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## Appendix: Sheffield data analysis

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This analysis report sets out the data collected during the research process that produced the Centre for Cities' Sheffield Partner City report *Advancing Ambitions*. It makes a number of headline points.

- Between 1971 and 2008, the manufacturing sector in Sheffield declined by 74 percent. The city is now recovering with the population of Sheffield having grown at an annual average rate of 3.5 percent since 2001.
- The city saw strong jobs growth between 1995 and 2008, with the number of jobs increasing by 22 percent. More than half of these new jobs were in the public services.
- Sheffield's economy still has some structural weaknesses. It has a two-tier workforce, with 28.2 percent of the residents holding a degree but 15.3 percent of the city's residents holding no qualification.
- Sheffield's high growth sectors are unlikely to be big employers in the future. Currently they only provide 15.6 percent of the city's employment, but they do make a higher than average contribution to GVA.
- Advanced manufacturing is a real strength of the city, with the proportion of total employment in this sector in Sheffield being almost double the national average.
- The city has a low level of entrepreneurship with only 29.9 business births per 10,000 people in 2008. This compares to the UK figure of 44.
- The low price of commercial office space in Sheffield (a rateable value of £86 per m<sup>2</sup>), suggests that a lack of office space is not a barrier to business growth.
- With 2,400 postgraduate research students, the combined size of Sheffield's universities places it on a middle tier of cities hoping to make use of their knowledge assets.
- Sheffield's universities created 17 spin-outs between 2004 and 2008. The city's universities may be able to increase this number in the future.

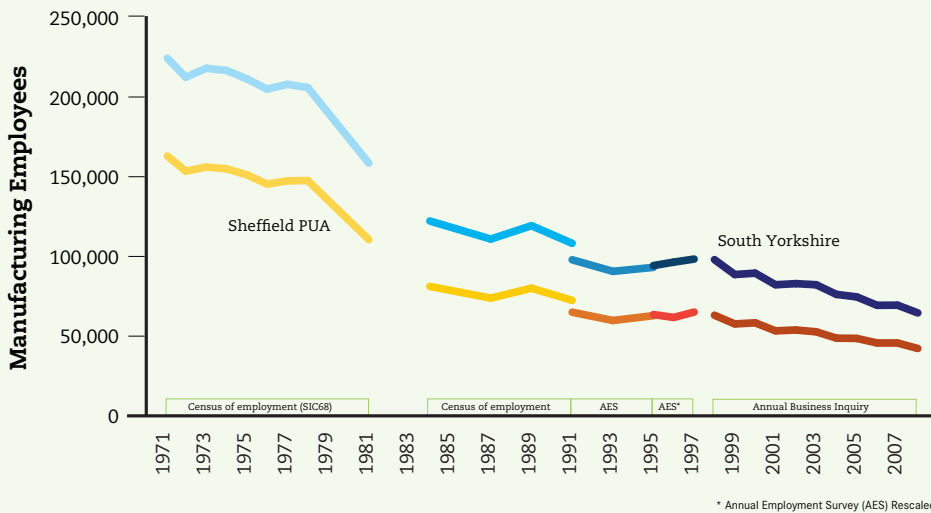
This data appendix is divided into four sections: the first section puts the Sheffield economy in context, the second section looks at the contribution of Sheffield's key sectors to the local economy, the third section analyses business and firm growth in Sheffield, and the final section looks at the contribution that Sheffield's universities could make to strengthen the private sector economy.

All figures in this report refer to the Sheffield, and other cities, Primary Urban Area (PUA). Sheffield's PUA includes Sheffield and Rotherham local authorities.

## The Sheffield economy in context

### Sheffield's decline and recovery

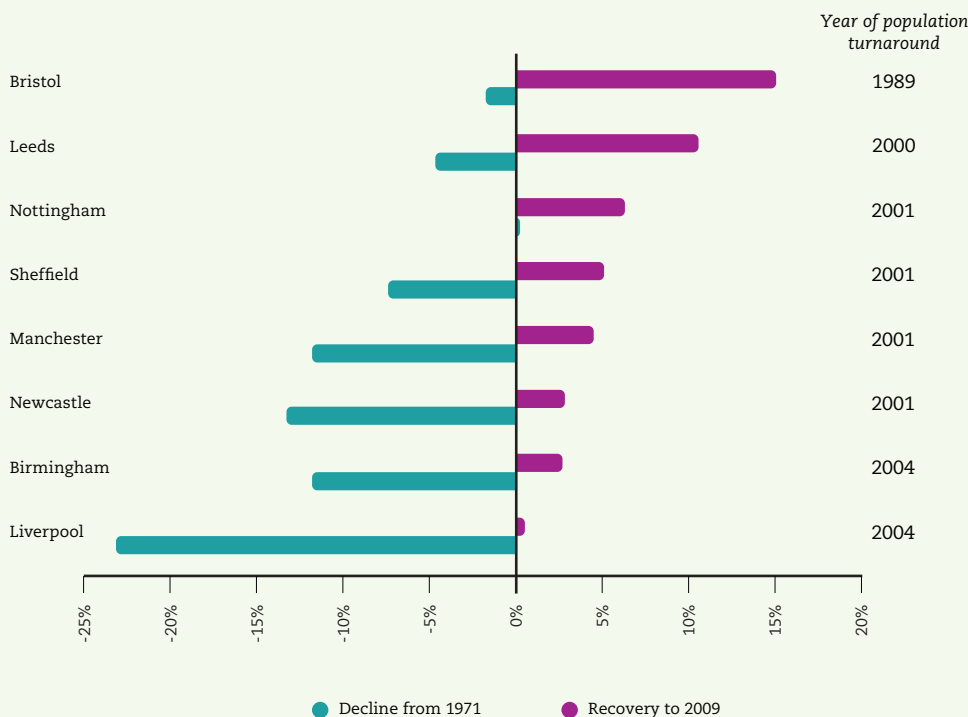
Sheffield experienced significant job losses as a result of the decline of its manufacturing sector, but from 2001 saw a turnaround in its economic performance.



**Figure 1:** Decline of the manufacturing sector in Sheffield and South Yorkshire (1971-2007)

**Source:** Census of Employment, Annual Employment Survey, Annual Business Inquiry

- Between 1971 and 2008, the manufacturing sector in Sheffield declined by 74 percent, shedding 120,000 jobs (Figure 1). A further 40,000 jobs were lost in the rest of the South Yorkshire sub-region.
- Nationally, the sector declined by 66 percent over the same period.

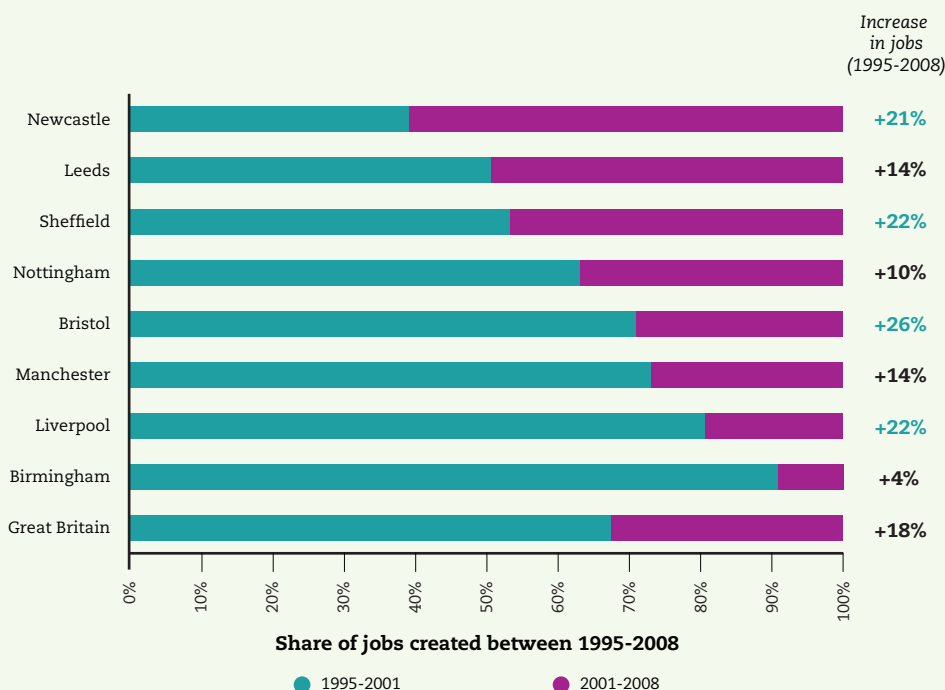


**Figure 2:** Population decline and recovery in England's Core Cities (1979-2008)

**Source:** Mid-year Population Estimates

- Population trends are an important indicator of a city's economic strength. Patterns of migration are associated with the strength of economic opportunity in a location – people move to where the jobs are.
- Sheffield's population has undergone a strong recovery, indicating a resurgent economy. From its lowest point in 2001 it has grown by 3.5 percent (Figure 2). This is the fourth strongest performance of the Core Cities.
- Sheffield's performance is even more impressive when you consider that two cities above Sheffield in the ranking – Bristol and Nottingham – did not see deindustrialisation on the same scale, and their population growth occurred from a stronger initial starting.

