

Greater Cambridge Employment Update October 2024

Even Cambridge KI can suffer

Highlights:

Overview

- The current business environment makes it important to have timely data on employment changes. This is the eleventh of a series of updates that bring up-to-date information about what is happening to corporate employment in the Greater Cambridge area.
- The October 2024 Update covers accounting year ends between December 2023 and April 2024 (the median year end is mid-February 2024). This median period captures the worst impacts of recession and early recovery. We compare this period with the same period the previous year, which covers the effects of the unfolding cost of living crisis.
- This update is obtained by sampling the CBR annual corporate database of all businesses based in the wider Cambridge region. It covers a large sample of companies representing about 67% of corporate employment in Greater Cambridge.

Areas

- The results portray a picture of continued but lower overall employment growth in the Greater Cambridge area. Growth slowed down from 6.3% in 2022-23 to 5.3% in 2023-24, suggesting that the UK recession in the third and fourth quarters of 2023 had some impact on business. Nevertheless, the employment performance of the Greater Cambridge corporate economy in the year to mid-February 2024 appears to be far superior to the performance of the national economy in this period (**Figure 2.1, p8**).
- Overall growth to 2024 was driven by a dynamic KI economy, which saw employment grow by 6.9% (down slightly from 7.3% in 2022-23) (**Figure 2.1, p8**).
- The resilience of the Greater Cambridge corporate economy also benefited from the continued yet lower growth of non-KI sectors. Non-KI employment increased by 2.8% in 2023-24, a considerable slowdown from 4.9% in 2022-23. These figures suggest that the worst impacts of recession were felt more amongst non-KI sectors (**Figure 2.1, p8**).
- The slowdown in employment growth during the most recent year was particularly marked in South Cambridgeshire (4.4% compared with 7.7% during the previous

year). This growth is still remarkable considering that it happened during very turbulent times, with inflation putting strong pressure on businesses (**Figure 2.1, p8**).

- The KI sectors showed a higher degree of dynamism than the non-KI sectors in both districts (**Figure 2.1, p8**).
- However, there is variation in these growth rates across both industry sectors and firm sizes.

Sectors

- All KI sectors but 'Life science and healthcare' saw employment growth accelerate in the latest year (**Figure 2.2, p9 & Figure 2.4, p13**).
- 'Knowledge intensive services', one of the four sectors making up the Greater Cambridge KI economy, emerges as the fastest growing sector during 2023-24 (11.8%) (**Figure 2.2, p9 & Figure 2.4, p13**).
- 'Information Technology and Telecoms' was the second fastest-growing sector, with employment growth of 6.7% in the year to mid-February 2024 (up from 3.1% one year earlier) (**Figure 2.2, p9 & Figure 2.4, p13**).
- Employment growth in 'Life science and healthcare', the largest sector in Greater Cambridge, was high at 5.6% (down from an exceptional 12.8% in the previous year) (**Figure 2.2, p9 & Figure 2.4, p13**).
- The contribution of 'Life science and healthcare' and 'Information technology and telecoms' to overall employment growth becomes apparent when examined in terms of the number of people employed (**Figure 2.7, p18**).
- The results paint a more multifaceted picture for non-KI sectors (**Figure 2.2, p9 & Figure 2.4, p13**).
- Seven out of nine non-KI sectors exhibited positive employment growth in the year to mid-February 2024. Among these, employment growth was faster last year than it was the previous year only in 'Education, arts, charities, social care' (11.5% and 3.7%, respectively) (**Figure 2.2, p9 & Figure 2.4, p13**).
- By contrast, employment growth slowed down in the other eight non-KI sectors. A case in point is the 'Transport and travel' sector, where employment grew by 2.7% in 2023-24 compared with 10.2% in 2022-23 (**Figure 2.2, p9 & Figure 2.4, p13**).

Size groups

- One-person businesses grew by 2.5% in the latest year, a rate that is lower than total employment growth across all size classes. Their small size also means that they have played a minor role in employment growth – only 53 extra employees compared with the addition of 3,760 employees by other businesses.
- Whilst 1-9 employee businesses have been the fastest growing companies in 'Wholesale and retail distribution' and 'Construction and utilities', 10+ employee businesses exhibited particularly fast growth in 'Education, arts, charities, social care', 'Knowledge intensive services' and 'Information technology and telecoms' (**Figure 2.3, p12**).
- The group of 10+ employee businesses tends to dominate employment growth given its large aggregate size. These businesses are significant contributors to the growth achieved by sectors such as 'Information technology and telecoms', 'Life science and healthcare', 'High-tech manufacturing' and 'Other services' (**Figure 2.3, p12**).
- Employment growth of 1-9 employee businesses increased from 0.1% in 2022-23 to 1.6% in 2023-24. Both KI and non-KI sectors saw employment grow by 1.6% in the most recent year (**Figure 2.8, p20**).
- The picture looks different for 10+ employee businesses. Although both KI and non-KI employment increased significantly faster in this size class than in the 1-9 employee group, 2023-24 growth slowed down from 2022-23 in both sectors. This slowdown was more pronounced for non-KI sectors. As a result, employment growth of 10+ employee businesses was 5.9% last year, down from 7.5% one year earlier (**Figure 2.8, p20**).
- Overall, these results confirm that it is the group of 10+ employee businesses operating in KI sectors which have been driving growth in the Greater Cambridge area (**Figure 2.8, p20**).

