1.2: Data underlying the measures of sector economic performance

	2013				1995			
	GDP, £ billion	Jobs, millions	GDP per job, £000	Exports of goods & services (2012), £ billion	GDP, £ billion at 2013 prices[2]	Jobs, millions	GDP per job, £000 at 2013 prices	Exports of goods & services, £ billion
Manufacturing	147.3	2.56	57.6	270.4	151.4	4.22	35.9	144.2
Utilities	38.9	0.32	122.3	-	29.7	0.27	110.8	-
Construction	92.2	2.06	44.8	-	82.9	1.84	45.2	-
Wholesale & retail	171.9	4.83	35.6	-	129.0	4.65	27.8	-
Transport services	64.4	1.50	42.9	21.5	49.2	1.28	38.4	10.0
Accommodation & food	43.1	2.05	21.0	11.0	30.9	1.63	19.0	6.2
Information & communication	95.1	1.28	74.6	22.0	34.8	0.82	42.6	3.5
Financial services	124.5	1.12	111.5	63.0	72.9	1.11	65.9	8.1
Real estate services[1]	53.5	0.53	101.7	-	19.8	0.28	70.1	-
Professional services	112.5	2.65	42.5	34.1	45.7	1.62	28.2	5.2
Support services	73.6	2.59	28.4	28.9	31.9	1.67	19.1	9.5
Recreational & other	61.7	1.81	34.1	6.3	46.5	1.56	29.8	2.1
Total of above sectors	1,078.8	23.28	46.3	457.2	724.7	20.93	34.6	188.8

[1] Excluding GDP imputed to the owner-occupied housing sector. [2] GDP for each sector is inflated by its own deflator.

Annex 2: Detailed methodology

Calculating purchases of business services by sector of client

Purchases of business services by business and government clients were taken from the study released earlier in 2015[5], with those purchases having been calculated mainly by combining data from the latest Annual Business Survey (relating to 2013), the latest supply and use table (2012) and the latest full input-output table (2010). The activities counted as falling within the definition of 'business services' for the purposes of this analysis are set out in Table A2.1.

Purchases by business sector clients were then split into the 14 industrial sectors set out in Table A2.2. These were calculated by assuming that purchases of each individual type of business service were split across market sector and NPISH purchasers, in proportion to purchases of the closest corresponding product category (for domestically-produced output) in the latest detailed input-output table.

Estimates of total turnover and the breakdown by sector were then estimated for 1995, by combining information on sector turnover in that year, taken from the Annual Business Survey results for that year, with information on the pattern of demand for UK-produced goods and services by product type and sector of purchaser, as found in the detailed 1995 input-output table. As the industrial classification used in the 1995 data tables differs to that used for the 2013 results, Oxford Economics re-estimated the splits in turnover and demand to align with the most recent industrial classification. In some cases this will have resulted in a degree of approximation.

Calculating intensity of use of business services by sector of client

'Intensity of use of business services' refers to the value of purchases of business services by each sector as a percentage of the total value of that sector's output (as illustrated in Figure A2.1). For these purposes purchases of local transport services were excluded from government sector purchases, as they mainly comprise sales to private households and so are not an 'input' to the 'government production process' in national accounts terms.

Estimates of output by sector were calculated for 2013 by taking the latest known data for 2012 and assuming that total output then grew in line with money-terms GDP (at basic prices) for each sector. Output by sector for 1995 was taken from the 1995 input-output table for that year, though again some manipulation was needed to get the industry classification onto the latest basis. Output imputed to owner-occupiers was excluded from the measure of output deemed relevant for these purposes for the real estate sector.

[5] Oxford Economics for the Business Services Association, *The UK market for business services: the national, regional and constituency picture in 2013*, January 2015. As of September 2015, the estimates in that report remain the most up-to-date possible.