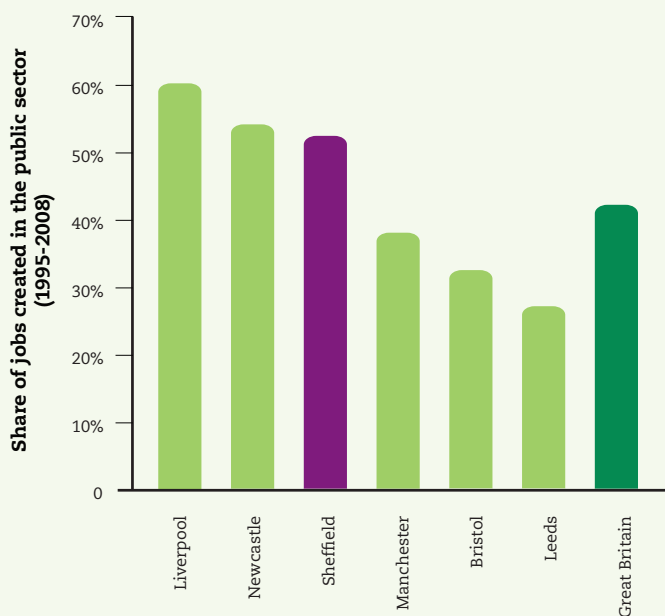
### Private and Public Sector Jobs Growth



**Figure 3:** Jobs growth in the Core Cities (1995-2008)

Source: Annual Business Inquiry

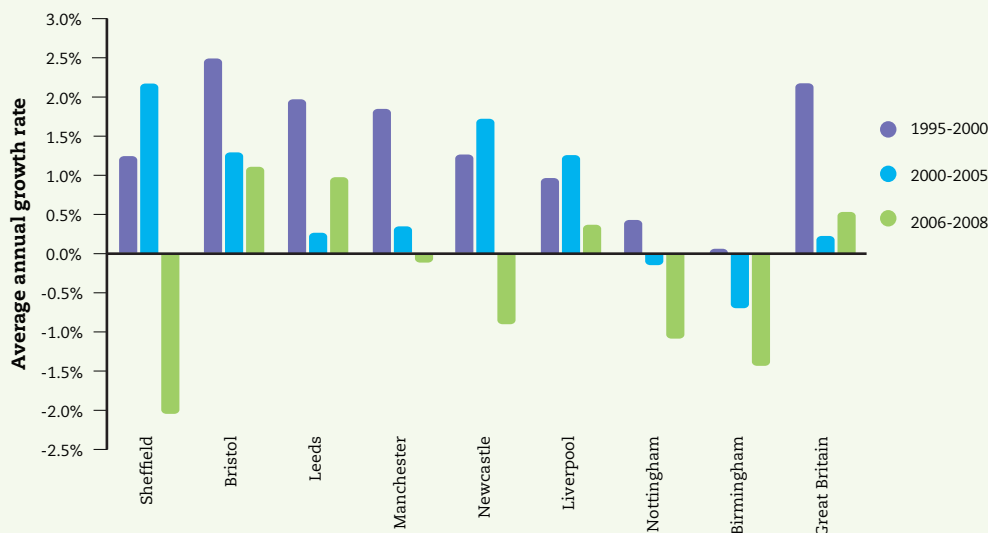
- Jobs growth in Sheffield has been fairly strong over the past decade and a half. Between 1995 and 2008, the number of jobs in Sheffield increased by 22 percent (Figure 3). This jobs growth was above the national average and makes Sheffield one of the strongest performers of the Core Cities.
- Sheffield also experienced relatively balanced growth with 53 percent of the total jobs growth occurring between 1995 and 2001 and 47 percent of the growth occurring between 2001 and 2008. Birmingham, Liverpool and Manchester by contrast saw a far greater proportion of their total jobs growth occur during the period 1995 to 2001.



**Figure 4:** The public sector has accounted for over half of the jobs created (1995-2008)

Source: Annual Business Inquiry

- Much of Sheffield’s total jobs growth can be attributed to the growth of the public sector – defined as those employed in public administration, education and health. In fact, 52 percent of the jobs created in Sheffield between 1995 and 2008 were in the public sector (Figure 4). This is 10 percentage points higher than the national average of 42 percent.
- This is a feature that Sheffield shares with many of the other Core Cities, such as Liverpool (60 percent) and Newcastle (54 percent). Indeed, Nottingham and Birmingham are excluded from the figure above because they saw overall private sector decline masked by public sector jobs growth over this period - more than 100 percent of the net jobs created in Nottingham and Birmingham were in the public sector.



**Figure 5:** Private sector jobs growth in Sheffield occurred later than in other Core Cities (1995-2008)

Source: Annual Business Inquiry

- One of the reasons that Sheffield has seen this more “balanced” profile of growth is that, compared to a number of the other Core Cities, Sheffield saw relatively weak private sector growth during the early stages of the period 1995 to 2008.
- Compared with Bristol, Leeds, Manchester and Newcastle, Sheffield saw slower private sector jobs growth between 1995 and 2000 – with an annual average growth rate of 1.2 percent (Figure 5).
- In the period that followed, between 2000 and 2005, private sector jobs growth in Sheffield outstripped all of the other Core Cities, with an annual average growth rate of 2.2 percent.
- More recently, Sheffield has seen a decline in the number private sector jobs in the city. Between 2006 and 2008, private sector jobs fell at an annual average rate of 2.0 percent. This was the biggest decline of the Core Cities over this period.

### Sheffield's labour market

Despite the relatively robust jobs growth seen in Sheffield over the past decade and a half, the city's economy still suffers from a number of structural problems. It has a two-tier workforce, with those with low level qualifications suffering from higher unemployment. And even though the city has a strong supply of skilled workers it has a lack of high skilled jobs.

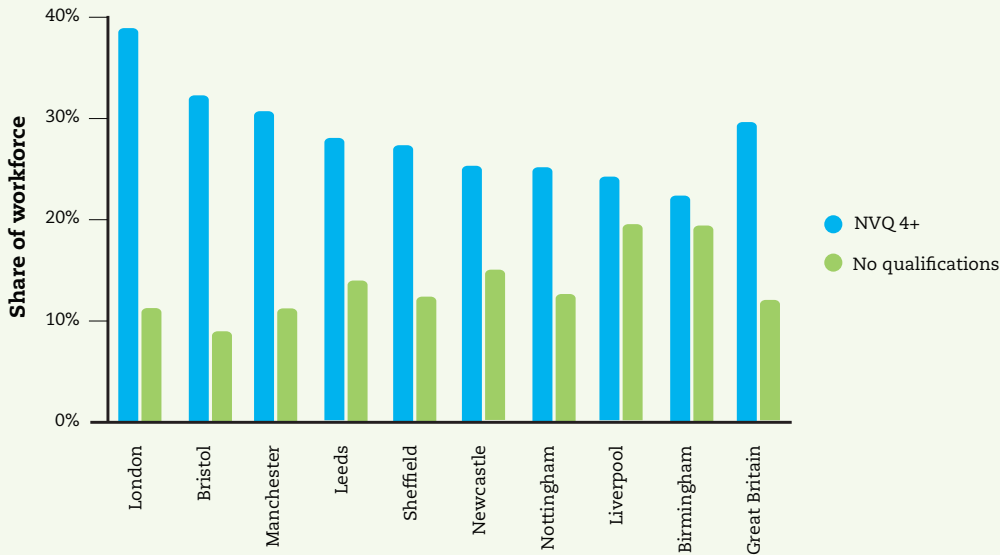
City	September 2007	September 2009	Change 2007/09
Bristol	77.5	76.4	-1.1
Leeds	74.9	71.4	-3.5
Manchester	71.9	67.9	-4.0
Nottingham	71.6	67.8	-3.8
Newcastle	70.8	67.5	-3.3
Sheffield	70.5	68.3	-2.2
Birmingham	67.1	63.4	-3.7
Liverpool	64.9	63.5	-1.4
Yorkshire and the Humber	73.3	71.2	-2.1
<b>Great Britain</b>	<b>74.3</b>	<b>72.9</b>	<b>-1.4</b>

**Table 1:** Sheffield's economy still has structural weaknesses (2007/09)

**Source:** Annual Population Survey

- Compared to many of the other Core Cities, the employment rate in Sheffield has not fallen by that much during the recession, declining by 2.2 percentage points between September 2007 and September 2009 (Table 1).
- As a result it currently has the third highest employment rate of any of the Core Cities (68.3 percent), although this is below the national average of 72.9 percent.