Analysis of ONS BRES

- This report includes an analysis of the latest employment data from the Business Register and Employment Survey (BRES) carried out by ONS. The 2023 BRES results were published in November 2024 and cover the growth period from September 2022 to September 2023.
- This analysis shows that Greater Cambridge outperformed the nation, driven by its fast-expanding KI economy. The superior performance of Greater Cambridge was due to the combined effect of its sectoral composition and performance (**Figure 3.1, p23, Figure 3.4, p26, Figure 3.5, p27, Table 3.1, p30, Figure 3.8, p33**).

- The difference in employment growth rates between CBR and BRES data, albeit less extreme than it used to be, still remains. A source of concern in relation to BRES data is the high volatility in the time series, highlighting the importance of considering BRES data alongside other sources when studying the employment growth of local areas and industry sectors (**Figure 3.2, p24, Figure 3.7, p29**).

Stop press

- We provide a snapshot of the impact of events in the Greater Cambridge corporate economy by considering a small sample of companies with interim results for the six-month periods ending in either May or June 2024. The gain from focusing on interim results for these six-month periods is that most of the activity reported in the accounts took place in 2024.
- Within this group of companies (all knowledge intensive), total turnover fell by 11% in the first six months of the 2024 financial year compared with a fall of 1% in the same period last year.
- These findings reinforce those from the employment update sample, while demonstrating that the consequences of the flatlining economy in 2023-24 have been felt even by these successful Greater Cambridge businesses. The perusal of their interim reports also reveals that business conditions have remained challenging in the first half of 2024.

Concluding remarks

- Our previous update (April 2024 Update) pointed to a slowdown in employment growth in the Greater Cambridge area. The analysis revealed that the onset of recession in the second half of 2023 was felt by some businesses and sectors, particularly in the non-KI economy. The October 2024 Update allows us to explore the impact of the unfolding recession on Greater Cambridge businesses and whether there are already any signs of recovery.
- Overall, the results of our October 2024 Update continue to show a resilient corporate economy in Greater Cambridge against a challenging macroeconomic backdrop. There is evidence that the UK recession in the second half of 2023 was felt by some businesses, particularly amongst non-KI sectors. It remains to be seen how swiftly the local corporate economy will recover from the worst impacts of recession. Our next update will explore this and any further developments.

1. Tracking Greater Cambridge corporate employment – the October 2024 Update

The Centre for Business Research (CBR) at Cambridge University has developed three methods for tracking the employment and turnover of companies based in the wider Cambridge region (for further details see Appendix A4).

The first is the **annual draw** of all companies within the region.¹ It is comprehensive and also examines company births and deaths along with company location changes. This gold standard work does suffer from being less timely. The results of the 2023-24 annual draw will be made available in February 2025 and examine employment in the accounting years ending from 6th April 2023 to 5th April 2024. Since December and, to a lesser extent, March dominate companies' choice of year ends, the modal year end for the annual draw will be early December 2023. For comparison, the ONS Business Register and Employment Survey (BRES) provisional annual employment data published in November 2024 has September 2023 as its latest information (and we will have to wait another year before these are confirmed as final).

The second method involves an **update** of companies in the Greater Cambridge area achieved by sampling the annual corporate database in April and October. On each occasion a large sample is drawn (over 40% of the company population on average) of companies that have reported in recent months. This brings more timely information about what is happening to employment, but does not take account of births and deaths or location changes. For example, this October 2024 Update includes companies with a financial year end between December 2023 and April 2024 and has a modal year end of mid-February 2024. This median period captures the worst impacts of recession and early recovery.

We use the update sample to provide estimates of employment for those companies with a year end between December 2023 and May 2024 that have not yet reported. We then use this larger sample to compare the performance of this sample of companies in 2023-24 with their performance in 2022-23. The final analysis sample for the October 2024 Update is 5,501 companies representing about 67% of corporate employment in the Greater Cambridge area. A sample of this size, with good coverage of all sectors and company sizes, should give a very accurate picture of what is happening to continuing businesses in the region.

