Employment and intangible spending in the UK's creative industries

A view from the micro data

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Summary

The UK's creative industries and creative workforce grew faster than the rest of the economy between 1997 and 2008. This article uses micro data to explore the changing patterns of creative employment in the UK's creative industries. The categories of creative employment showing the strongest growth over this period were Advertising and Software & Computing. It is also shown that the creative industries exhibiting the highest proportions of creative employment are those with the highest proportions of sector– or skill–specific employment. The article then continues to find a broad association between the proportion of creative employment in an industry and the level of spending on intangibles. These intangibles predominately consist of knowledge capital, hence positing a link between an expert creative workforce and indicators of innovation.

The creative industries – a brief introduction by numbers

The Department for Culture, Media and Sports (DCMS) has identified nine main industries that form the UK's creative sector (see DCMS 2001). These are: Advertising; Architecture; Art & Antiques; Designer Fashion; Video, Film & Photography; Music and the Visual & Performing Arts; Publishing; Software, Computer Games & Electronic Publishing and Radio & Television[1]. **Table 1** provides a summary of the relative size of each sub–sector based on the share in overall gross value added (GVA). These data were compiled by DCMS using ONS's Annual Business Inquiry (ABI) micro data. The same table also shows how GVA by sub–sector grew between 1997 and 2007.

Table 1 The UK's creative industries: shares in total GVA and growth

Creative industries sub–sector	Share in UK total GVA, 2007	Average growth in GVA, 1997–2007
Advertising	0.6%	4%
Architecture	0.6%	4%
Art & Antiques	0.06%	5%
Designer Fashion	0.05%	3%
Video, Film & Photography	0.3%	2%
Music and the Visual & Performing Arts	0.4%	2%
Publishing	1.0%	2%
Software, Computer Games & Electronic Publishing	2.9%	9%
Radio & Television	0.2%	0%

Source: Economic Estimates of the creative industries, DCMS (2010)

The main observations from Table 1 are:

- the creative industries, excluding Crafts and Design, accounted for 6.2 per cent of Gross Value Added (GVA) in 2007
- the creative industries grew by an average of 5 per cent each year between 1997 and 2007. This compares to an average of 3 per cent for the whole of the economy over this period
- Software, Computer Games & Electronic Publishing has had the highest average growth at 9 per cent per annum between 1997 and 2007. The lowest was Radio and Television where GVA was broadly flat over the same period

Other key results reported in DCMS (2010) are:

- exports of services by the creative industries totalled £16.6 billion in 2007. This equated to 4.5 per cent of all goods and services exported
- 33 per cent of total creative industries exports were contributed by the Software, Computer Games & Electronic Publishing industry
- in 2008, there were an estimated 157,400 businesses in the creative industries on the Inter–Departmental Business Register (IDBR); and
- around two–thirds of the businesses in the creative industries are contained within two sectors; Software, Computer Games and Electronic Publishing (75,000 companies) and Music and the Visual & Performing Arts (31,200 companies)

Table 2 shows the total employment in the creative industries and the average growth rate of employment between 1997 and 2008. The figures in this table were calculated by adding up total employment data for each industry from the IDBR. The IDBR represents a population register covering 99 per cent of all business activity in the United Kingdom.

Table 2 Employment in the creative industries

Creative industries workforce	Total employment in 2008	Average employment growth, 1997 - 2008
Advertising	248,600 (3)	2%
Architecture	130,100 (5)	3%
Art & Antiques	23,000 (10)	1%
Crafts	101,700 (7)	1%
Design & Designer Fashion	107,200 (6)	3%
Video, Film & Photography	63,500 (9)	0%
Music and the Visual & Performing Arts	272,100 (2)	2%
Publishing	242,700 (4)	-2%
Software, Computer Games & Electronic Publishing	681,600 (1)	5%
Radio & Television	100,700 (8)	0%

Source: Economic Estimates of the creative industries, DCMS (2010)

The most striking observation from Table 2 is employment in the Software, Computer Games and Electronic Publishing sub–sector, which employs by far the largest number of workers at close to 700,000 and which also expanded at the fastest rate of 5 per cent between 1997 and 2008.

Other key findings reported in DCMS (2010) are:

- in the summer quarter of 2008, creative employment totalled just under 2 million jobs. This comprised over 1.1 million jobs in the creative industries and over 800,000 further creative jobs within businesses outside these industries
- total creative employment increased from 1.6 million in 1997 to nearly 2 million in 2008, an average growth rate of 2 per cent per annum, compared to 1 per cent for the whole of the economy over this period

This article uses up–to–date micro data to further explore the pattern of creative employment in the UK, specifically

- the composition of the relative value attributed by the market to creative workers employed within the creative industries and how this changes through time

A number of recent studies have investigated the importance of spending of intangibles in the UK. This research recognises that traditional definitions of capital expenditure (buildings, plant and machinery and vehicles) may fail to adequately capture all the spending undertaken by firms on productive assets. Advanced economies are increasingly engaged in generating net value through the generation of ideas, concepts and blueprints. For example, Hulten, Corrado and Sichel (2002) identify a number of 'intangibles' which they describe as having 'asset properties' – meaning that they raise the future productive capacity (value) of the firm. These include computer services,

research and development and economic competencies – which is a broad category of intangible spending directed at improving organisational structure, branding and training. However, with the exception of software these are largely classified in the National Accounts as intermediate consumption rather than investment. Giorgio Marrano and Haskel (2007) find that capitalising spending on intangibles would double the share of investment in the UK[2]. Related to this, The National Endowment in Science, Technology and the Arts (NESTA) has employed broadly similar approach to construct an index of innovation for the UK (see Clayton, Dal Borgo and Haskel 2009).

Therefore, this article also investigates

- the relative level and nature of intangible investment occurring within the creative industries for a given set of intangible investment indicators and how this varies through time

Accepting the view that concepts such as 'creativity', 'intangible investment', and 'innovation' are all in some way inextricably linked to each other, it makes sense to use available data to explore how strongly such measures co–move with each other over time. In particular:

- the relationship between creative employment in industries and intangible spending

One of the main findings of the paper is that sectors employing more sector– or skill–specific labour spent above average amounts on intangibles. This supports the view that 'creative expert denseness' is a key driver of intangible spending.

In order to compute estimates of creative employment as well as indicators of intangible spending, a number of micro data sets are used. These are:

- **Annual Survey of Hours and Earnings** (ASHE) – provides data on the raw headcount and earnings–adjusted[3] levels of creative and other employment in the creative industries through time
- **Business Expenditure on Research and Development** (BERD) – enables the estimation of the amount of scientific employment within the creative industries as well as the levels of various categories of research and development expenditure, which are likely to contribute to the accumulation of intangible assets
- **Annual Business Inquiry** (ABI)[4] – permits further computation of expenditure figures which are suitable for identifying investment flows into stocks of intangible assets, such as expenditure on marketing and advertising as well as software

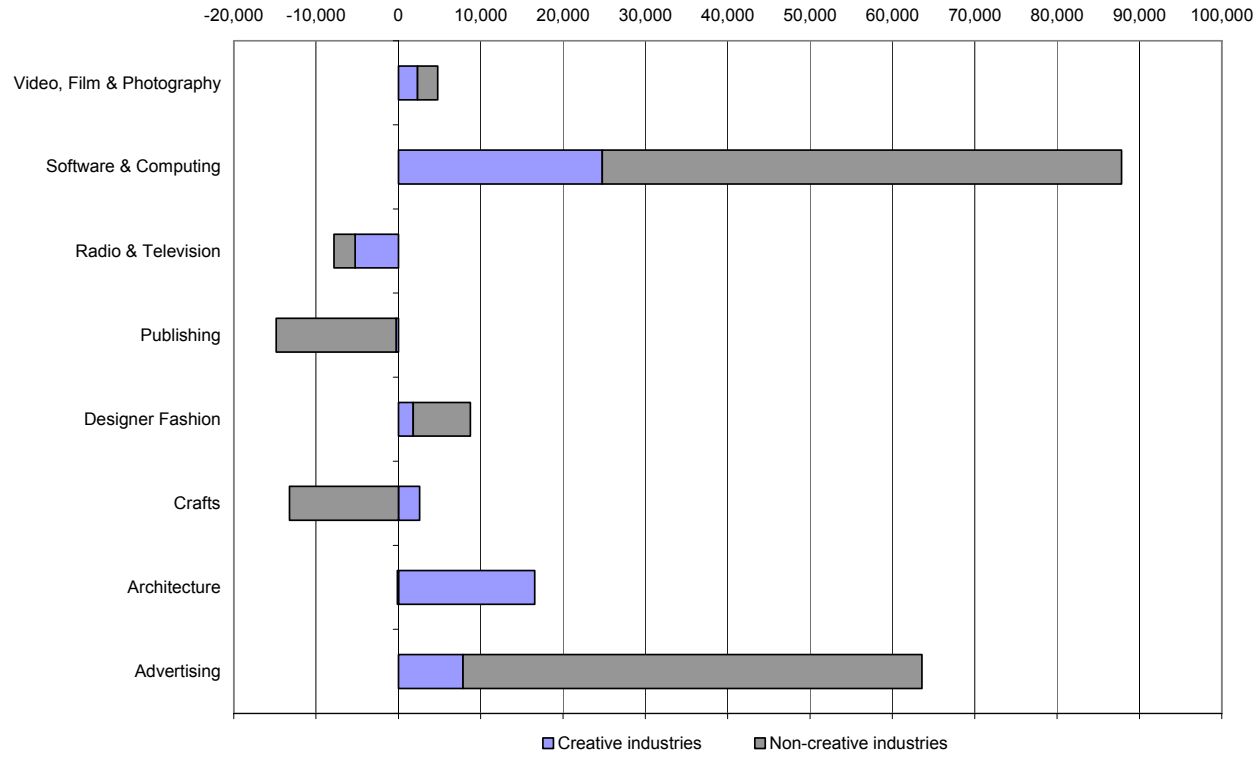
Patterns of creative employment in the creative and non–creative industries

DCMS (2001) also provides a mapping of how to identify employment in creative occupations[5]. These creative worker categories broadly correspond with the same break–down for the creative

industries in Table 1. As a first step, ASHE micro data is used to calculate the raw number of creative workers employed inside and outside of the creative industries between 2002 and 2008. **Figure 1** shows how the headcounts of different categories of creative workers have changed over this period.