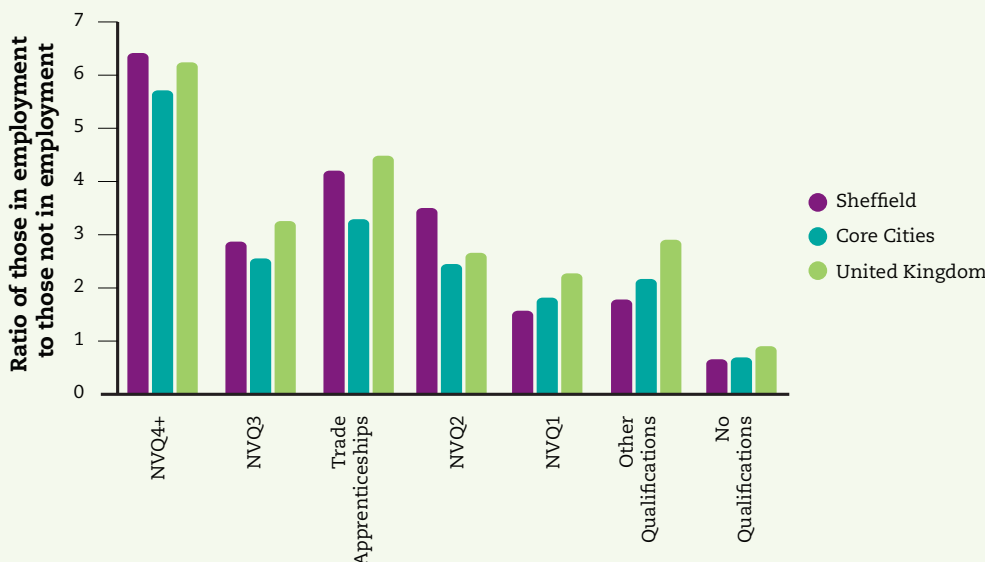
- But looking back a little further reveals a less positive picture. Before the recession, in September 2007, the employment rate in Sheffield was only 70.5 percent, the third lowest performance of the Core Cities and almost 4 percentage points below the national average (74.3 percent). This suggests that structural weaknesses remain in the Sheffield economy.



**Figure 6:** Sheffield's skills profile (2009)

**Source:** Annual Population Survey

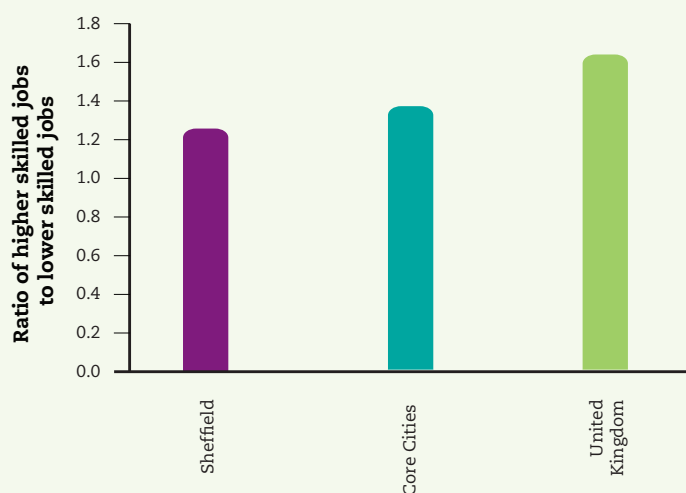
- Of the Core Cities, Sheffield has the fourth largest share of NVQ 4+ workers and the sixth largest share of workers with no qualifications.
- Sheffield saw a significant decline in the number of workers with no qualifications between 2008 and 2009, bringing the share of unqualified workers close to the national average. The share of working age residents with no qualifications fell from 16.6 percent in 2008 to 12.4 percent in 2009, a 4.2 percentage points decline. This change was outside of the confidence intervals, suggesting that there has been a material improvement in the Sheffield economy.



**Figure 7:** Skilled workers have found employment, but unskilled workers are more likely not to be in employment (2008)

**Source:** Annual Population Survey

- Figure 7 above shows the ratio of those in employment to those not in employment for each qualification group. For example, for every person not in employment with an NVQ3 level qualification there were around three in employment in Sheffield.
- Interestingly, Sheffield has a higher ratio of graduates in employment (as shown by NVQ4+) to those not in employment than the other Core Cities (Figure 7). This suggests that the graduates in Sheffield are more able to find employment in Sheffield than in other parts of the country. This is repeated for those with NVQ2 level skills and it is higher than the Core Cities ratio for NVQ3 level skills and for those with trade apprenticeships.
- However, employment prospects for lower skilled people appear to be weaker, suggesting that they find it difficult to find employment. The ratio for those with NVQ1 level / no qualifications was a little lower than for the Core Cities.

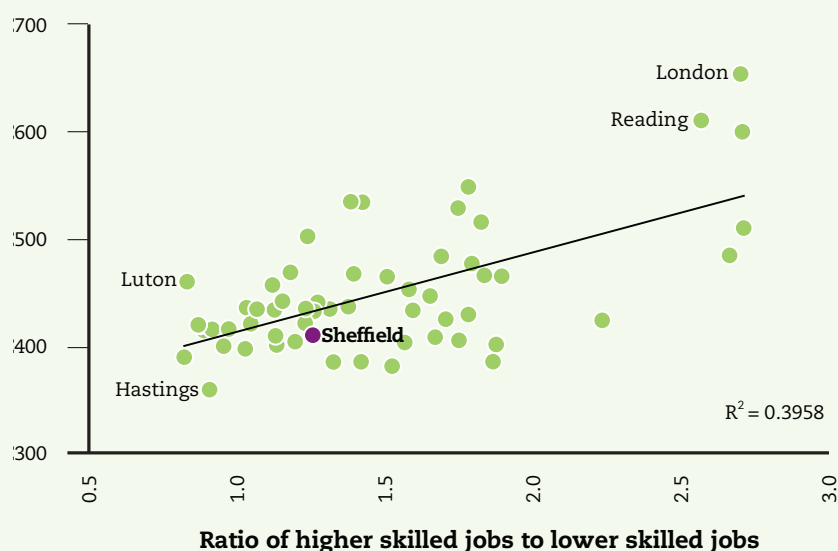


**Figure 8:** Sheffield has a lack of higher skilled jobs (2008)

**Source:** Annual Population Survey

- Figure 8 above shows the ratio of higher skilled jobs to lower skilled jobs as measured by those employed by occupational groups.
- Higher skilled jobs are classified as the top three occupational groups (managers and senior officials, professional occupations, and associate professional and technical occupations). Lower skilled jobs are classified as the bottom three occupational groups (sales and customer service occupations, process, plant and machine operatives, and elementary occupations).
- Sheffield has a lower ratio of higher to lower skilled jobs (1.3) relative to the Core Cities as a group (1.4) and the UK (1.7) (Figure 8).
- In conjunction with the high employment ratio of NVQ4+ workers in Sheffield, this analysis probably suggests that an under-employment

of graduates is taking place. The large cohort of graduates in Sheffield seems to have no problem finding employment, but the number of higher skilled jobs in the city is limited. Therefore, some of those graduates working in Sheffield may be working in occupations which fail to fully utilise their skills.



**Figure 9:** Cities with a greater share of higher skilled jobs have higher wages (2008)

**Source:** Annual Population Survey; Annual Survey of Higher Earnings

- The lack of higher skilled employment shown above is likely to be one of the factors that have led to low wages in Sheffield. Cities with a higher ratio of higher skilled employment to lower skilled employment generally have higher weekly wages (Figure 9).
- The mean wage in Sheffield is below the Core City average. At £410 per week, the mean wage in the city was the lowest out of all Core Cities in 2008. This is a sign of weak labour demand.

## Sheffield's key sectors

This section analyses issues related to the performance of specific sectors in the Sheffield economy which the council has identified as key sectors – the advanced manufacturing sector, digital and new media and healthcare technologies.<sup>1</sup> It looks at how specialised Sheffield is in these sectors, what the key features of these sectors are and how they are spatially distributed across Sheffield's Primary Urban Area (PUA).

**1.** Yorkshire Forward's SIC code definitions of these sectors are used.

## Manufacturing and other key sectors

- In the short-run, many sectors exhibit a trade off between productivity growth and employment growth. Sectors which are likely to generate increased wealth are unlikely to be big providers of new employment opportunities. Similarly, many of the sectors which provide lots of additional employment are unlikely to be high value or to experience productivity growth.