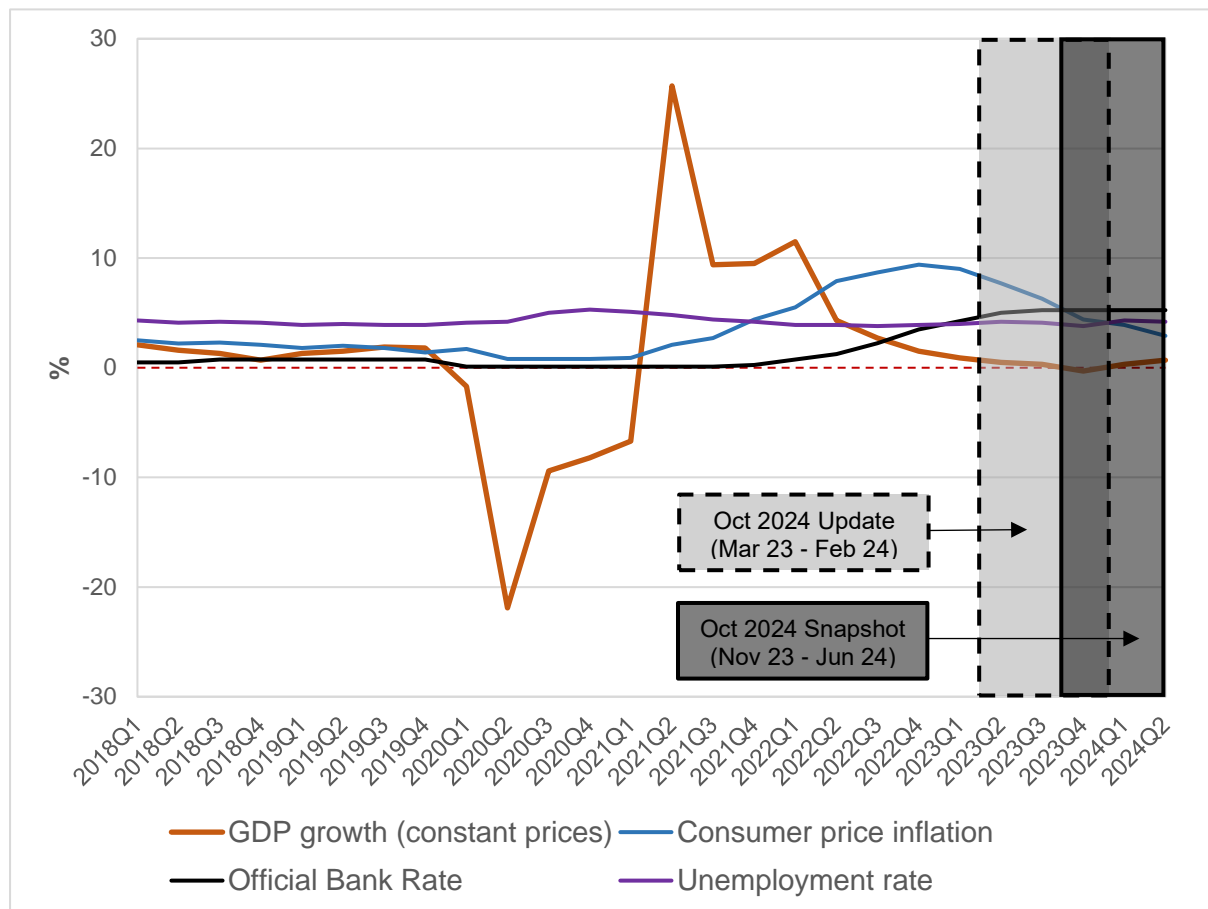
The third method is a **snapshot** of very recent growth that draws on a small sample and should be regarded as merely indicative. It considers only the largest businesses (top 100 by employment or turnover) and examines those that have filed interim reports for six-month periods ending in either May or June 2024. The seven companies in the snapshot sample do not provide employment figures in their interim reports, but together they represent a combined current annual turnover of about £168m. The gain from focusing on interim results is that most of the activity reported in the accounts took place in 2024. We compare turnover in this period with the same six-month period last year.

Figure 1.1 shows where the October 2024 update and snapshot sit in relation to the national economy. The chart graphically displays how turbulent the last three years have been in comparison with the previous decade. The UK slipped into a technical recession (i.e. two consecutive quarters of negative GDP growth) in the final six months of 2023, followed by a

¹ The underlying core corporate database has been established and maintained with the ongoing support of Cambridge Ahead, and is currently sponsored by Arm, Cambridgeshire and Peterborough Combined Authority, Greater Cambridge Partnership, Marshall of Cambridge and Mills & Reeve.

flatlining economy in recent months. The shaded area reflects the October 2024 Update period, which was characterised by limited or non-existent GDP growth, high but falling inflation, and stubbornly high interest rates.

Figure 1.1 UK macroeconomic indicators and the October 2024 Update period



Note: GDP growth is the percentage change of GDP in constant prices on the same quarter a year earlier. Consumer price inflation is the annual change in the Consumer Price Index. Unemployment rate is the share of people aged 16 and over who are unemployed.

Source: ONS.

The remainder of this report is structured as follows. Section 2 presents the results of the October 2024 employment update, drawing on a set of charts that we developed specifically for this study. The section examines growth of Greater Cambridge-based companies by area, industry sector and firm size. Section 3 provides a detailed analysis of the latest employment data from BRES. Section 4 shows the findings of the snapshot sample, while Section 5 offers some concluding remarks. Appendices A1-A3 provide a summary of employment growth rates by sector for Greater Cambridge as a whole, as well as for Cambridge and South Cambridgeshire separately. Appendix A4 explains the methodology underpinning the Greater Cambridge Employment Update.