Figure 1 Changes in creative employment, 2002–2008

Number of full–time employees



Source: ASHE micro data

The key observations are:

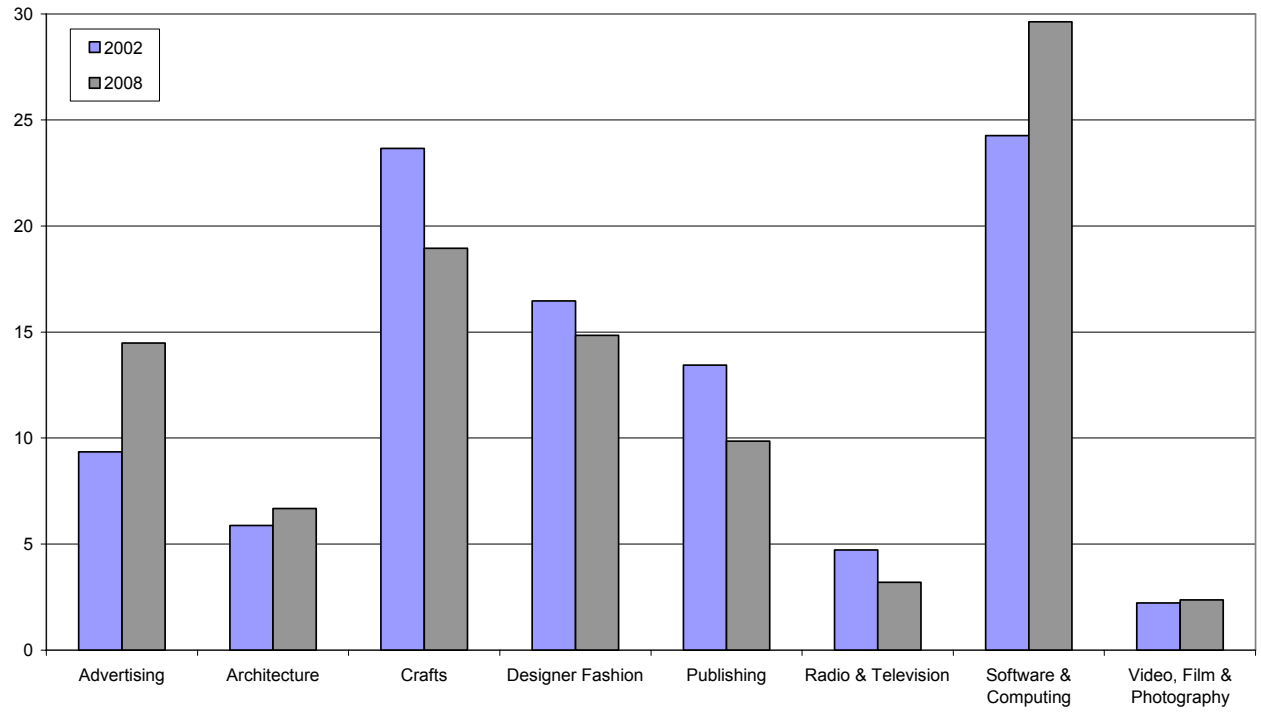
- total creative employment increased by 148,000 between 2002 and 2008. All employment was up by 1.41 million over the period
- the share of the creative workforce in the total workforce rose from 3.6 per cent to 4.0 per cent
- the largest increases in headcounts were in advertising (+64,000) and software (+87,000)
- most of the increase was outside of the creative industries (98,000 compared to 50,000)

The larger increase in the creative workforce outside of the creative industries is consistent with the findings of Chamberlin, Clayton and Farooqui (2007) who find that, in the measurement of in–house software development, there was a rapid increase in software–related workers outside of the software industry after 1997.

Figure 2 shows how the respective proportions of each creative worker category relative to all creative workers have changed between 2002 and 2008 (that is the bars add up to 100 per cent for each year)

Figure 2 Employment shares by creative worker categories

Percentage shares



Source: ASHE micro data

In line with the observations from Figure 1:

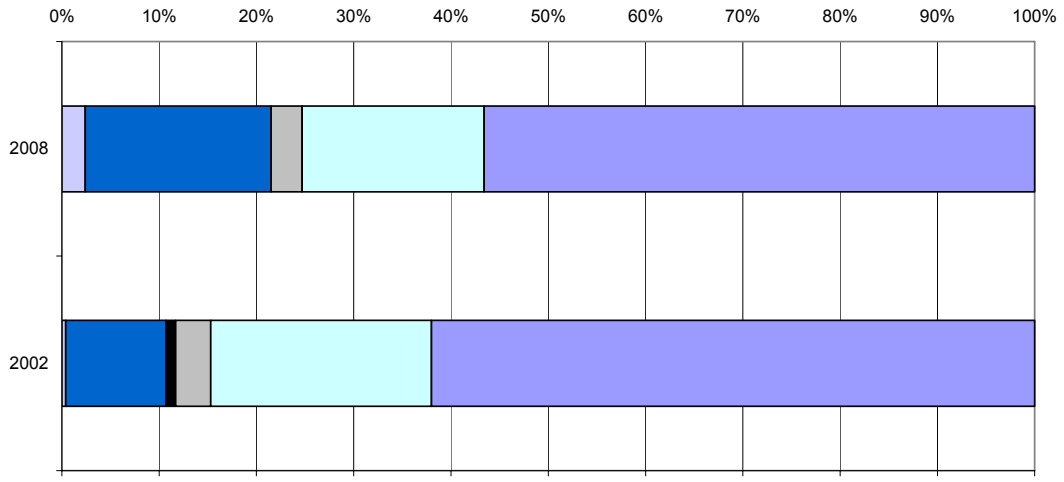
- Software & Computing rose from 24.3 per cent to 29.6 per cent (+5.3 percentage points)
- Advertising rose from 9.3 per cent to 14.5 per cent (+5.2 percentage points)
- Crafts fell from 23.7 per cent to 18.9 per cent (-4.8 percentage points)
- Publishing fell from 13.4 per cent to 9.9 per cent (-3.5 percentage points)

To measure the changing pattern of creative employment in the creative industries, ASHE micro data is used to calculate the earnings–adjusted composition of creative employment within the creative industries between 2002 and 2008. The earnings–adjustment works by multiplying the number of workers by earnings in order to better account for the market value attached and helping to illustrate the relative importance each category of creative employment has in each creative industry and how this changes over time. The findings in this section therefore focus exclusively on the composition of creative employment within the creative industries, ignoring those workers not belonging to the pool of creative workers. This analysis complements DCMS's own economic estimates which do not provide a detailed breakdown of creative workers employed within the creative industries.

Advertising

Figure 3 shows the earnings–weighted breakdown in employment patterns in the Advertising sub–sector of the UK's creative industries. In 2002, the earnings–adjusted employment of creative workers in this sector were 25.0 per cent of the total (23.0 per cent unadjusted), which was broadly unchanged in 2008 at 25.7 per cent of the total (23.7 per cent unadjusted). This sector shows a high share of sector specific employment at 62.0 per cent in 2002 and 56.6 per cent in 2008. There were some other changes in the composition of the earnings–adjusted creative workforce. Designer Fashion fell from 22.7 per cent to 18.7 per cent but Software & Computing rose from 10.3 per cent to 19.1 per cent, reflecting a rise in headcounts.