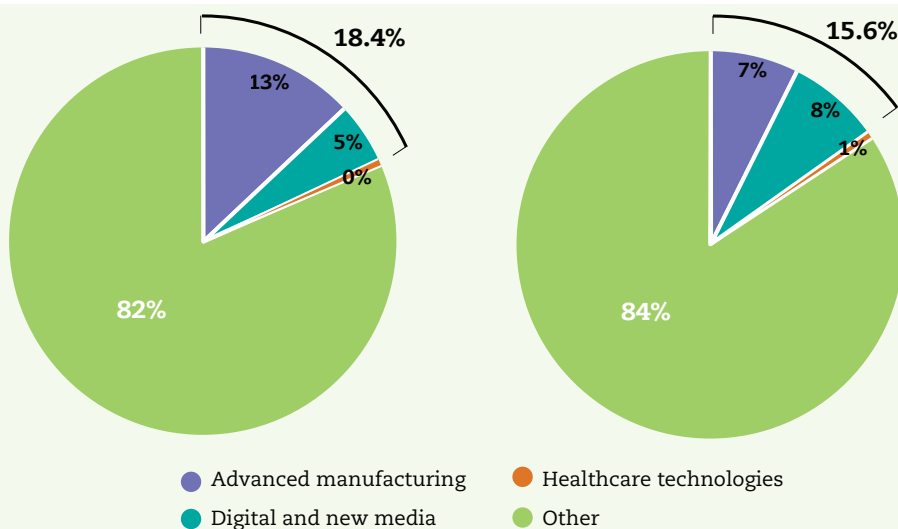
- Over the past decade, in South Yorkshire, sectors like manufacturing have seen their output per job grow, while their employment has declined (Figure 10). This trend seems likely to continue. While manufacturing may make a larger contribution to Sheffield’s GVA it is likely that overall employment totals in the sector will continue to decline.



**Figure 10:** Most sectors in South Yorkshire have experienced productivity growth or employment growth not both (1997-2007)

**Source:** Office of National Statistics; Annual Business Inquiry

- Between 1997 and 2007, only one sector saw both significant employment growth and output per worker growth – real estate, renting and business activity. This sector is a big employer and makes up a large proportion of total economic activity. Its future is now less certain following the recession, but it seems likely that it will continue to be a source of jobs growth in the future.
- Sheffield has identified three key sectors – advanced manufacturing, digital and new media and healthcare technologies. None of these sectors is likely to be a major employer for the city. Currently, the sectors contribute around 15.6 percent of Sheffield’s employment, down 2.9 percentage points from 1998 (Figure 11).
- This decline has been caused by the fall in employment in the advanced manufacturing sector, which includes the manufacture of basic metals, the manufacture of fabricated metal products, and the automotive and aerospace industries. Employment in advanced manufacturing fell by 29 percent between 1998 and 2008.
- The major employment components of the digital and new media sector are printing, software consultancy, architecture and miscellaneous business activities. In 2008, it contributed seven percent of Sheffield’s total employment.



**Figure 11:** Key sectors only provide a small amount of Sheffield's total employment

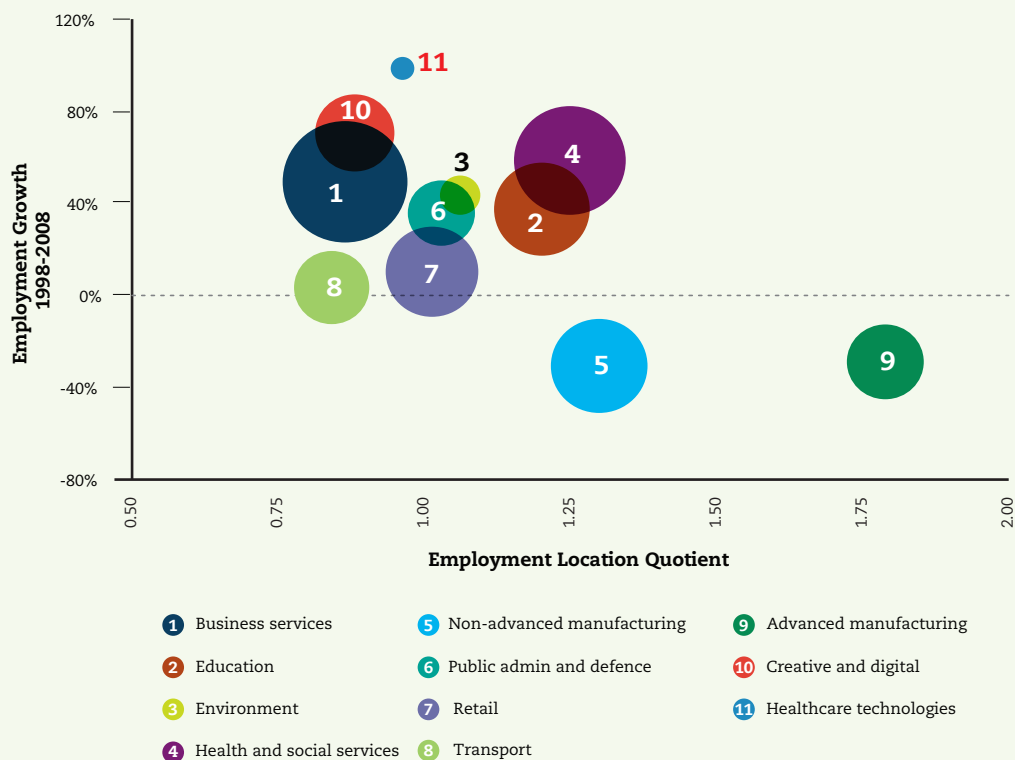
**Source:** Annual Business Inquiry

- The major employment component of the healthcare technologies sector is the manufacture of medical and surgical equipment – it accounts for 47 percent of the total employment in the healthcare technologies sector. In 2008, it contributed one percent of Sheffield's total employment.
- While the key sectors as a whole may now expand as an employer in Sheffield, their small size means that they are unlikely to be a substantial source of new employment.

### Characteristics of Sheffield's key sectors

Sheffield's three key sectors all have very different characteristics and features. Of the three, advanced manufacturing is the sector in which Sheffield has the greatest specialism. While the three key sectors have different firm structures, all have a large percentage of small businesses.

- Figure 12 shows a selection of Sheffield's sectors organised by recent growth in employment (y-axis), their specialisation in Sheffield (x-axis) and their total employment (bubble size).
- Advanced manufacturing (9) is clearly a comparative strength for the city with a location quotient of 1.8 – Sheffield's share of employment in this sector is almost double the national average. Of the Core Cities, only Birmingham has a greater specialisation than Sheffield in advanced manufacturing.
- By contrast, Sheffield does not appear to have a specialism in digital and new media (10) – the location quotient for this sector is 0.9. However, the sector has undergone significant growth during the past decade, with employment increasing by 71 percent.
- Finally, healthcare technologies has a location quotient of 1.0 indicating that there is about the same proportion of employment in this sector in Sheffield as there is across the country as a whole. We can also see again just how small an employment contribution the sector makes.



**Figure 12:** Advanced manufacturing is the strongest of the key sectors

Source: Annual Business Inquiry

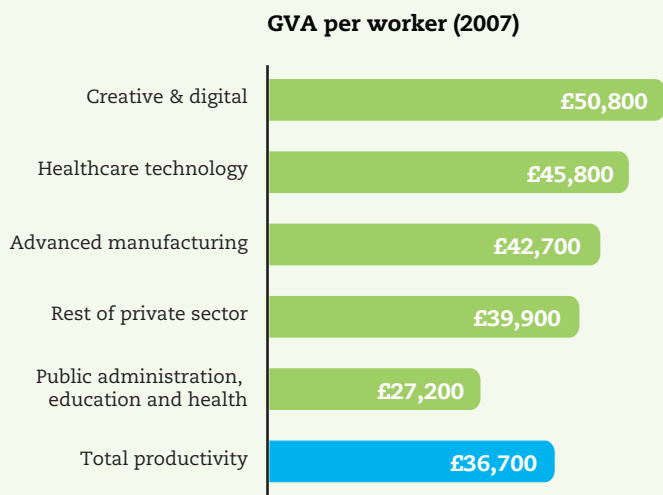
- Sheffield’s three key sectors have quite different characteristics. Despite employing a similar number of people there are almost three times as many firms in the digital and new media sector as in advanced manufacturing (Table 2).