2. October 2024 employment update results

In this section, we present the results of the October 2024 employment update, the eleventh of a series of updates aimed at providing a timely picture of the performance of the Greater Cambridge corporate economy. This update covers the worst impacts of recession and early recovery. We compare this year against the previous year, which captures the effects of the unfolding cost of living crisis.

2.1. Analysis by area

Our previous update (April 2024 Update) pointed to a slowdown in employment growth in the Greater Cambridge area. The analysis revealed that the onset of recession in the second half of 2023 was felt by some businesses and sectors, particularly in the non-KI economy. The October 2024 Update allows us to explore the performance of Greater Cambridge businesses through the entire recession period and whether they show any signs of recovery.

Figure 2.1 depicts employment growth in KI and non-KI sectors during 2022-23 (horizontal axis) and 2023-24 (vertical axis) by area. This chart allows us to compare the performance of each area over time. It is drawn from a large sample of 5,501 companies with accounts for the years ending between December 2023 and April 2024. The position of the area marker relative to the 45° line indicates whether a given area grew more (above 45° line) or less (below 45° line) fast than last year. Areas with positive growth in 2023-24 are found above the horizontal axis and those with positive growth in 2022-23 appear to the right of the vertical axis. It shows growth for KI, non-KI and all sectors for Cambridge, South Cambridgeshire and for Greater Cambridge overall. A summary of employment growth rates by sector for each area is reported in Appendices A1-A3.

Figure 2.1 portrays a picture of continued but lower overall employment growth in the Greater Cambridge area during the year to mid-February 2024. Growth in the area slowed down from 6.3% in 2022-23 to 5.3% in 2023-24, suggesting that the UK recession in the third and fourth quarters of 2023 had some impact on business. Nevertheless, the employment performance of the Greater Cambridge corporate economy in the year to mid-February 2024 appears to be far superior to the performance of the national economy in this period (Figure 1.1).

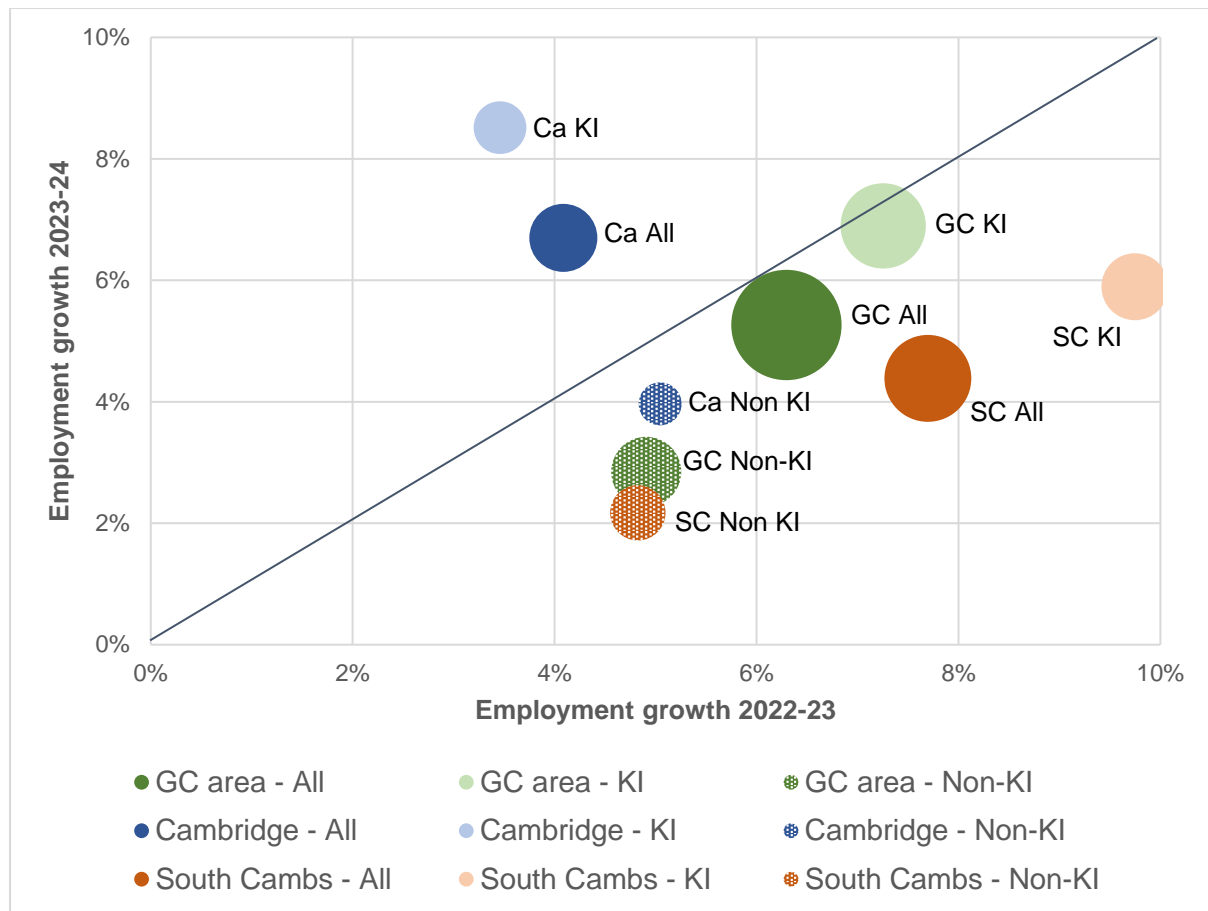
However, it must be noted that our results might reflect the performance of a somewhat biased sample of companies, which did not delay publication of their latest accounts despite the ongoing economic uncertainty. The fact that most of the sample companies did not take more time to file their accounts could suggest that they have been less impacted by the changing business environment than companies that have yet to file their latest accounts. We have attempted to mitigate selection bias by waiting until mid-October before drawing the data for this update.