Figure 3 **Creative employment composition: Advertising**



	2002	2008
Advertising	62.0	56.6
Architecture	0.0	0.0
Crafts	0.0	0.0
Designer Fashion	22.7	18.7
Publishing	3.6	3.2
Radio & Television	1.0	0.0
Software & Computing	10.3	19.1
Video, Film & Photography	0.4	2.4

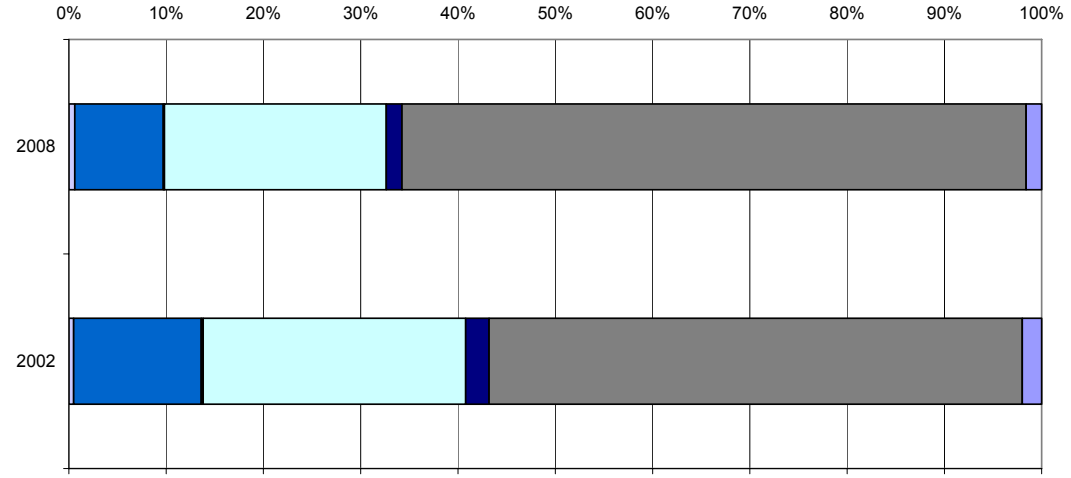
Source: ASHE micro data

Architecture

In the Architecture sub–sector the (earnings–adjusted) creative workforce was broadly unchanged as a proportion of the total workforce between 2002 and 2008 at 18.6 per cent and 18.4 per cent (unadjusted the proportions were 17.0 per cent and 17.8 per cent respectively). This sub–sector also exhibits a high share of sector–specific employment with Architecture increasing from 54.8 per cent to 64.1 per cent whilst the share of Designer Fashion fell from 27.0 per cent to 22.8 per cent (**Figure 4**). There was also a fall in the relative share of Software & Computing creative employment from 13.1 per cent to 9.1 per cent. These patterns predominantly reflect a significant

increase in Architecture employment in this sub–sector of the creative industries during this period.

Figure 4 **Creative employment composition: Architecture**



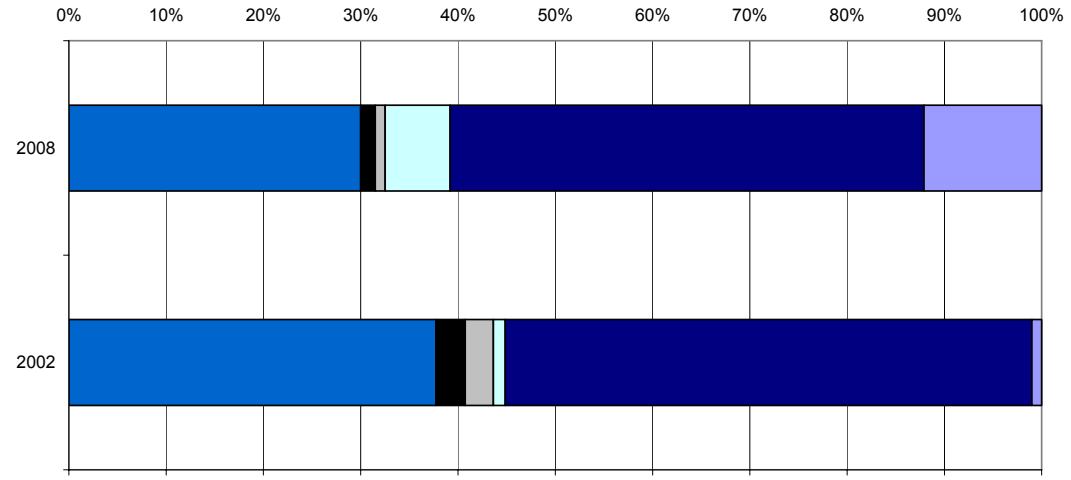
	2002	2008
Advertising	2.0	1.6
Architecture	54.8	64.1
Crafts	2.4	1.6
Designer Fashion	27.0	22.8
Publishing	0.0	0.1
Radio & Television	0.2	0.0
Software & Computing	13.1	9.1
Video, Film & Photography	0.5	0.6

Source: ASHE Micro data

Arts & Antiques

The Arts & Antiques sector comprises a relatively small share of total creative employment although the earnings–adjusted share increased from 5.4 per cent to 5.7 per cent between 2002 and 2008 (unadjusted the rise was 3.8 per cent to 4.9 per cent). But as **Figure 5** shows, it is heavily concentrated in the Crafts category (54.1 per cent in 2002 falling to 48.7 per cent in 2008). Software & Computing also accounts for a relatively large share of creative employment, although the respective share also fell from 37.7 per cent in 2002 to 30.0 per cent in 2008. These falls were countered by increasing shares in Advertising employment (1.0 per cent to 12.1 per cent) and Designer Fashion (1.2 per cent to 6.7 per cent). In these two employment categories there were increases in headcounts over the period.

Figure 5 **Creative employment composition: Arts & Antiques**



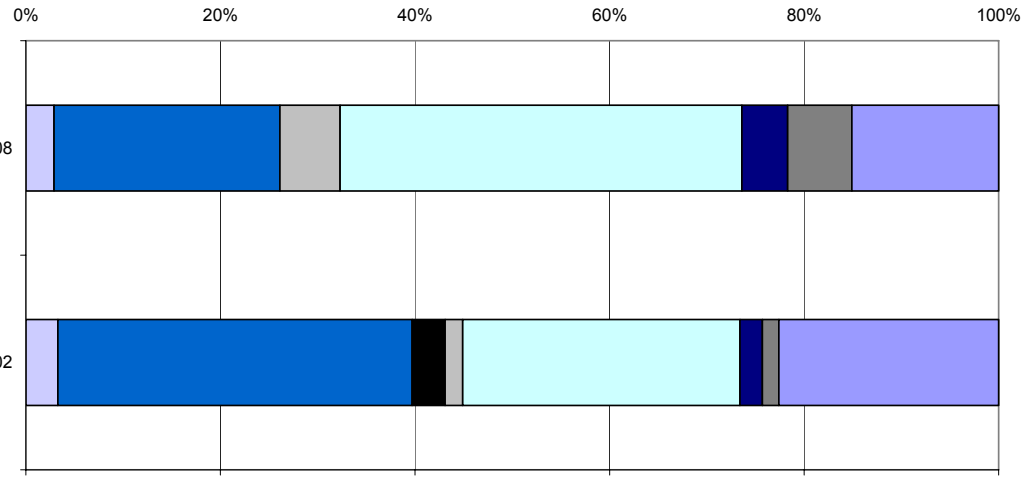
	2002	2008
Advertising	1.0	12.1
Architecture	0.0	0.0
Crafts	54.1	48.7
Designer Fashion	1.2	6.7
Publishing	2.9	1.0
Radio & Television	3.0	1.5
Software & Computing	37.7	30.0
Video, Film & Photography	0.0	0.0

Source: ASHE micro data

Designer Fashion

The earnings–adjusted share of the Designer Fashion creative workforce rose from 10.9 per cent to 11.1 per cent between 2002 and 2008 (7.8 to 9.6 unadjusted). As **Figure 6** shows there has been more variation in the creative employment composition in this sub–sector of the creative industries. There was a sharp rise in the Designer Fashion share from 28.5 per cent to 41.3 per cent with this increasing share coming at the expense of the Advertising share which fell from 22.6 per cent to 15.1 per cent and Software & Computing share which declined from 36.4 per cent to 23.2 per cent.

Figure 6 **Creative employment composition: Designer Fashion**



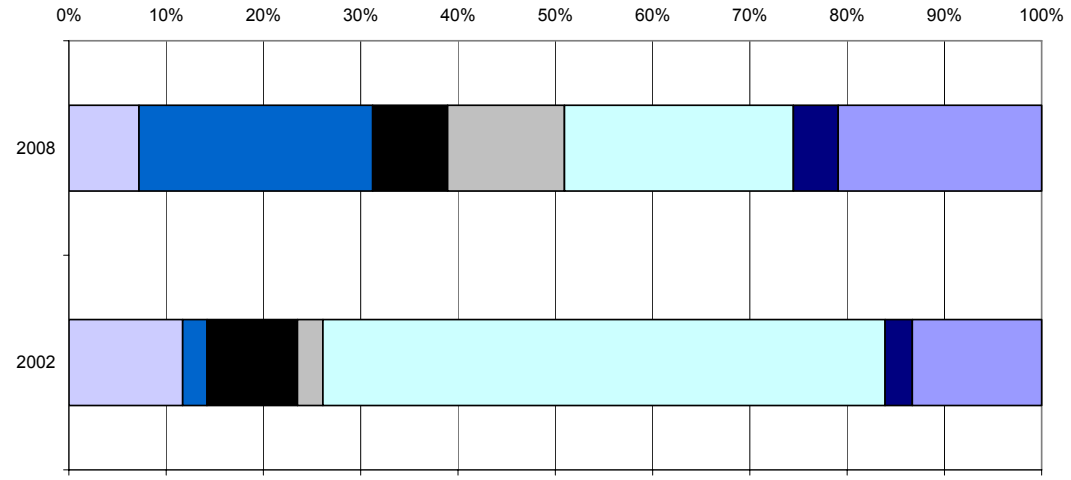
	2002	2008
Advertising	22.6	15.1
Architecture	1.7	6.6
Crafts	2.3	4.7
Designer Fashion	28.5	41.3
Publishing	1.8	6.2
Radio & Television	3.4	0.0
Software & Computing	36.4	23.2
Video, Film & Photography	3.3	2.9

Source: ASHE micro data

Music, Visual & Performing Arts

The earnings–adjusted share of the creative workforce picked up from 12.0 per cent to 14.5 per cent (9.8 per cent to 13.2 per cent unadjusted) between 2002 and 2008. However, as **Figure 7** shows, this sub–sector has seen substantial changes in respective shares of the different categories of creative workers. A sharp fall in the Designer Fashion share (57.8 per cent to 23.5 per cent) has been associated with increasing shares of Advertising (13.3 per cent to 20.9 per cent), Software & Computing (2.5 per cent to 24.0 per cent) and Publishing (2.6 per cent to 12.0 per cent). These moving shares are broadly consistent with changes in the headcounts of each.