	Advanced manufacturing	Digital and new media	Healthcare technologies	All employment
Employees	24,900	26,900	2,400	347,400
Firms	1,140	3,220	100	24,226
Employees per firm	21.8	8.3	23.6	14.3
Share of firms with:				
1-10 employees	65%	92%	60%	81%
11-49 employees	26%	6%	32%	14%
50-199 employees	8%	2%	< 10%	4%
200+ employees	< 2%	1%	< 5%	1%
Share of employees working part-time				
	5.1%	20.0%	22.1%	32.9%
Proportion of employees in Sheffield local authority				
	64%	63%	82%	71%
Proportion of firms in Sheffield local authority				
	69%	75%	83%	70%

**Table 2:** Key sectors have different firm structures (2008)

Source: Annual Population Survey

- This means that digital and new media companies employ fewer people. Both the advanced manufacturing sector and the healthcare technologies sector average around 22-23 employees per firm, whereas the digital and new media sector averages eight employees per firm.
- This is also reflected in the share of firms by employee size band for each sector. 65 percent and 60 percent of firms in the advanced manufacturing and healthcare technologies sectors respectively, employ less than 10 people, compared with 92 percent of firms in the digital and new media sector.
- However, it is also important to recognise that the vast majority, over 90 percent, of firms in the advanced manufacturing and healthcare technologies sectors are small, employing less than 50 people.
- A larger share of employees in the digital and new media sector work part time compared with the advanced manufacturing sector, perhaps indicating the prevalence of freelance working in this sector.
- Although the three priority sectors provide a relatively small proportion of the city’s employment, they all contribute above average GVA per worker than the rest of the private sector in the city.

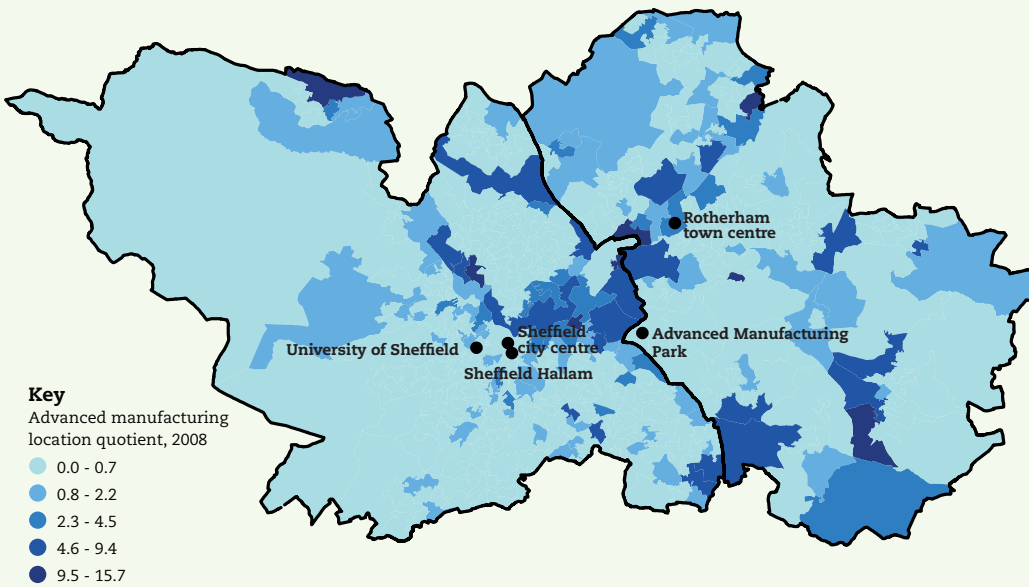


**Figure 13:** Key sectors can add value to the economy

**Source:** ONS (2010) Gross Value added by NUTS2 area; NOMIS (2010), Annual Business Inquiry

### Distribution of Sheffield's key sectors

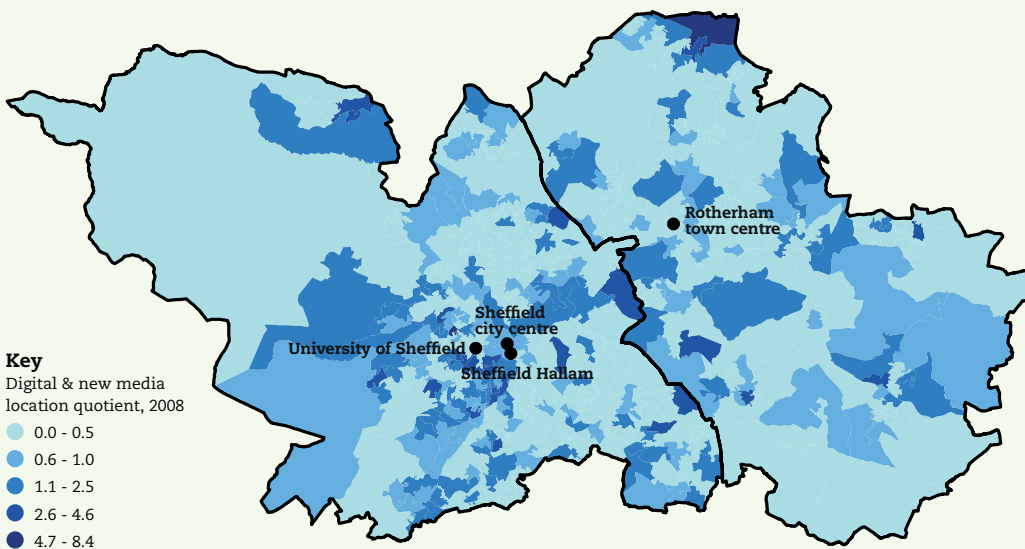
The distribution and concentration of Sheffield's key sectors also differs significantly. The maps below highlight areas of significant employment in each of the three key sectors.



**Figure 14:** Advanced manufacturing sector is concentrated on transport routes

**Source:** Contains Ordnance Survey data © Crown copyright and database right 2011. Annual Business Inquiry Employee Analysis 2008, sectoral definitions provided by Yorkshire Forward.

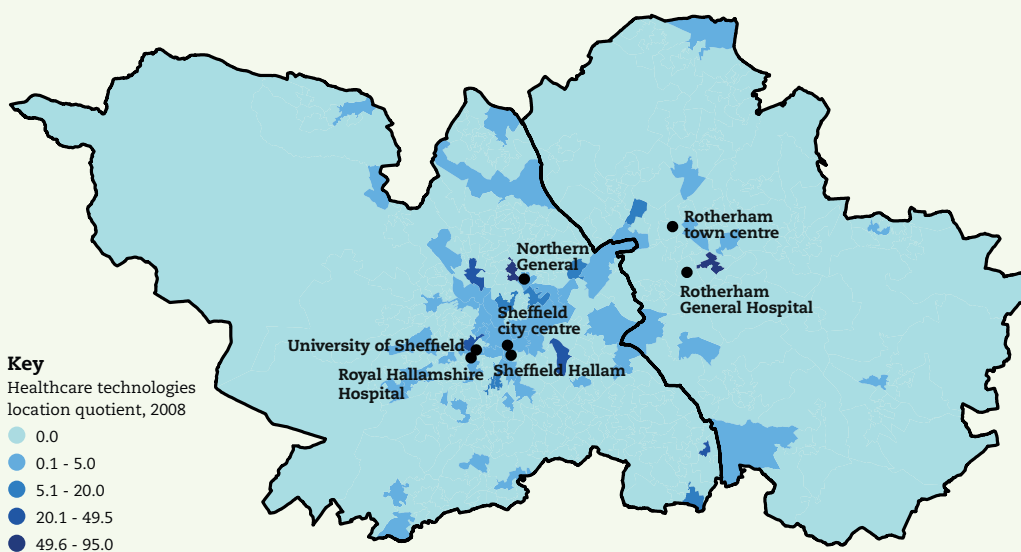
- Sheffield's advanced manufacturing sector is highly clustered along the A6178 between Sheffield and Rotherham (Figure 14). Much of the advanced manufacturing sector is located in Rotherham local authority. The other areas of concentration are also arranged around access to the M1.
- By contrast, Sheffield's digital and new media sector is far more dispersed (Figure 15). Its main concentrations appear to be between the two universities and to the south east of the city centre.



**Figure 15:** Digital and new media sector is located close to the universities

**Source:** Contains Ordnance Survey data © Crown copyright and database right 2011. Annual Business Inquiry Employee Analysis 2008, sectoral definitions provided by Yorkshire Forward.

- The healthcare technologies sector is far more sparsely distributed, reflecting the smaller size of the sector in Sheffield (Figure 16). There are small pockets of activity located in the vicinity of the Royal Hallamshire Hospital, the Northern General and the Rotherham General Hospital.
- There is also some suggestion of activity located along the A6178, probably linked to the manufacturing industries.



**Figure 16:** Healthcare technologies sector is sparsely distributed

**Source:** Contains Ordnance Survey data © Crown copyright and database right 2011. Annual Business Inquiry Employee Analysis 2008, sectoral definitions provided by Yorkshire Forward.