Employment growth over the median period to mid-February 2024 (October 2024 Update) remained virtually unchanged from the 5.2% growth to mid-October 2023 (April 2024 Update), a period which captures the impact of the onset of recession in the second half of 2023. However, there are some important differences across both sectors and areas.

One of the distinguishing features of the Greater Cambridge area is the scale of its KI economy. Our findings show that overall growth to 2024 was driven by a dynamic KI economy, which saw employment grow by 6.9% (down slightly from 7.3% in 2022-23). In each of the charts, the size of the bubble is proportional to total employment in that area or

sector. The bubble that identifies KI sectors in Greater Cambridge is to the right of the bubble for non-KI sectors – showing that overall KI sectors grew faster than non-KI sectors.

Figure 2.1 Employment growth by area – 2023-24 vs 2022-23



Note: The size of each bubble is proportionate to the number of employees in 2022-23 on a continuous scale.

Source: Cosh & Caselli, CBR.

The resilience of the Greater Cambridge corporate economy to the recession also benefited from the continued yet lower growth of non-KI sectors. Non-KI employment increased by 2.8% in 2023-24, a considerable slowdown from 4.9% in 2022-23. These figures suggest that the worst impacts of recession in the last two quarters of 2023 were felt more amongst non-KI sectors.

Turning to the individual districts, the slowdown in employment growth during the most recent year was particularly marked in South Cambridgeshire (4.4% compared with 7.7% during the previous year). Employment growth in the year to mid-February 2024 was faster in Cambridge (6.7%, up from 4.1% one year earlier). However, the figures for Cambridge reflect a large increase in employment at Arm in 2023-24, which came after a reduction in employment following their 2022 restructuring. If Arm is excluded from the sample, employment growth in Cambridge would be 6.0% in 2023-24 and 6.6% in 2022-23.

The KI sectors showed a higher degree of dynamism than the non-KI sectors in both districts.

In Cambridge, KI employment increased by 8.5% in 2023-24 (3.5% in 2022-23), reflecting a substantial growth in employee numbers at Arm, IQGeo and Redgate Software. KI

employment growth in Cambridge would be 7.6% in 2023-24 and 7.8% in 2022-23 if Arm, which dominates KI employment growth in the district, is excluded from the sample. In South Cambridgeshire, the addition of over 300 employees by Science Group, Bango and Bicycle Therapeutics was a key driver behind the 5.9% growth last year (9.7% in the previous year).