Figure 7 **Creative employment composition: Music, Visual & Performing Arts**



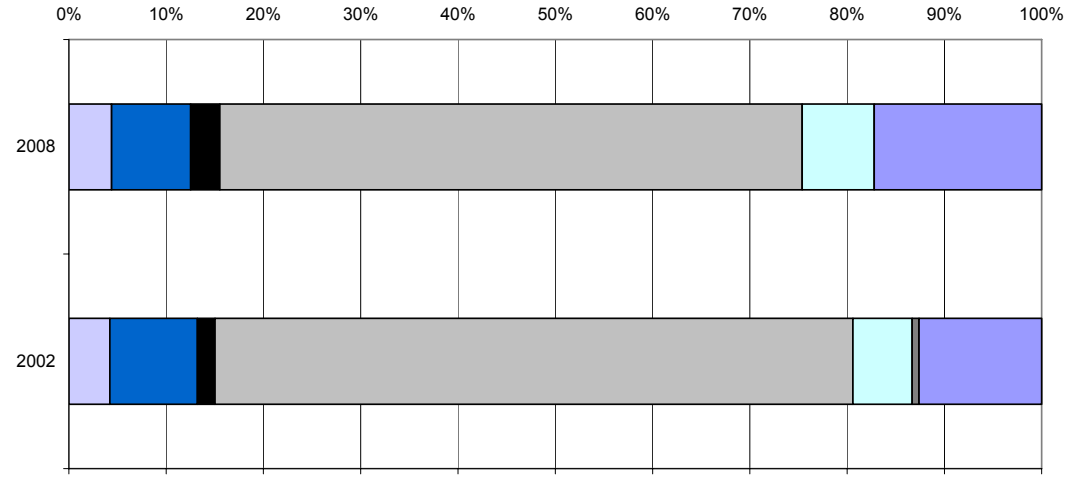
	2002	2008
Advertising	13.3	20.9
Architecture	0.0	0.0
Crafts	2.8	4.6
Designer Fashion	57.8	23.5
Publishing	2.6	12.0
Radio & Television	9.3	7.7
Software & Computing	2.5	24.0
Video, Film & Photography	11.7	7.2

Source: ASHE micro data

Publishing

In contrast to the Music, Visual & Performing Arts sub–sector, earnings–adjusted employment shares in the Publishing sector has been relatively stable (**Figure 8**). This is largely due to the very high sector–specific share of Publishing even though it fell from 65.5 per cent to 59.8 per cent between 2002 and 2008. This was primarily offset by a rise in the Advertising share from 12.6 per cent to 17.2 per cent. The creative workforce in this sub–sector is relatively high as a proportion of total employment although exhibiting a slight fall from 34.8 per cent in 2002 to 31.3 per cent in 2008 (unadjusted the fall was from 30.4 per cent to 29.1 per cent). This is in line with recent estimates published by DCMS (DCMS 2010) which recorded a fall in employment in the Publishing sub–sector in 2008.

Figure 8 Creative employment composition: Publishing



	2002	2008
Advertising	12.6	17.2
Architecture	0.7	0.0
Crafts	0.0	0.0
Designer Fashion	6.1	7.4
Publishing	65.5	59.8
Radio & Television	1.8	3.0
Software & Computing	9.0	8.1
Video, Film & Photography	4.2	4.4

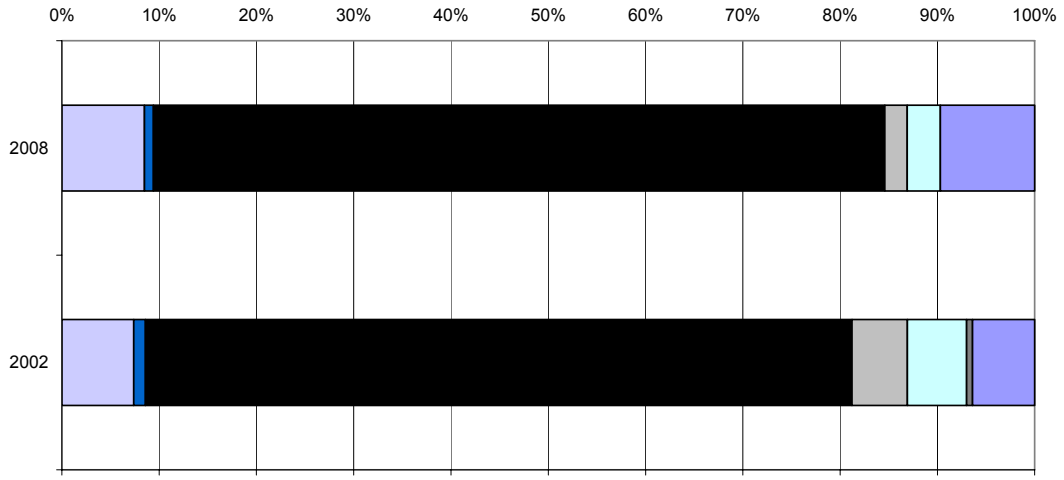
Source: ASHE micro data

Radio & Television

Figure 9 shows the earnings–weighted employment breakdown of creative workers in the Radio & Television sub–sector. In both 2002 and 2008, around three–quarters is sector–specific, 72.7 per cent in 2002 and 75.2 per cent in 2008. The shares accounted for by the other creative employment categories were fairly constant with a small increase in the advertising share and small falls in the Designer Fashion and Publishing shares.

This sub–sector also shows a relatively high concentration of creative workers at 53.1 per cent in 2002 and 46.3 per cent in 2008 (the unadjusted fall was from 47.9 per cent to 40.3 per cent). This fall largely reflects the larger fall in the creative workers headcount than the overall headcount over the period.

Figure 9 **Creative employment composition: Radio & Television**



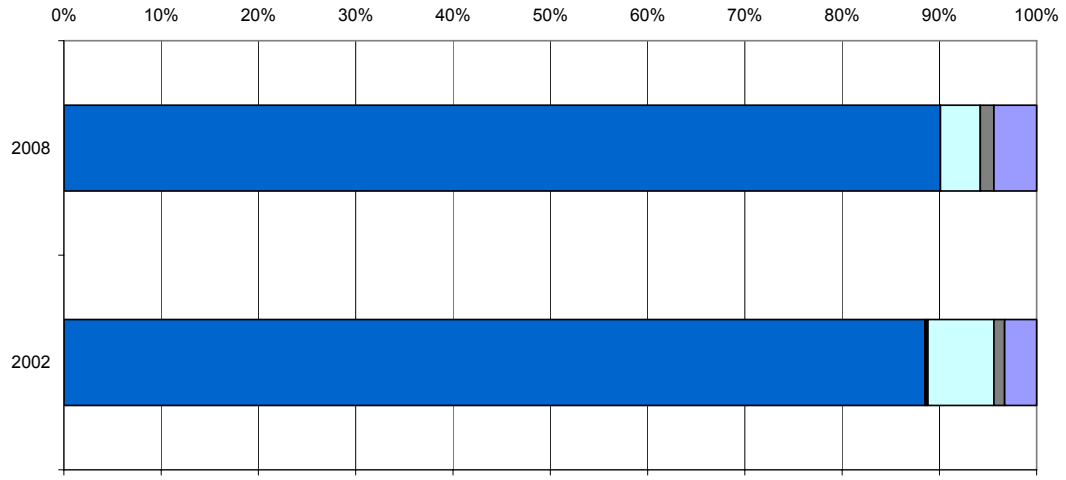
	2002	2008
Advertising	6.4	9.7
Architecture	0.6	0.0
Crafts	0.0	0.0
Designer Fashion	6.1	3.4
Publishing	5.7	2.3
Radio & Television	72.7	75.2
Software & Computing	1.2	0.9
Video, Film & Photography	7.4	8.5

Source: ASHE micro data

Software & Computing

Sector–specific employment is also very high in the Software & Computing sub–sector of the creative industries, accounting for around nine–tenths of all creative employment (88.6 per cent in 2002 and 90.1 per cent in 2008). Due to this large share, the overall distribution of employment across the creative worker categories is fairly stable in this sub–sector (see **Figure 10**). A strong rise in the Software & Computing headcount has also resulted in an increase in the relative share of creative employment in the sub–sector. On an earnings–adjusted basis, this increased from 21.0 per cent to 27.2 per cent (17.7 per cent to 23.1 per cent unadjusted).