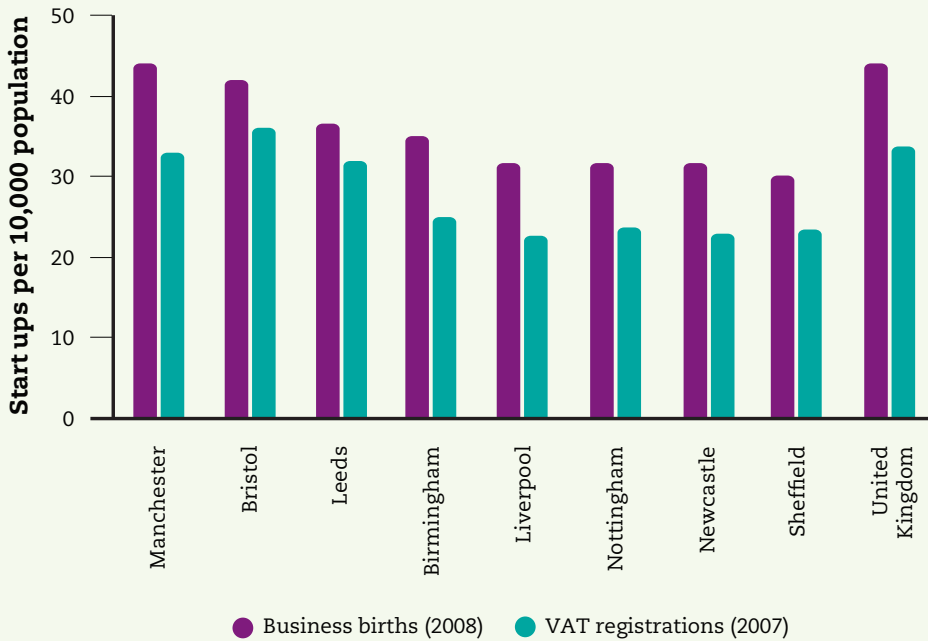
## Enterprise and Business Growth

### Sheffield has a low level of enterprise activity

Enterprise and entrepreneurship is important for urban success and economic growth. One of the reasons for this is that new enterprises out-compete existing firms, reallocating resources from old, less productive uses to new, more productive uses.<sup>2</sup> Sheffield suffers from low rates of enterprise activity. This could be holding back the success of the Sheffield economy.

- There are two datasets relevant for thinking about the number of business start-ups in a city – VAT registrations and business births, from the Business Demography database. The latter covers a larger number of businesses, capturing smaller businesses which do not register for VAT, but is only available going back to 2002.
- Sheffield does poorly on both of these measures (Figure 17). Of the Core Cities, Sheffield had the third lowest number of VAT registrations per 10,000 people in 2007 (23.4) and the lowest number of business births (29.9) in 2008.
- By comparison, the UK figure for VAT registrations per 10,000 people in 2007 was 33.7 and for business births in 2008 it was 44.

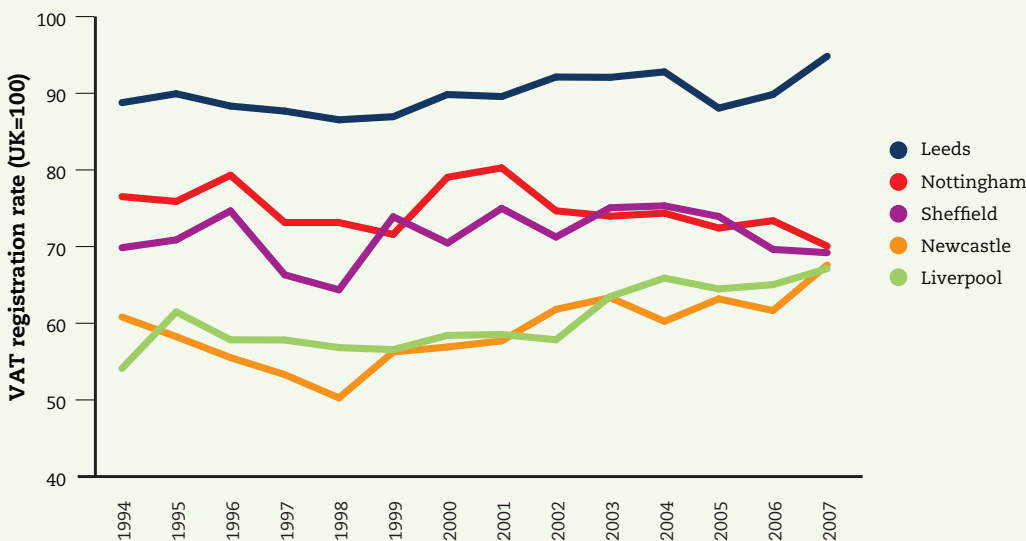
<sup>2</sup> For a discussion see: Glaeser E, Rosenthal S & Strange W (2009) 'Urban economics and entrepreneurship', NBER Working Paper 15536



**Figure 17:** Start-ups in Sheffield (2007/08)

**Source:** VAT Registrations & Stocks; Business Demography Database.

- Business start-up rates are very difficult for a city to improve. Figure 16 shows VAT registration rates per 10,000 people, between 1994 and 2007. The figures have been indexed to the UK average to control for the fluctuations associated with the wider performance of the economy – the UK would be shown as a constant horizontal line at 100 on the y-axis.
- Sheffield basically ended this period with the same number of start-up as it began with, 70 percent of the UK average. Other comparable Core Cities have also seen fairly stable patterns of start-up rates with only Liverpool seeing an appreciable improvement in performance



**Figure 18:** Business start-up rates are very difficult to improve

**Source:** VAT Registrations & Stocks

A significant proportion of Sheffield’s manufacturing sector is still involved in lower value activities, and the sector as a whole seems to be less advanced than some other comparable cities. This can be demonstrated by comparing the R&D intensity of the manufacturing sector in Sheffield relative to other UK cities.

The R&D intensity of a city’s manufacturing sector can be analysed by weighting the employment in the various manufacturing sub-sectors by each sub-sector’s R&D intensity (how much of the sub-sector’s profits nationally are spent on research and development). This can give us an idea of the research intensity of a city’s manufacturing sector – or how advanced it can be considered to be.

On this measure Sheffield achieves a rating of 1.9, 36 percent less than the national average (Figure 19). 18 of the 26 cities that have a manufacturing sector larger than 15,000 employees have a manufacturing sector that is more R&D intensive than Sheffield’s.<sup>3</sup>

3. To some extent Sheffield is disadvantaged in this analysis, due to its aerospace supply chain activities being allocated to other sub-sectors, rather than aerospace and defence. However, the findings of the analysis are still relevant.

4. That a significant proportion of the sector is still mainly involved in lower value manufacturing activities is a finding confirmed by business interviews.

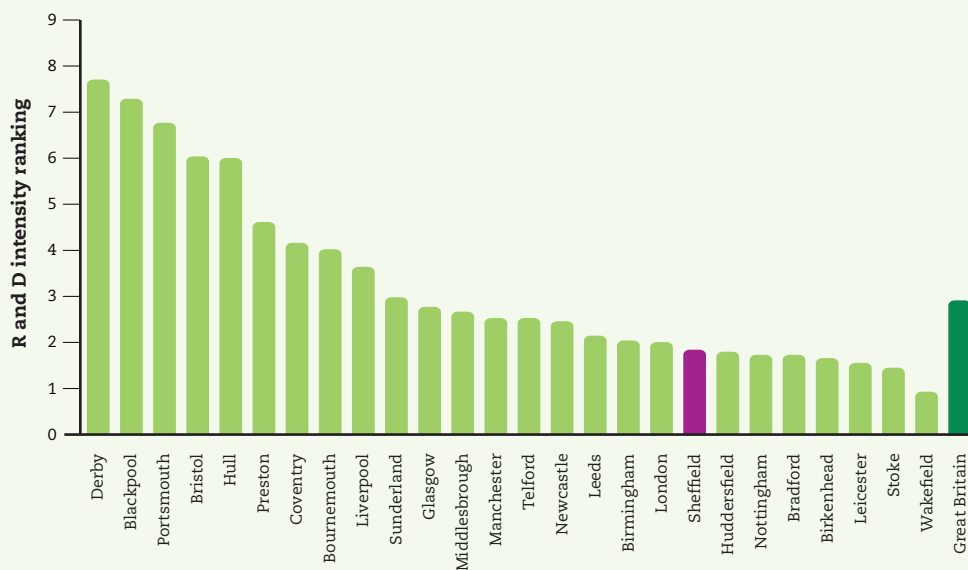


Figure 19: How “advanced” is Sheffield’s manufacturing sector? (2008)