Table A2.1: Activities included in the definition of 'business services'

Sales of domestic non-capital output by UK market entities[1] classified to the following industrial sectors	SIC code[2] (2007)	Sales to other UK market entities	Sales to UK non-profit entities[3]	Sales to UK non-market entities[4]	Sales to UK non-market entities, same sector only[5]	Sales to final cons-umers
Telecommunications	61	√	√	√		
Computer programming and related	62	√	√	√		
Data processing and related	63.1	√	√	√		
Food and beverage serving services	56	√	√	√		
Services to buildings (mainly cleaning) and landscape activities	81	√	√	√		
Security services	80	√	√	√		
Office and other business support services	82	√	√	√		
Property repair and maintenance	43 (part)	√	√	√		
Development of building projects	41.1	√	√	√		
Architectural and engineering activities and technical testing	71	√	√	√		
Waste collection and related	38			√		
Remediation activities and related	39			√		
Education	85				√	
Health services	86				√	
Residential care and social work	87-88				√	
Public administration (e.g. courts, prisons, defence services)	84				√	
Public return-to-work programmes	78.1 (part)			√		
Urban and suburban passenger land transport (i.e. local public transport)[6]	49.31	√	√	√		√

[1] Commercial operations mainly but not exclusively in the private sector. [2] Numerical code given to a sector in the official UK Standard Industrial Classification (2007 revision). [3] Non-profit institutions serving households, such as charities, clubs and universities. Not-for-profit organisations serving businesses are included in the 'market' sector. [4] Government sector entities providing services that are mainly free at the point of use. [5] E.g. purchases of UK private health services by government sector health service providers only. [6] All sales of local public transport services but only by private sector providers.

Figure A2.1: Stylised illustration of an industry's inputs and output

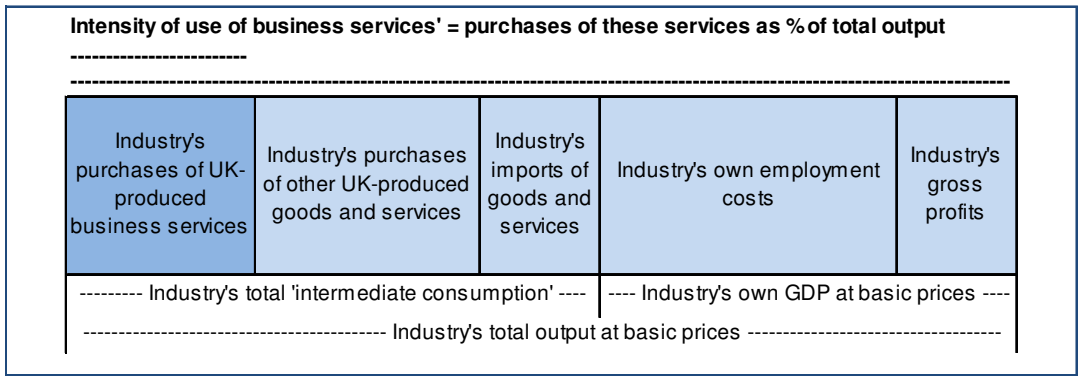


Table A2.2: Definition of client sectors used in the report

	SIC code (2007)	Chapter 1 analysis (size and trends)	Chapter 2 analysis (intensity of use[1])	Chapter 3 analysis (productivity and GDP performance)	Chapter 3 analysis (export performance)
'Sales to government sector'					
Sales to non-market service providers	All non-market	√	√	X[2]	X[2]
Sales of local public transport services	All, plus final consumers	√	X[3]	X[3]	X[3]
'Sales to business sector' *Sales to market and non-profit entities split into the following categories of purchaser:*					
Agriculture and mining (including oil & gas extraction)	01-09	√	√	X[4]	X[4]
Manufacturing	10-33	√	√	√	√
Utilities (electricity, gas, water, waste-related)	35-39	√	√	√	X[5]
Construction	41-43	√	√	√	X[5]
Wholesale and retail services	45-47	√	√	√	X[5]
Transport services	49-53	√	√	√	√
Accommodation and food services	55-56	√	√	√	√
Information and communication (publishing, broadcasting, telecommunications, computer-related)	58-63	√	√	√	√
Financial services	64-66	√	√	√	√
Real estate services	68	√	√[6]	√[6]	X[5]
Professional services (legal, accountancy, varied consultancy, technical & scientific, advertising, photography, translation, design)	69-75	√	√	√	√
Support services (equipment rental, staffing, cleaning, security, administrative support, other business support)	77-82	√	√	√	√
Public-type services (non-government providers of public administration, education, health, residential care and social work services)	84-88	√	√	X[2]	X[2]
Recreational and other (arts, culture, recreation, sports, membership organisations, repair of household items, other personal services)	90-97	√	√	√	√

[1] Inputs of business services as a share of total sector output. [2] Excluded due to inability to separate government and business sector activity in the datasets, plus other measurement difficulties. [3] Excluded due to most sales being to final consumers, rather than being an input into the production process. [4] Excluded due to the overwhelming influence of the long-term decline of oil production on trends in activity. [5] Excluded on grounds of insignificance of exports. [6] Sector activity excludes that imputed to owner occupiers in this analysis.