Figure 10 Creative employment composition: Software & Computing



	2002	2008
Advertising	3.3	4.4
Architecture	1.1	1.4
Crafts	0.0	0.0
Designer Fashion	6.8	4.1
Publishing	0.0	0.0
Radio & Television	0.3	0.0
Software & Computing	88.6	90.1
Video, Film & Photography	0.0	0.0

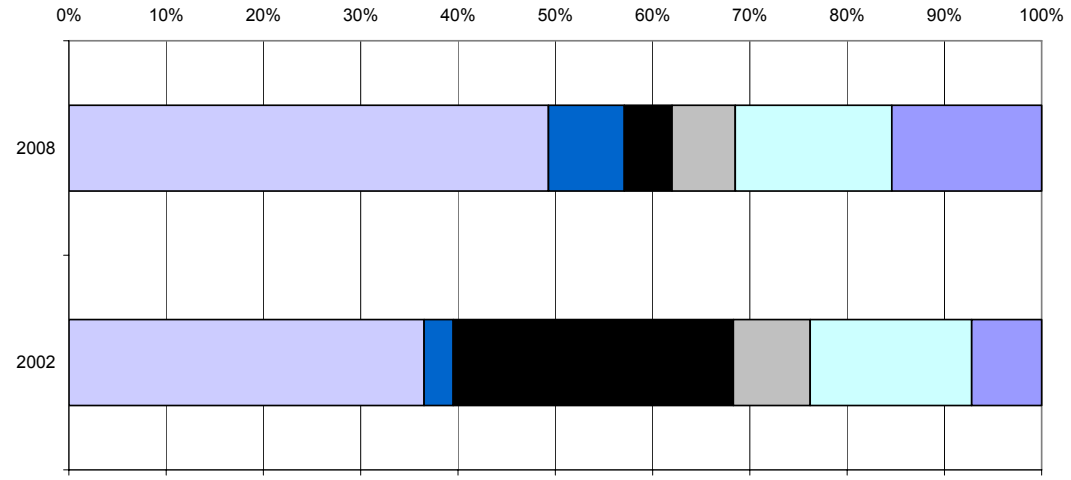
Source: ONS micro data

Video, Film and Photography

The share of creative employment in this sub–sector picked up significantly from 19.2 per cent in 2002 to 36.1 per cent. Using earnings–unadjusted data (straight headcounts), the proportional increase was from 17.3 per cent to 23.9 per cent – reflecting a stronger rise in creative than non–creative workers.

The share of sub–sector creative employment accounted for by Video Film and Photography increased from 36.5 per cent to 49.3 per cent. Advertising rose from 7.2 per cent to 15.4 per cent but the Radio & Television share fell markedly from 28.8 per cent to 4.9 per cent (**Figure 11**).

Figure 11 Creative employment composition: Video, Film & Photography



	2002	2008
Advertising	7.2	15.4
Architecture	0.0	0.0
Crafts	0.0	0.0
Designer Fashion	16.6	16.1
Publishing	7.9	6.5
Radio & Television	28.8	4.9
Software & Computing	3.0	7.8
Video, Film & Photography	36.5	49.3

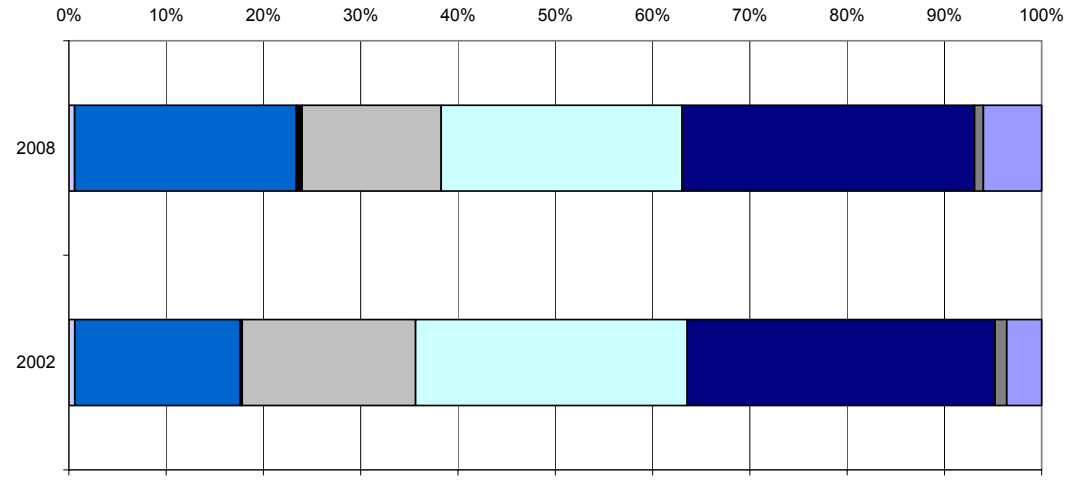
Source: ASHE micro data

Non–Creative Non–Services

The non–creative sector refers to all the firms not belonging to the creative industries defined in the DCMS mapping document (DCMS 2001). The earnings–adjusted intensity of creative employment in the non–creative non–services sector is relatively low – 6.1 per cent in 2002 and 6.5 per cent in 2008 (unadjusted – 6.3 per cent in 2002 and 6.6 per cent in 2008). The relative stability of these shares, along with the composition shares of different creative workers in **Figure 12** largely reflect that creative employment has fallen in proportion with non–creative employment in this sub–sector.

Crafts have the highest earnings–adjusted employment share (31.6 per cent in 2002 and 30.1 per cent in 2008). The Software & Computing share went up from 17.0 per cent to 22.8 per cent between 2002 and 2008. Over the same period, the Designer Fashion share declined from 27.9 per cent to 24.8 per cent and Publishing declined from 17.8 per cent to 14.3 per cent.

Figure 12 Creative employment composition: Non–Creative Non–Services



	2002	2008
Advertising	3.6	6.0
Architecture	1.2	0.9
Crafts	31.6	30.1
Designer Fashion	27.9	24.8
Publishing	17.8	14.3
Radio & Television	0.2	0.6
Software & Computing	17.0	22.8
Video, Film & Photography	0.6	0.6

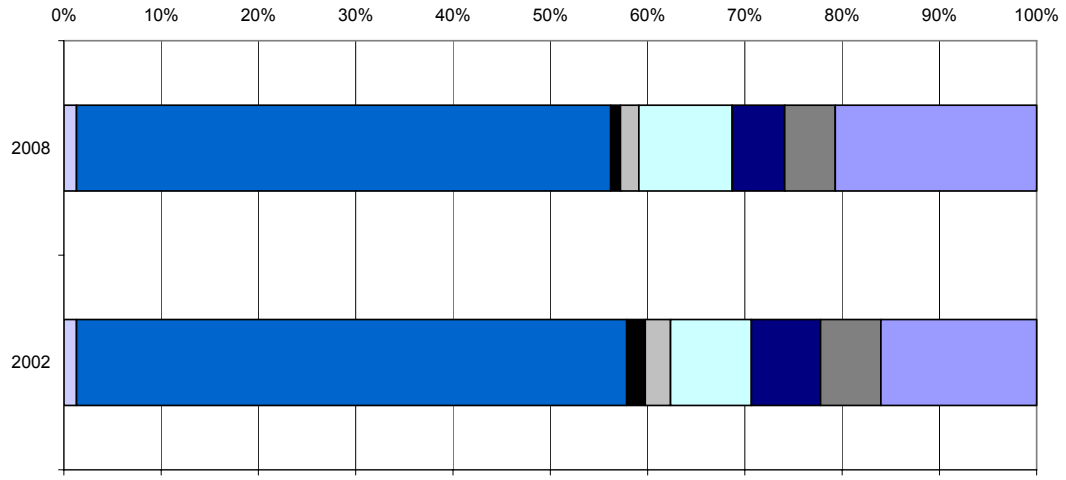
Source: ONS micro data

Non–creative services

The employment composition of creative workers in the Non–Creative Services sectors of the UK economy highlights the significant contribution of Software & Computing workers, whose earnings–weighted share remains stable at around 55 per cent of the total creative employment share in 2008, down slightly from 57 per cent in 2002 (**Figure 13**). Over the same period the earnings–weighted shares of the Advertising and Designer Fashion employment categories increased from 16 per cent to 21 per cent and from 8 per cent to 10 per cent respectively.

The overall earnings–adjusted share of the creative workforce was broadly unchanged between 2002 and 2008, increasingly modestly from 2.8 per cent to 3.2 per cent (unadjusted increase was from 1.8 per cent to 2.2 per cent). This shows that creative employment in this sector rose slightly faster than non–creative employment over the period.

Figure 13 Creative employment composition: Non–Creative Services



	2002	2008
Advertising	16.0	20.7
Architecture	6.2	5.2
Crafts	7.1	5.4
Designer Fashion	8.3	9.6
Publishing	2.6	1.9
Radio & Television	1.9	1.0
Software & Computing	56.5	54.9
Video, Film & Photography	1.3	1.3

Source: ONS micro data

Figure 14 shows the proportions of creative employment relative to all workers employed (both creative and non–creative) in each sub–sector of the creative industries and how these have changed over the period 2002–2008. Radio & Television, Publishing, Advertising, Designer Fashion, Software & Computing, Video, Film & Photography and Architecture exhibit the highest proportions of creative employment, with average proportions of 45 per cent, 30 per cent, 25 per cent, 20 per cent, 19 per cent and 18 per cent, respectively. This suggests that:

- sub–sectors of the creative industries showing the highest proportions of creative employment are also those sub–sectors with the highest proportions of skills– or sector–specific employment