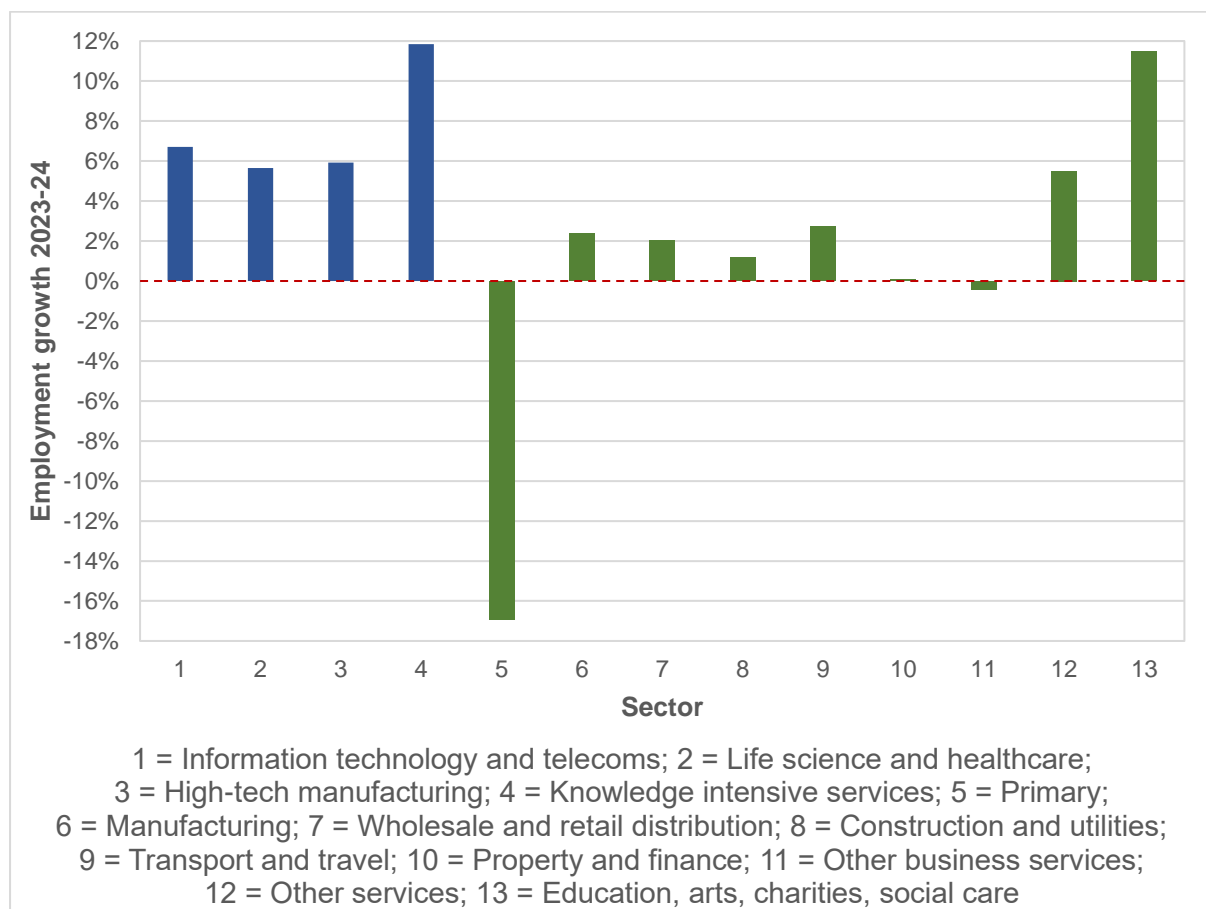
Non-KI sectors in Cambridge showed a 4.0% employment growth in the year to mid-February 2024 (down from 5.0% in the year to mid-February 2023), helped by a steady increase in staff numbers at conservation charity Fauna & Flora International and language education provider The Bell Foundation. The slowdown in non-KI employment growth was more pronounced in South Cambridgeshire (2.2% in 2023-24 compared with 4.8% in 2022-23), where businesses such as commercial cleaning services company Quality Care Cleaning and fruit producer Harrold Fruit Farming had a fall in employment in the most recent year.

2.2. Analysis by sector

Employment growth in Greater Cambridge

Figure 2.2a looks more closely at differences in performance across industry sectors by distinguishing between 4 KI sectors and 9 non-KI sectors. It compares these 13 sectors by examining their employment growth during 2023-24 (on average the year to mid-February 2024), the latest year covered by this work.

Figure 2.2a Employment growth 2023-24 by sector in the Greater Cambridge area



Note: Blue bars identify KI sectors, whereas green bars are for non-KI sectors.

Source: Cosh & Caselli, CBR.

'Knowledge intensive services', one of the four sectors making up the Greater Cambridge KI economy, emerges as the fastest growing sector during 2023-24 (11.8%). This result is particularly encouraging if one considers that our October 2024 Update sample covers about 84% of corporate employment in the 'Knowledge intensive services' sector in Greater Cambridge (see the fourth data column in Appendices A1-A3). Growth in the sector benefited from a continued increase in employee numbers by some of the largest 'Knowledge intensive services' companies based locally, for example Science Group (36.2%) and Cambridge Consultants (8.7%).

'Information Technology and Telecoms' was the second fastest-growing sector, with employment growth of 6.7% in the year to mid-February 2024. CyanConnote (82.8%), IQGeo (48.1%) and Bango (46.5%) are but a few examples of ICT companies reporting fast growth in the most recent period.

Employment in 'Life science and healthcare', the largest KI sector in Greater Cambridge, grew by 5.6% during 2023-24. This rate of growth happened after an exceptional performance in the previous year (12.8%). Among the companies contributing to the growth of the Life Science sector last year are Endomag (43.3%), Bicycle Therapeutics (37.8%) and Amgen (6.1%).

The other KI sector, 'High-tech manufacturing', achieved a growth in employment of 5.9%. Examples of high-tech manufacturers with a considerable increase in staff numbers are thin-film semiconductor manufacturer Pragmatic (38.7%), deposition systems provider for the semiconductor industry AIXTRON (19.8%) and composite materials producer for the commercial aerospace industry Hexcel Composites (13.5%).

The results paint a more multifaceted picture for non-KI sectors.