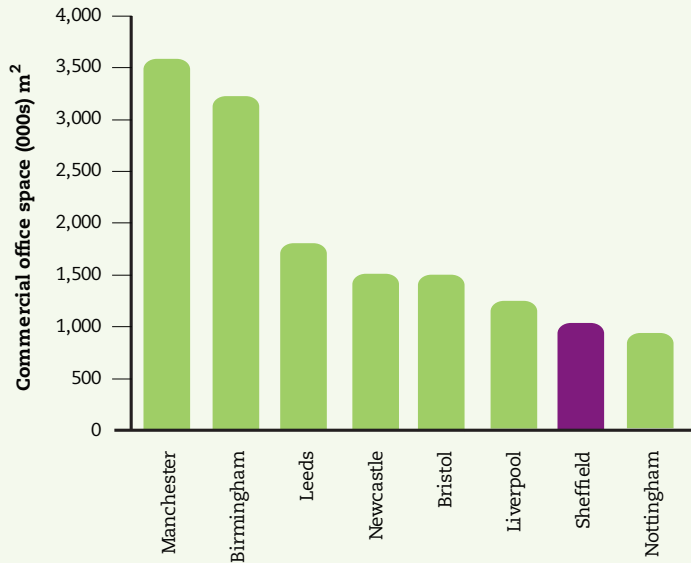
Source: NOMIS (2010), Annual Business Inquiry

The implication of this is that while firms connected to the AMRC are clearly highly innovative, beyond this it is probably a smaller number of firms that operate in leading areas of technology.<sup>4</sup>

**A lack of business space does not seem to be a key barrier to business growth**

- Compared with the other Core Cities, Sheffield has significantly less commercial office space, with only 1,054,000 m<sup>2</sup> of total commercial office space in the city in 2008 (Figure 20).
- Comparatively, Sheffield has 30 percent less commercial office space than Newcastle. Of the Core Cities only Nottingham has less commercial office space than Sheffield.

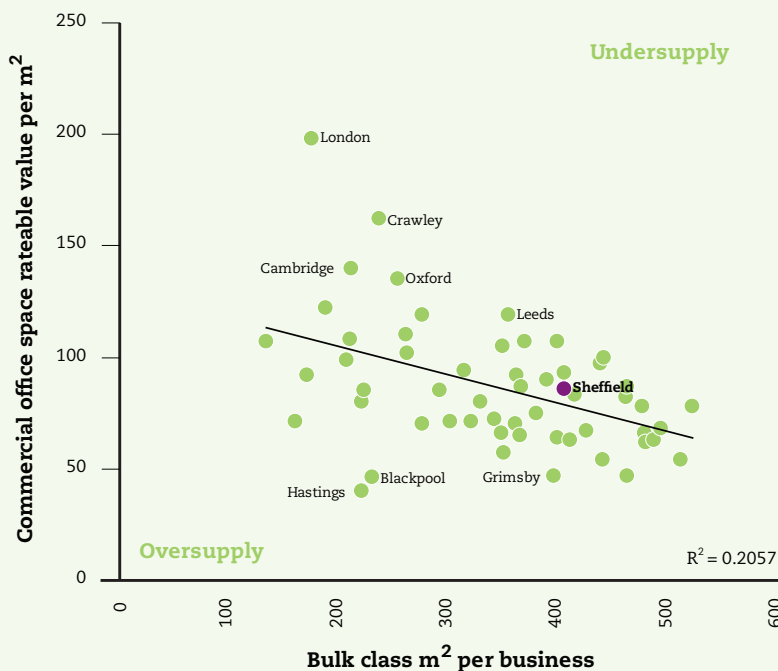




**Figure 20:** Sheffield has a limited office space supply (2008)

Source: Valuation Office Agency

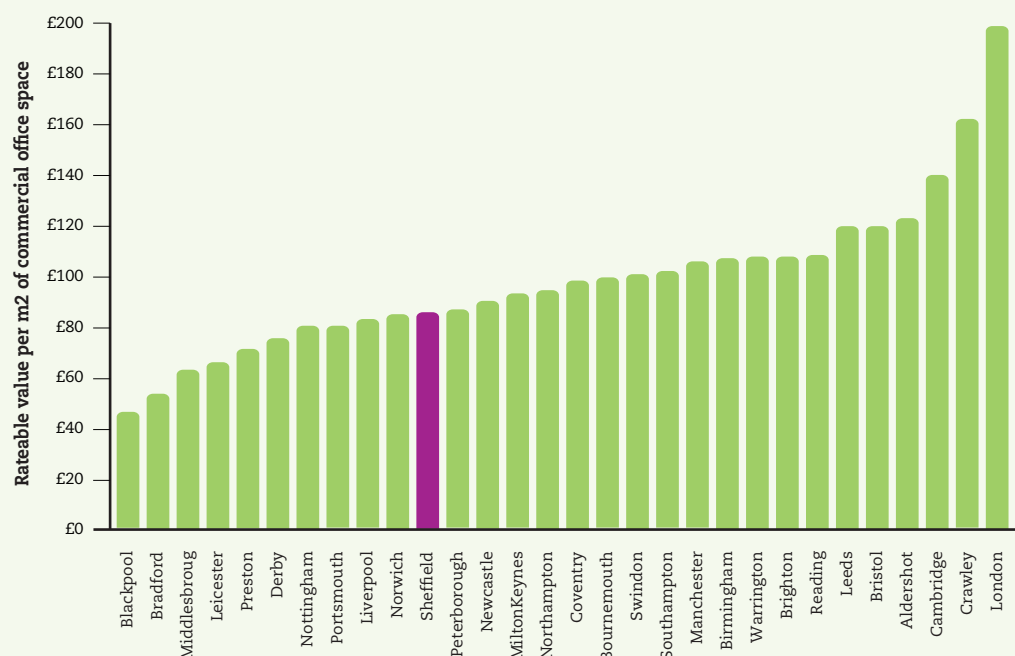
- Figure 20 compares the price per m<sup>2</sup> of commercial office space for all English cities against the total available workspace per business. This aims to make an assessment of the supply and demand for office space in English cities.
- The cities shown above the line are those which have an undersupply of office space relative to demand, and consequently the commercial space is more expensive than would be expected – these include London, Cambridge and Oxford. Conversely, those cities with an oversupply of office space, resulting in cheap commercial property, are shown below the line – these include Blackpool, Hastings and Grimsby.



**Figure 21:** But is there an undersupply of office space in Sheffield?

Source: Valuation Office Agency; Annual Business Inquiry

- The cost of office space in Sheffield appears to be about as would be expected compared to the supply of all premises. We would interpret this result as suggesting that a lack of office space is not a barrier to business and firm growth in Sheffield.
- The previous point can also be demonstrated by straight comparison. Considering the 30 cities with the largest supply of commercial office space, Sheffield has the 11th least expensive rateable value per m<sup>2</sup> (£86) (Figure 22).
- Of the Core Cities, only Liverpool (£83) and Nottingham (£80) have cheaper commercial office space.



**Figure 22:** Office space in Sheffield is fairly inexpensive

Source: Valuation Office Agency

- Office vacancy rates for Sheffield (not based on the PUA definition) also suggest that while Sheffield doesn't have a massive oversupply of office space, the reasonably high vacancy rates suggest that a shortage of office space is probably not an overall barrier to business growth (Table 3).
- However, other studies have identified a shortage of quality Grade A office space in the city centre suitable for large companies. Interviews suggest that there would be demand for this space from existing businesses if it was built.