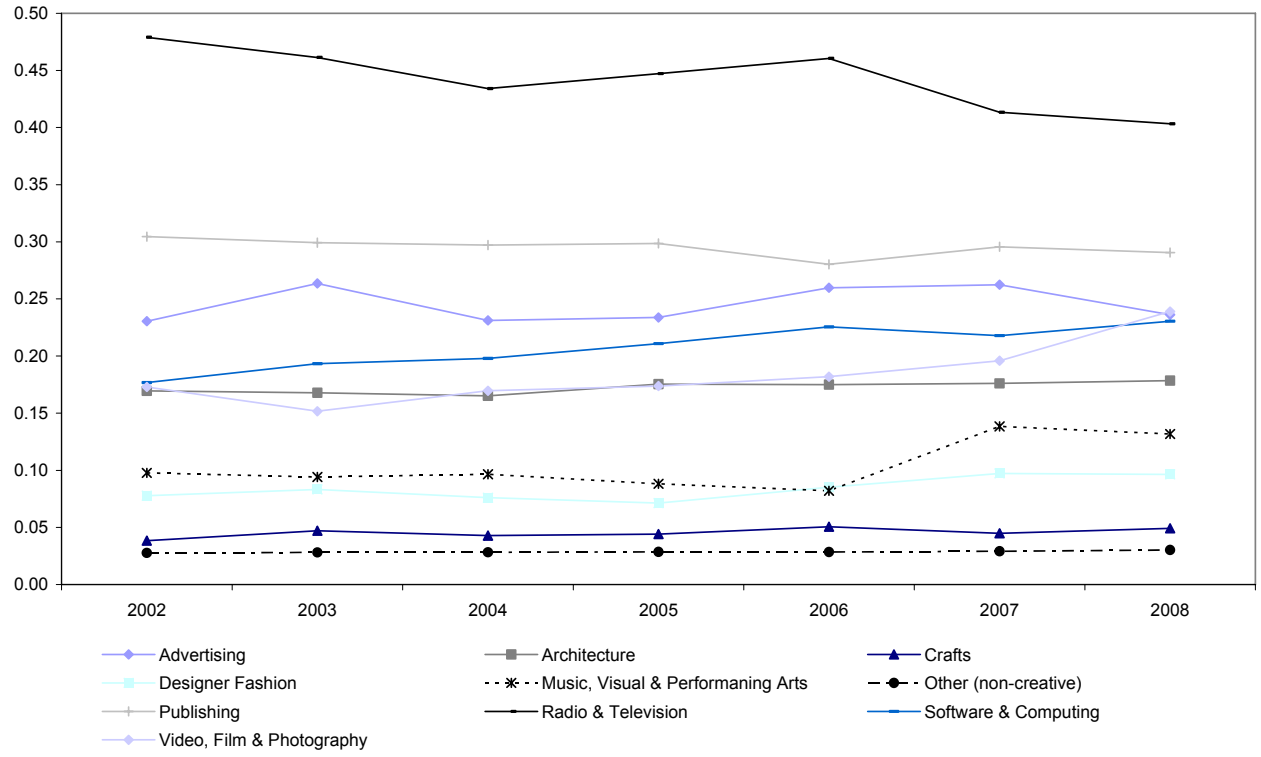
This is an important finding as it will be shown that:

- the positive association between 'expert denseness' and proportion of creative employment extends also to many categories of intangible expenditures

The sectors with the smallest proportion of creative employment are the non–creative sector (3 per cent), the Arts & Antiques sector (4 per cent), the Designer & Fashion sector (8 per cent) and the Music, Visual and Performing Arts sector (11 per cent).

Figure 14 **Proportions of creative employment in each creative sector**

Proportions



Source: ASHE micro data

Measures of intangible spending in the creative industries

Interest in spending on intangibles recognizes a firm's productive assets are broader than traditional 'plant and machinery'. Instead, such alternative assets may be given by:

- the brand recognition of the firm which it may have accumulated through marketing and advertising expenditures over time
- spending on computer services (software)
- the services provided by managers (fully or partially) engaged in optimizing organisational structures through business process re–engineering
- out–sourced or own–account expenditure on original research and development

This section presents a number of graphs showing spending by the creative industries on a number of intangibles. These are computer services, advertising, purchases of computer software, employment of scientists, total R&D expenditure, applied research, experimental research and in–house R&D expenditures.

These indicators have been produced using data (firm–level responses) available from the Annual Business Inquiry (ABI) as well the Business Enquiry on Research & Development (BERD). The graphs visualize relative expenditure intensities – which have been produced by dividing the

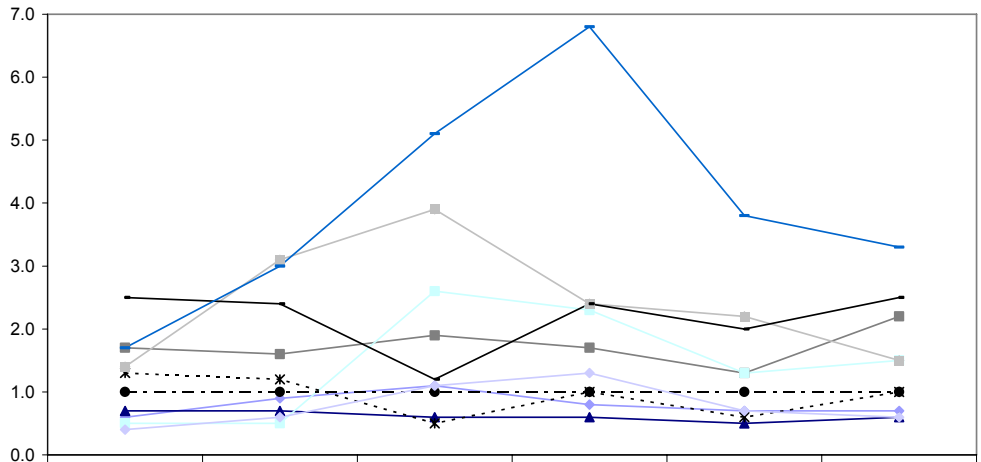
relevant expenditure figures at firm level by each firm's turnover – which have then been further normalized by dividing through by a 'benchmark' sector, which in this case is given by all of the firms not belonging to the creative industries (denominated here as 'Other'). This means that each graph reveals how the intensity of a particular expenditure category varies across time in terms of a multiple of the benchmark category, which remains stable at a value of 1.0 across all time period.

Computer services

Figure 15 shows that the Software & Computing sub–sector, unsurprisingly, reports the highest expenditure intensity in computer services at between 1.5 to nearly 7 times higher than the benchmark. Other sub–sectors which display investment intensities considerably above the benchmark are Publishing, Radio & Television and Architecture, which are up to 4, 2.5 and 2 times higher than the benchmark, respectively. Expenditures on computer services are generally lowest for Arts & Antiques, Music, Visual & Performing Arts, and Advertising. The Designer Fashion category starts off with a relatively low multiple of the benchmark at about 0.5 in 2001 and 2002 before increasing to a multiple of approximately 2.5 in 2003 and eventually falling to a multiple of 1.5 in the final year of the sample in 2006.

Figure 15 Creative industry spending on computer services

Expenditure intensity relative to benchmark



	2001	2002	2003	2004	2005	2006
Advertising	0.6	0.9	1.1	0.8	0.7	0.7
Architecture	1.7	1.6	1.9	1.7	1.3	2.2
Arts & Antiques	0.7	0.7	0.6	0.6	0.5	0.6
Designer Fashion	0.5	0.5	2.6	2.3	1.3	1.5
Music, Visual & Performing Arts	1.3	1.2	0.5	1.0	0.6	1.0
Other	1.0	1.0	1.0	1.0	1.0	1.0
Publishing	1.4	3.1	3.9	2.4	2.2	1.5
Radio & Television	2.5	2.4	1.2	2.4	2.0	2.5
Software & Computing	1.7	3.0	5.1	6.8	3.8	3.3
Video, Film & Photography	0.4	0.6	1.1	1.3	0.7	0.6

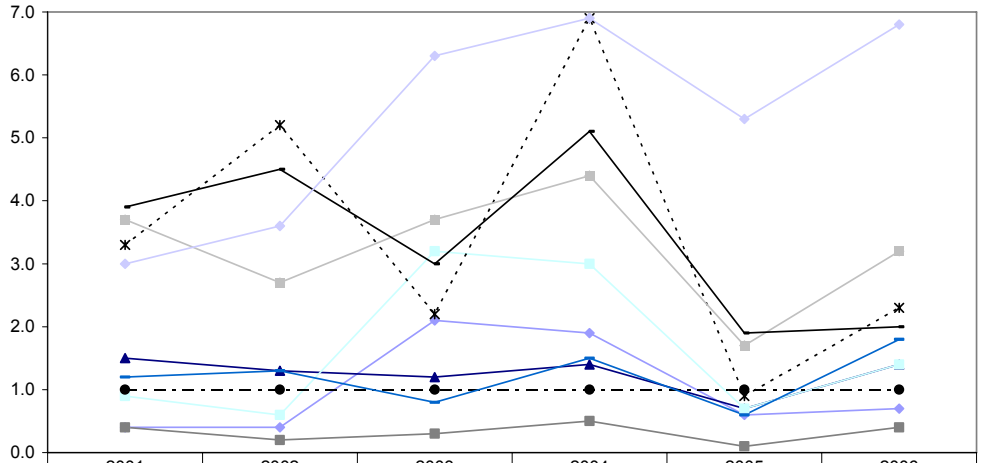
Source: ABI micro data

Advertising

Advertising expenditure is an indicator of firm investment in branding or reputation capital. Relative to the benchmark, spending is a significant multiple for Video, Film & Photography, Radio & Television and Publishing, which reach levels of up to 7, 5 and 4.5 times the investment intensity of the benchmark. Above average investment intensities are also exhibited by Music, Visual & Performing Arts, which happens to be the most volatile series. Creative sectors where advertising spending is closer to the benchmark – and are also much less volatile – are Arts & Antiques, Software & Computing and Architecture. Of these, the first two are usually above the benchmark in terms of relative expenditure, while the latter is normally below benchmark spending.