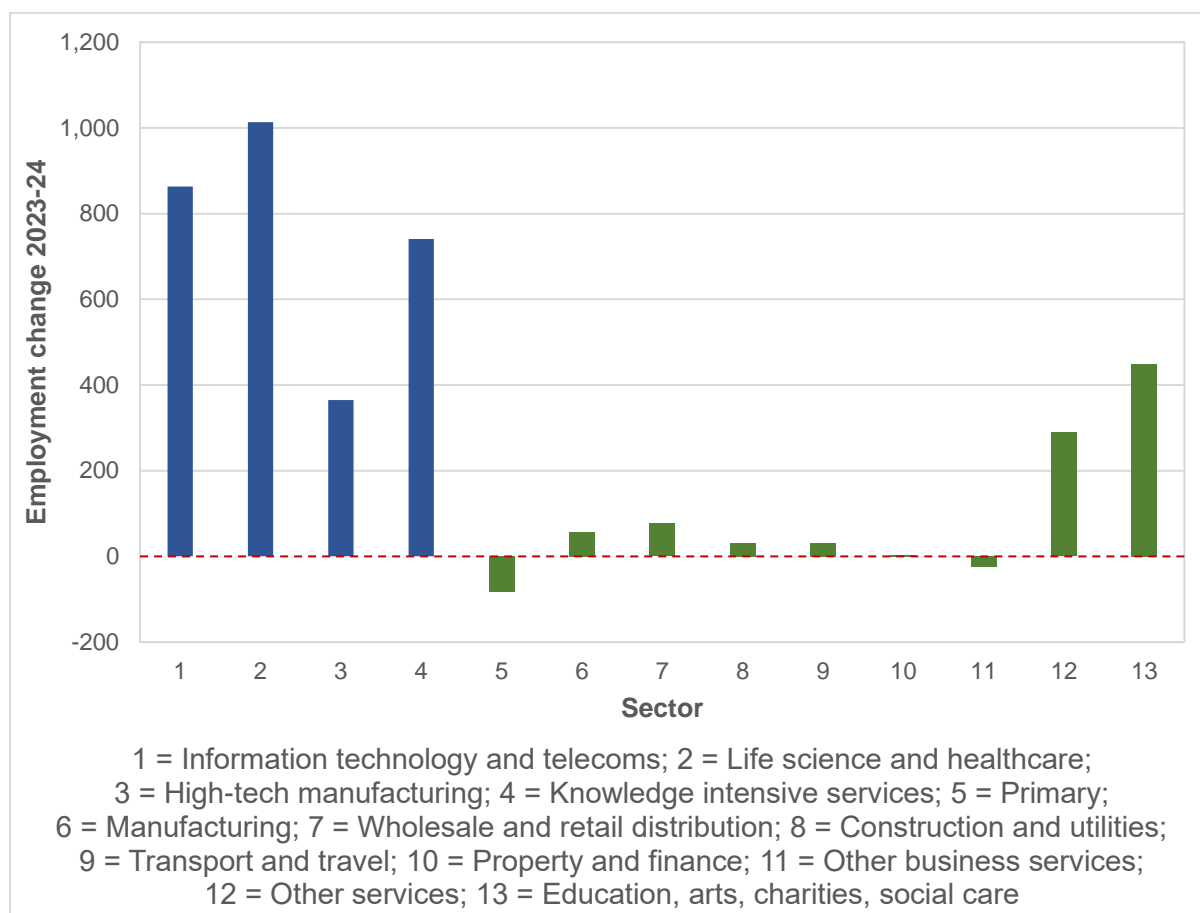
Seven out of nine non-KI sectors exhibited positive employment growth in the year to mid-February 2024. Among these, 'Education, arts, charities, social care' was the fastest-growing sector. Employment in the sector grew by 11.5%, partly due to the continuous influx of language students to Cambridge after Covid – e.g. The Bell Foundation (24.3%) – and partly due to an increase in staff numbers at several non-school organisations such as provider of services to people with learning disabilities The Edmund Trust (28.6%) and conservation charity Fauna & Flora International (24.4%). However, it must be noted that employment for public schools is typically excluded from our updates work – our October 2024 Update covers about one-third of corporate employment in the 'Education, arts, charities, social care' sector in Greater Cambridge.

The 'Other services' sector, which includes healthcare consultants, hospitality businesses and other in-person services companies, also had robust employment growth in 2023-24 (5.5%). By contrast, other non-KI sectors such as 'Transport and travel' (2.7%), low- and med-low-tech 'Manufacturing' (2.4%) and 'Wholesale and retail distribution' (2.0%) showed more modest growth.

Employment in the year to mid-February 2024 remained practically unchanged in the 'Other business services' sector (-0.4%), whilst it dropped in the 'Primary' sector (-16.9%) mainly due to the fall in staff numbers at fruit producer Harrold Fruit Farming. However, the drop in 'Primary' sector employment was small in terms of absolute change in staff numbers (-83 employees).

Figure 2.2b shows the consequences of employment growth differences by looking at the actual change in the number of people employed. Therefore, it takes into account the absolute size of each sector in Greater Cambridge.

Figure 2.2b Employment change 2023-24 by sector in the Greater Cambridge area



Note: Blue bars identify KI sectors, whereas green bars are for non-KI sectors.

Source: Cosh & Caselli, CBR.