City	Office Vacancy Rates			Average 2002/09
	2002	2007	2009	
Liverpool	14.9	14.5	17.5	15.9
Manchester	8.9	10	14	11.6
Sheffield	6.7	9.5	12.5	9.1
Bristol	12	5.4	10	8.3
Birmingham	7.6	8	13.3	7.7
Newcastle	8.2	3	7.5	6.3
Leeds	1.2	2.5	12	3.8

**Table 3:** Office vacancy rates (2002/09)

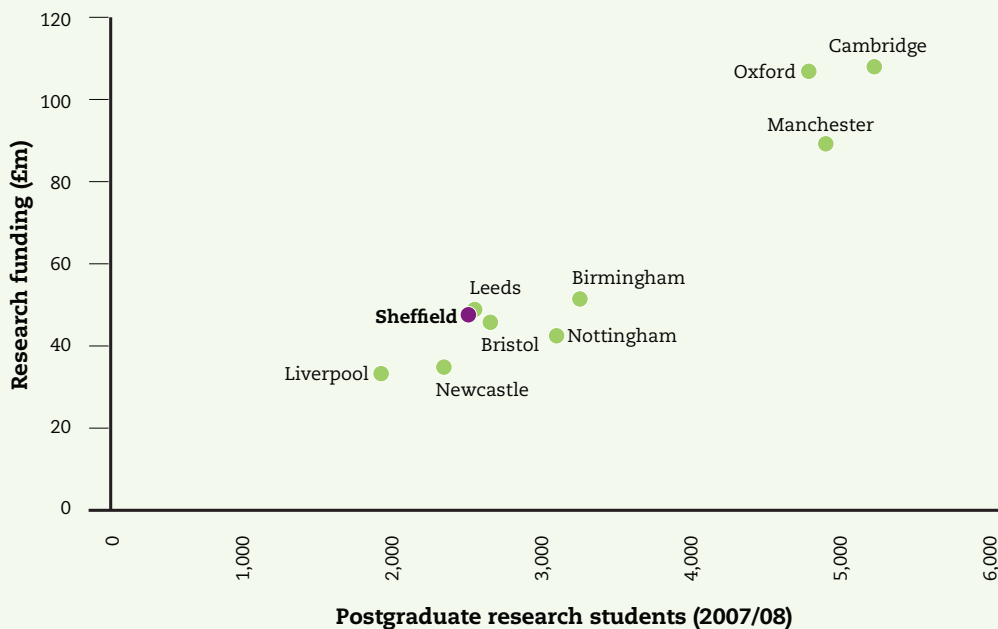
**Source:** Knight Frank's Regional Office Market Presentation

## University-Business Links

### Relative importance of Sheffield's universities

The size of the research functions of Sheffield's two universities puts them on a par with a second tier of university cities, behind Oxford, Cambridge and Manchester.

- In 2007/08, Sheffield had 2,405 postgraduate research students. This is one of the smaller totals of the university cities group with only Liverpool and Newcastle having fewer research students (Figure 23).
- In the same year, Sheffield's universities received £49 million in research funding.
- These two results place Sheffield on a middle tier of city performance at a comparable level to Leeds, Bristol, Birmingham and Nottingham, but behind Oxford, Cambridge and Manchester which have more research students and receive more funding.



**Figure 23:** Sheffield is part of a second tier of university cities (2007/08)

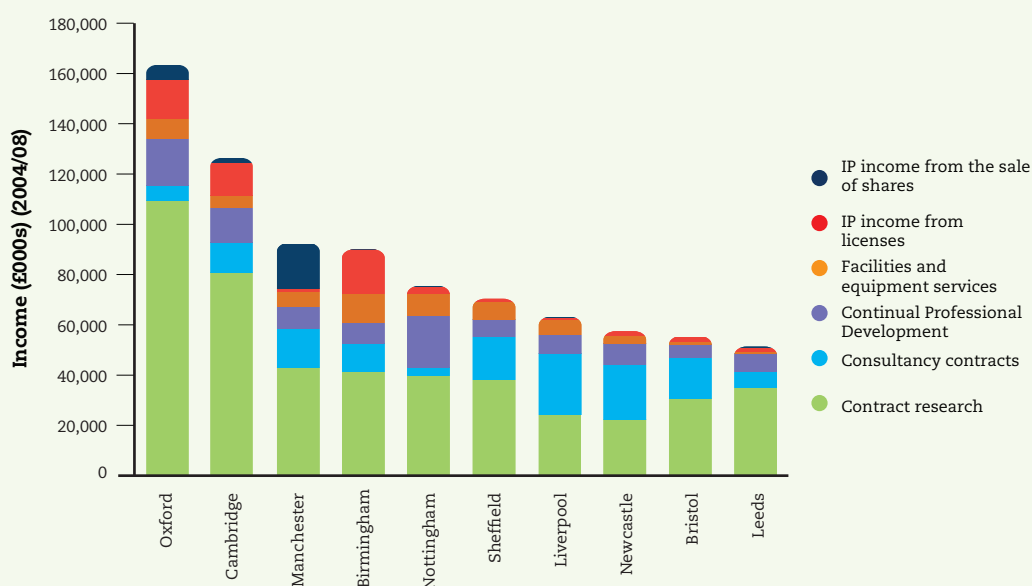
**Source:** HESA, Students in Higher Education 2007/08; HEFCE, Business and Community Interaction Survey, 2007/08

### Value of research provided to the private sector

Sheffield’s universities derive significant benefit from the research and services they provide to the private sector. Because private companies are prepared to pay universities for this research, universities income from commercial sources can be used as a proxy for the value generated by the universities likely to lead to private returns.

While not all of this revenue will come from local sources, it is presumed that higher total revenues would imply higher value also being created in the Sheffield economy. Increasing the total amount of private value that universities help to generate is also good for the UK as a whole.

- Between 2004 and 2008, Sheffield’s universities received £70 million worth of commercial income (Figure 24). This was the fourth largest amount of the Core Cities, behind Manchester and Birmingham.



**Figure 24:** Sheffield’s universities have derived significant income from commercial sources (2004/08)

**Source:** HEFCE, Business and Community Interaction Survey, 2007/08

- Sheffield has done well on generating revenue from consultancy contracts, with £17 million of income coming from this source between 2004 and 2008. This is the third largest total of the university cities group, with only Liverpool and Newcastle generating more revenue from this source.
- Less income came from delivering Continual Professional Development courses to business with Sheffield receiving the second lowest total. Only Bristol received less income from this source.
- Sheffield also received limited income from Intellectual Property (IP) related sources, coming second from bottom on IP income from licenses and joint bottom on IP income from the sale of shares, with no income from this source between 2004 and 2008.

### Spin-outs, start-up and patents created by the university cities group

One of the ways to measure the private impact being created by universities is the number of spin-out and start-ups created and the number of patents registered. In terms of positive economic impact, it is the value of spin-outs and start-ups created and the income from the patents registered that is more important than the total number. However, as comparable data is not always available for value, start-up and patent numbers can be used as a reasonable proxy for levels of innovation and knowledge creation.

- Table 4 looks at two measures of firm creation associated with universities. Spin-outs are companies based on an IP developed by the relevant university; start-ups are companies set up by university staff or students, but with no specific use of university IP. Given their use of proprietary IP, spin-outs are likely to be of a higher value than start-ups. Spin-outs may be owned by Higher Education Institutions (HEI) or have been sold off.

City	HEI owned spin-outs established (2004/08)	Non-HEI owned spin-outs established (2004/08)	Total spin-outs established (2004/08)	Number of active spin-outs (2007/08)
Liverpool	39	17	56	53
Manchester	32	5	37	53
Birmingham	28	0	28	47
Oxford	23	1	24	64
Leeds	19	0	19	46
Sheffield	17	0	17	55
Cambridge	10	7	17	54
Nottingham	11	0	11	30
Bristol	8	0	8	23
Newcastle	7	0	7	24

City	Staff start-ups established (2004/08)	Graduate start-ups established (2004/08)	Total start-ups (2004/08)	Number of active start-ups (2007/08)
Liverpool	18	60	78	60
Manchester	4	114	118	93
Birmingham	3	183	186	117
Oxford	0	92	92	no data
Leeds	0	276	276	152
Sheffield	0	34	34	38
Cambridge	14	49	63	21
Nottingham	2	111	113	104
Bristol	5	11	16	41
Newcastle	1	121	122	113

**Table 4:** In the recent past Sheffield has not generated many spin-outs or start-ups (2004/08)

- Sheffield does poorly on the number of start-ups established, with only 34 created between 2004 and 2008. This is the second lowest number of start-ups in the university cities group. Leeds is the strongest performer on this measure with 276 start-ups established between 2004 and 2008 and 152 active start-ups in 2007/08. Leeds' success in this area is largely driven by Leeds Metropolitan University.

City	Number of disclosures made (2004/08)	New patent applications filed (2004/08)	New patent applications granted (2004/08)
Oxford	691	557	229
Bristol	382	276	190
Manchester	1106	146	164
Cambridge	522	370	103
Birmingham	715	233	41
Nottingham	387	217	40
Sheffield	616	220	35
Leeds	250	106	31
Newcastle	309	139	21
Liverpool	600	91	17

**Table 5:** High disclosures have not led to a high number of patents (2004/08)

**Source:** HEFCE, Business and Community Interaction Survey, 2007/08

- Between 2004 and 2008, Sheffield had the fourth highest number of disclosures (the first step to securing a patent) of the university cities group (Table 5).
- However, the universities in Sheffield are less successful in turning these inventions into patents. Of the 10 cities in the university cities group, Sheffield came fifth in terms of patent applications filed between 2004 and 2008, but seventh for new applications granted.

## Contact

Contact Tom Bolton, Senior Analyst for further information on this report and our work with Partner Cities: [t.bolton@centreforcities.org](mailto:t.bolton@centreforcities.org) / 020 7803 4306



[www.centreforcities.org](http://www.centreforcities.org)

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