Figure 16 Creative industry spending on advertising

Expenditure intensity relative to benchmark



	2001	2002	2003	2004	2005	2006
Advertising	0.4	0.4	2.1	1.9	0.6	0.7
Architecture	0.4	0.2	0.3	0.5	0.1	0.4
Arts & Antiques	1.5	1.3	1.2	1.4	0.7	1.4
Designer Fashion	0.9	0.6	3.2	3.0	0.7	1.4
Music, Visual & Performing Arts	3.3	5.2	2.2	6.9	0.9	2.3
Other	1.0	1.0	1.0	1.0	1.0	1.0
Publishing	3.7	2.7	3.7	4.4	1.7	3.2
Radio & Television	3.9	4.5	3.0	5.1	1.9	2.0
Software & Computing	1.2	1.3	0.8	1.5	0.6	1.8
Video, Film & Photography	3.0	3.6	6.3	6.9	5.3	6.8

Source: ABI micro data

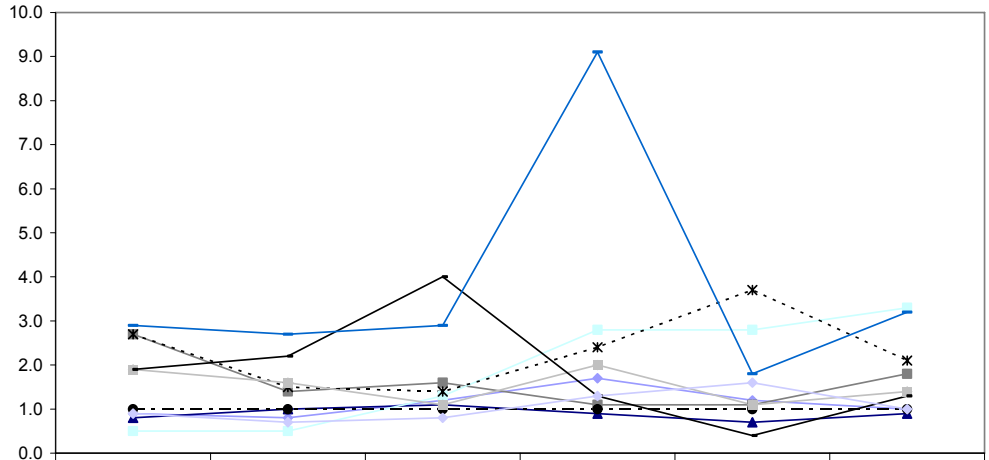
Purchased computer software

The Software & Computing sub–sector records the highest purchases of computer software at about 3 times the benchmark (**Figure 17**). This multiple rises to more than 9 in 2004 which may reflect an outlier. Radio & Television as well as Music, Visual and Performing Arts are the other two categories where investment intensities are generally above the benchmark, ranging between 1–4 and 1–3.5 respectively. Designer Fashion starts off below the benchmark only to rise significantly above it – reaching a peak of above 3 in 2006. Architecture also displays investment intensity

levels consistently above 1. Most of the other creative sectors record investment intensities which are close to the benchmark category.

Figure 17 Creative industry spending on computer software

Expenditure intensity relative to benchmark



	2001	2002	2003	2004	2005	2006
Advertising	0.9	0.8	1.2	1.7	1.2	1.0
Architecture	2.7	1.4	1.6	1.1	1.1	1.8
Arts & Antiques	0.8	1.0	1.1	0.9	0.7	0.9
Designer Fashion	0.5	0.5	1.3	2.8	2.8	3.3
Music, Visual & Performing Arts	2.7	1.5	1.4	2.4	3.7	2.1
Other	1.0	1.0	1.0	1.0	1.0	1.0
Publishing	1.9	1.6	1.1	2.0	1.1	1.4
Radio & Television	1.9	2.2	4.0	1.3	0.4	1.3
Software & Computing	2.9	2.7	2.9	9.1	1.8	3.2
Video, Film & Photography	0.9	0.7	0.8	1.3	1.6	1.0

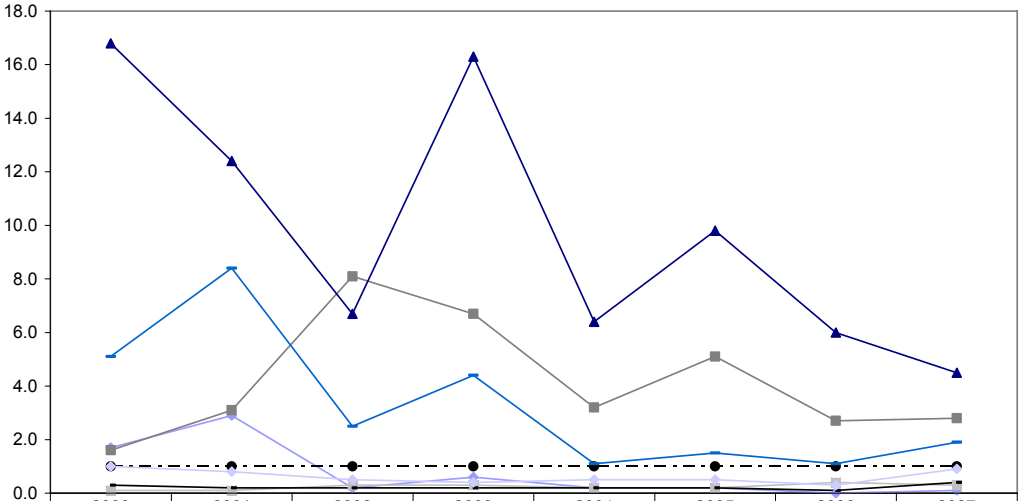
Source: ABI micro data

Employment of scientists

Figure 18 shows substantial volatility in a number of series but the Architecture, Arts & Antiques and Software & Computing industries all employ significantly more scientists relative to their general workforce, than those set of firms not belonging to the creative industries. This implies that two sectors with very high proportions of skills- or sector-specific employment shares – namely Software & Computing and Architecture – employ a significantly higher number of scientists relative to their general workforce than is the case in the benchmark sector.

Figure 18 Creative industry spending on employment of scientists

Expenditure intensity relative to benchmark



	2000	2001	2002	2003	2004	2005	2006	2007
Advertising	1.7	2.9	0.2	0.6	0.2	0.2	0.0	0.1
Architecture	1.6	3.1	8.1	6.7	3.2	5.1	2.7	2.8
Arts & Antiques	16.8	12.4	6.7	16.3	6.4	9.8	6.0	4.5
Other	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Publishing	0.1	0.1	0.3	0.3	0.2	0.2	0.4	0.3
Radio & Television	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.4
Software & Computing	5.1	8.4	2.5	4.4	1.1	1.5	1.1	1.9
Video, Film & Photography	1.0	0.8	0.5	0.4	0.5	0.5	0.3	0.9

Source: BERD micro data

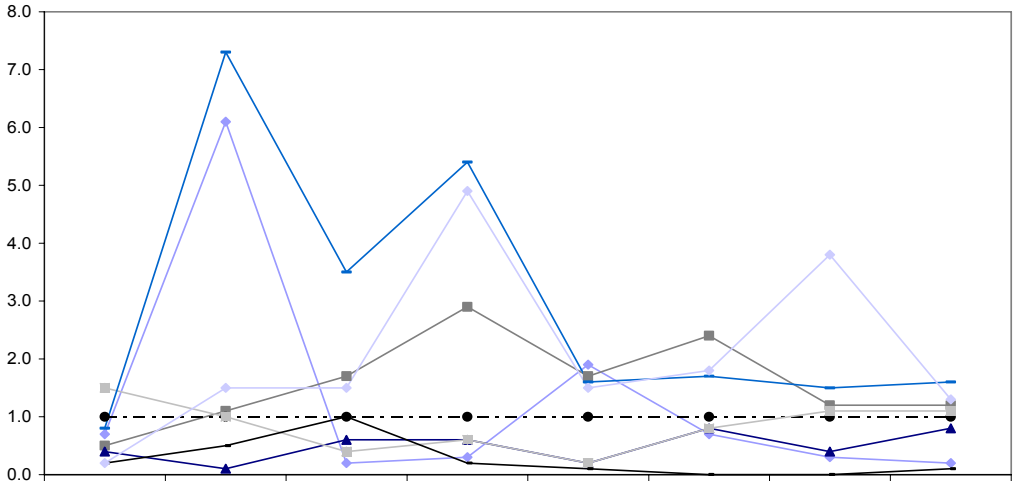
Research and Development

As **Figure 19** shows, there are three industries in the creative sector which consistently spend more on research and development than the benchmark of the non–creative industries. These industries are Architecture, Software & Computing and Video, Film & Photography. The other creative industries may rise above benchmark spending sporadically, such as Advertising in 2001 and 2004 and Publishing in 2000, 2006 and 2007, but these levels of expenditure relative to the benchmark are not sustained. Arts & Antiques and Radio & Television generally show a low level of spending on R&D.

These patterns are repeated when looking at the components of total R&D spending – Applied R&D (**Figure 20**), Experimental R&D (**Figure 21**) and In–house R&D (**Figure 22**). In each of these sub–categories of R&D, only the Architecture, Software & Computing and Video, Film & Photography industries consistently spend more than the benchmark. The other creative–industries generally undertake these R&D activities less intensively than in the non–creative industries as a whole.