Calculating measures of sector economic performance

For the purposes of measuring economic performance, government clients were excluded, as were business clients in 'public-type services', due to the lack of any split in the real GDP and jobs data at the industry level between private and public sector service providers, as well as other difficulties in the measurement of real-terms output and productivity in the case of services delivered free at the point of use. Agriculture and mining was also excluded due to the overwhelming influence of the long-term decline in oil production on that sector's real GDP growth.

Figures for real-terms GDP (at basic prices) and workforce jobs were taken straight from the latest official datasets, for 1995 and 2013. Unlike the figures for output and inputs, official estimates are available going back to 1995 for GDP and jobs on the basis of the latest industrial classification, so no further manipulation was necessary. Real productivity was worked out as real GDP per job in each year, and annual growth rates for real GDP, jobs and productivity over the period 1995-2013 were then calculated. (For the purposes of Table A2.1, real GDP has been translated into 2013 prices, from the 2011 prices used in the underlying official dataset, but this does not affect the real GDP and productivity growth rates.)

The value of exports of goods and services of each sector was taken from the 1995 and 2012 supply and use tables, with the 1995 figures manipulated in order to align with the latest industrial classification. Average annual growth was then calculated. The utilities, construction, wholesale & retail and real estate sectors were excluded from this part of the analysis, as these sectors are essentially domestic-facing with an insignificant volume of export activity. The possibilities of using growth in export volumes rather than values, and of extending the export performance period covered to 2013, had to be excluded as the more timely data on exports by product type is on a completely different basis to the standard industrial classification used in the rest of this analysis.

Correlating intensity of use with measures of economic performance

Correlations were then analysed in a simple way, by plotting scatter diagrams in Excel and using the straightforward linear relationship calculated automatically by that programme. Rates of growth were plotted against the level of intensity in 1995, the level of intensity in 2013, the change in intensity in absolute percentage point terms, and the change in intensity in per cent per annum terms. The best way to think about the potential impact of intensity in 2013 on growth over the *previous* 18 years is to think of the level of intensity now as reflecting the level of intensity in the past together with the rate of growth in intensity seen in the interim.

Table A2.3 shows the relationships found, with the exception of those involving the change in intensity in per cent per annum terms where no statistically significant correlation at all could be demonstrated. As an example, the top left result in the table suggests that, for each percentage point by which intensity of use of business services was higher in 1995, productivity growth over the following 18 years was faster by 0.12% per annum.

Further work was carried out in Excel to check the explanatory power of the relationships found in statistical terms. These findings are also indicated in the table[6].

Table A2.3: Relationships between intensity of use and economic performance

Impact on annual growth in productivity, GDP and exports of intensity of use of business services, or of the change in intensity of use over time, being higher by one percentage point	Level of intensity of use in 1995	Level of intensity of use in 2013	Absolute change in intensity between 1995 and 2013
Annual % growth in real-terms productivity, 1995-2013	+0.12%	+0.12%	+0.10%
Annual % growth in real-terms GDP, 1995-2013	+0.37%	+0.39%	+0.36%
Annual % growth in monetary value of exports, 1995-2012	+0.46%	+0.61%	+0.86%

Explanatory power of the relationships in statistical terms:

No clear significance	Weak relationship	Some significance	Good	Very good

[6] The judgement about explanatory power takes into account two criteria. First, how important business intensity is in explaining business performance (productivity growth etc), as measured by the 'r-squared' statistic which shows the proportion of the variation in business performance explained by the variation in intensity of use of business services. Second, the precision of our estimated impact, as measured by the 't-statistic', where a value of 1.64 or more is 'precise'. The values underlying the table are as follows: 'No clear significance': r^2 = 0.03, t = 0.51. 'Weak relationship': r^2 = 0.09, t = 1.00. 'Some significance': r^2 = 0.16-0.25, t = 1.31-1.58. 'Good': r^2 = 0.46-0.49, t = 2.41-2.90. 'Very good': r^2 = 0.58, t = 3.73.

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