Figure 19 Creative industry spending on total R&D

Expenditure intensity relative to benchmark

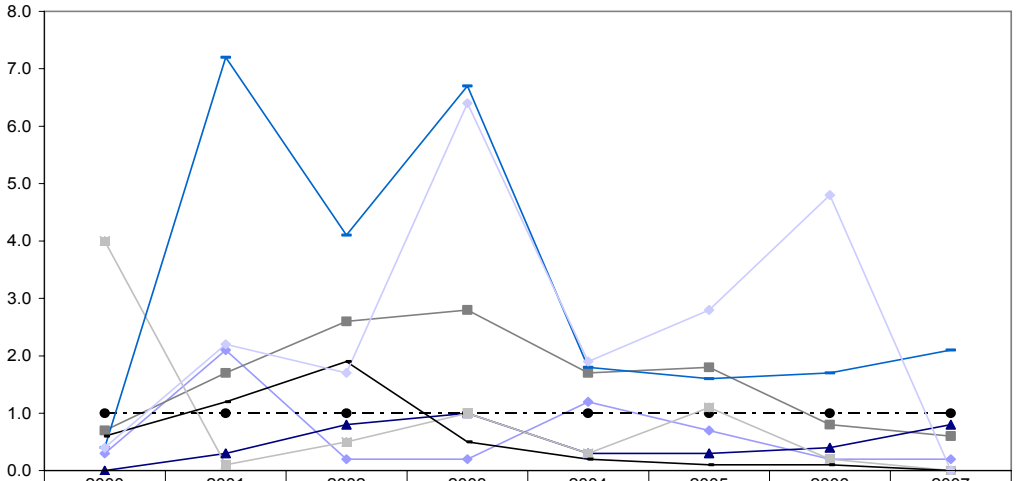


	2000	2001	2002	2003	2004	2005	2006	2007
Advertising	0.7	6.1	0.2	0.3	1.9	0.7	0.3	0.2
Architecture	0.5	1.1	1.7	2.9	1.7	2.4	1.2	1.2
Arts & Antiques	0.4	0.1	0.6	0.6	0.2	0.8	0.4	0.8
Other	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Publishing	1.5	1.0	0.4	0.6	0.2	0.8	1.1	1.1
Radio & Television	0.2	0.5	1.0	0.2	0.1	0.0	0.0	0.1
Software & Computing	0.8	7.3	3.5	5.4	1.6	1.7	1.5	1.6
Video, Film & Photography	0.2	1.5	1.5	4.9	1.5	1.8	3.8	1.3

Source: BERD micro data

Figure 20 Creative industry spending on applied R&D

Expenditure intensity relative to benchmark

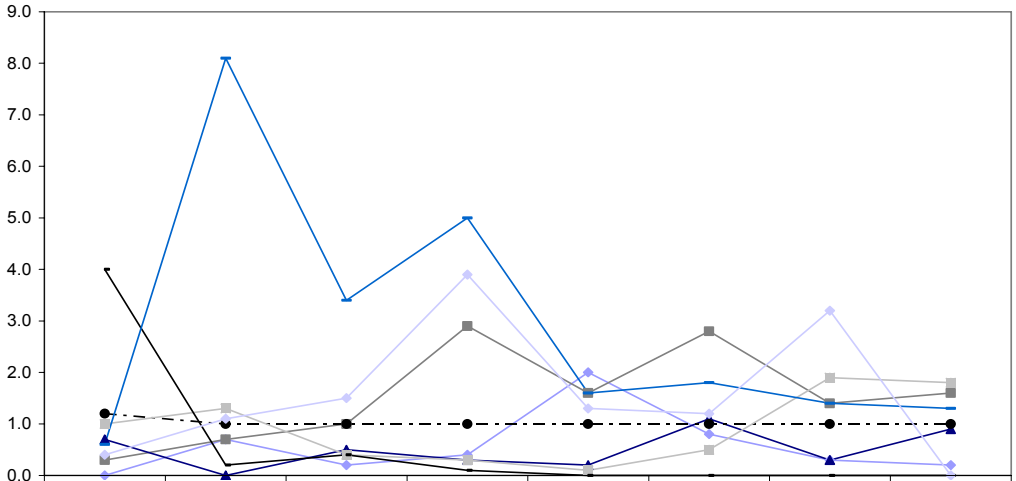


	2000	2001	2002	2003	2004	2005	2006	2007
Advertising	0.3	2.1	0.2	0.2	1.2	0.7	0.2	0.2
Architecture	0.7	1.7	2.6	2.8	1.7	1.8	0.8	0.6
Arts & Antiques	0.0	0.3	0.8	1.0	0.3	0.3	0.4	0.8
Other	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Publishing	4.0	0.1	0.5	1.0	0.3	1.1	0.2	0.0
Radio & Television	0.6	1.2	1.9	0.5	0.2	0.1	0.1	0.0
Software & Computing	0.4	7.2	4.1	6.7	1.8	1.6	1.7	2.1
Video, Film & Photography	0.4	2.2	1.7	6.4	1.9	2.8	4.8	0.0

Source: BERD micro data

Figure 21 Creative industry spending on experimental R&D

Expenditure intensity relative to benchmark

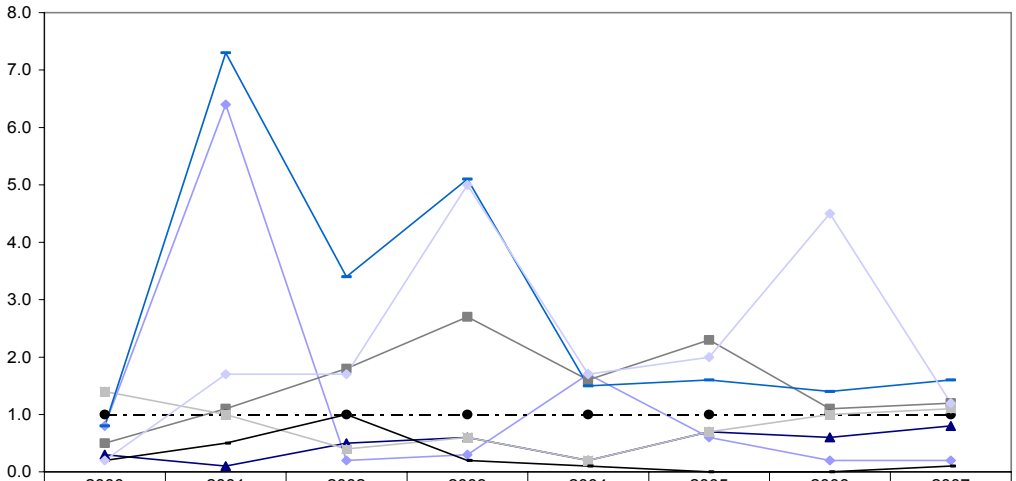


	2000	2001	2002	2003	2004	2005	2006	2007
Advertising	0.0	0.7	0.2	0.4	2.0	0.8	0.3	0.2
Architecture	0.3	0.7	1.0	2.9	1.6	2.8	1.4	1.6
Arts & Antiques	0.7	0.0	0.5	0.3	0.2	1.1	0.3	0.9
Other	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Publishing	1.0	1.3	0.4	0.3	0.1	0.5	1.9	1.8
Radio & Television	4.0	0.2	0.4	0.1	0.0	0.0	0.0	0.0
Software & Computing	0.6	8.1	3.4	5.0	1.6	1.8	1.4	1.3
Video, Film & Photography	0.4	1.1	1.5	3.9	1.3	1.2	3.2	0.0

Source: BERD micro data

Figure 22 Creative industry spending on experimental R&D

Expenditure intensity relative to benchmark



	2000	2001	2002	2003	2004	2005	2006	2007
Advertising	0.8	6.4	0.2	0.3	1.7	0.6	0.2	0.2
Architecture	0.5	1.1	1.8	2.7	1.6	2.3	1.1	1.2
Arts & Antiques	0.3	0.1	0.5	0.6	0.2	0.7	0.6	0.8
Other	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Publishing	1.4	1.0	0.4	0.6	0.2	0.7	1.0	1.1
Radio & Television	0.2	0.5	1.0	0.2	0.1	0.0	0.0	0.1
Software & Computing	0.8	7.3	3.4	5.1	1.5	1.6	1.4	1.6
Video, Film & Photography	0.2	1.7	1.7	5.0	1.7	2.0	4.5	1.2

Source: BERD micro data

Conclusions

This article has attempted to analyse and draw links between patterns of employment and spending on intangibles in the UK's creative industries. For the majority of the creative industries, the earnings–adjusted number of creative workers has been rising between 2002 and 2008. Sector–specific employment is typically dominant and stable and Software & Computing work is on the rise for practically all creative industry sectors. Advertising workers have also seen significant increases in their share of total creative employment between 2002 and 2008.

Two broad themes emerge from the analysis on spending on intangibles by creative industries. First, industries with high levels of skill– or sector–specific creative workforces tend to exhibit higher levels of spending on intangibles. This primarily includes Software & Computing, but also Architecture and Publishing. Second, Arts & Antiques is the creative sector displaying the lowest proportion of creative employment in total employment, and for that sector intangibles spending is consistently below the benchmark set of non–creative sectors.

This micro data study therefore posits a possible link between creative industries and higher (relative) spending on intangibles. This is particularly true for those creative sectors with high levels of skills- or sector-specific employment and suggests a link between 'creative expert denseness', relative levels of creative employment and the relative level of intangible spending.

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Notes

1. These are constructed using the 2003 Standard Industrial Classification (SIC) at the 4 digit level.

2. Further work shows that in growth accounting exercises including intangible spending as capital inputs fundamentally re–writes Britain's past productivity record. (see Giorgio Marrano, Haskel and Wallis 2007).

3. ASHE records the average earnings of all employees whose National Insurance number ends with '14'.

4. Strictly speaking the micro data being used here is the Annual Respondents Database (ARD). This is a database specific to the Virtual Microdata Laboratory (VML) at the Office for National Statistics containing individual firm–level responses to ABI1 and ABI2.

5. Based on the Standard Occupational Classification (SOC).

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