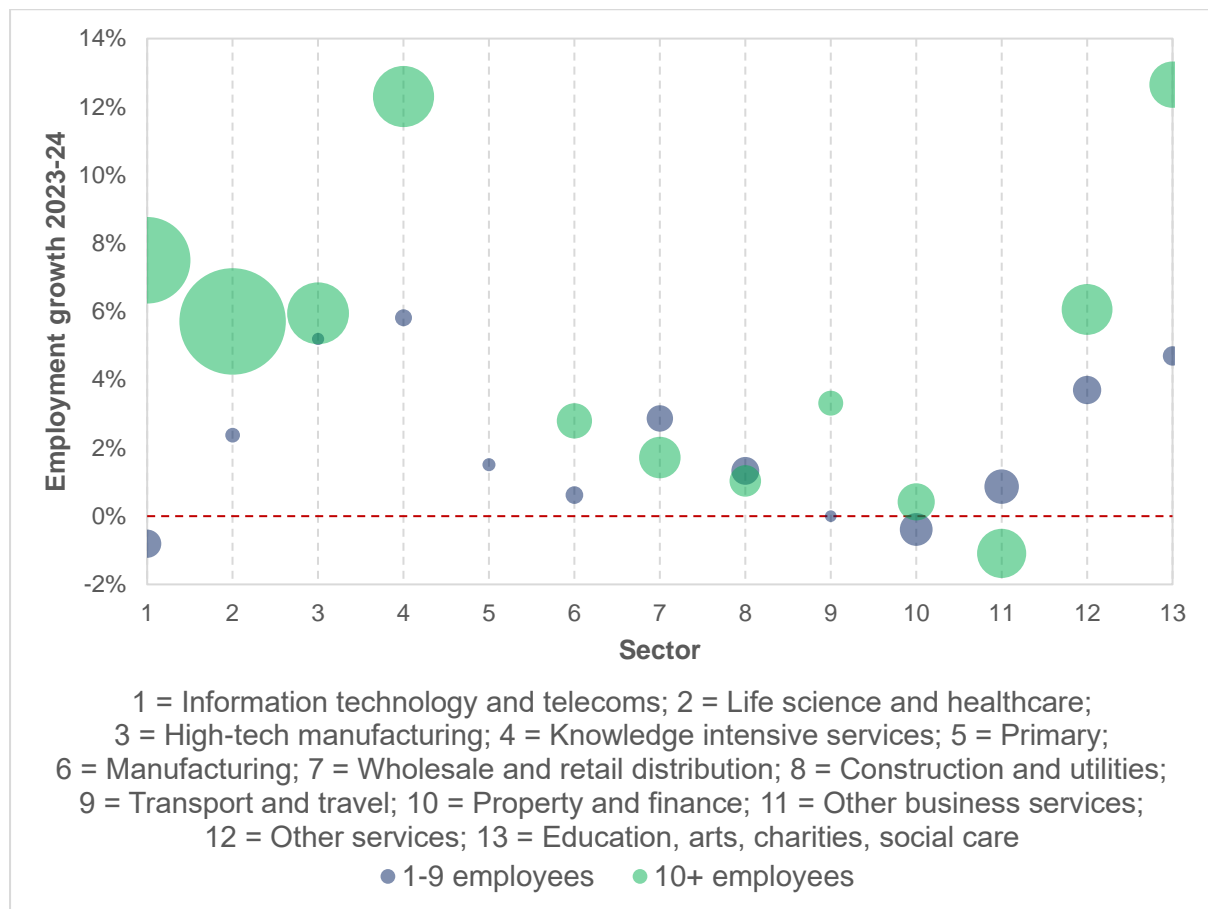
As we can see in Figure 2.2b, the performance of KI sectors is even more dominant when one looks at employment change. Whilst ‘Education, arts, charities, social care’ has one of the fastest growth rates amongst all sectors, the height of its bar suggests that this fast growth does not have the same impact on overall employment growth in Greater Cambridge as KI sectors such as ‘Life science and healthcare’ and ‘Information technology and telecoms’ do.

Figure 2.3 expands on the results from Figures 2.2a and 2.2b presented above by providing a breakdown of employment growth to 2024 by both industry sector and firm size. Companies were assigned to two size classes: 1-9 employees and 10+ employees. Further analysis by firm size with individual sectors grouped into KI and non-KI sectors is presented in Section 2.3 below.

The results from Figures 2.2a and 2.2b pointed to strong employment growth across KI sectors, whereas there was a mixed picture for non-KI sectors. Figure 2.3 augments these results by suggesting that there is variation in employment growth rates across both industry sectors and firm sizes.

Looking at percentage growth rates for small businesses can be problematic. Most small businesses do not grow and the median growth is uninformative at 0%. However, a few small businesses can grow very fast in percentage terms (e.g. from 2 to 8 employees). It is these rare businesses that create the overall growth of smaller businesses.

Figure 2.3 Employment growth 2023-24 by sector and firm size in the Greater Cambridge area



Note: The size of each bubble is proportionate to the number of employees in 2022-23 on a continuous scale. Employment growth for 10+ employee companies in the ‘Primary’ sector has an extreme value (-38.7%, or -87 employees) and therefore is not shown in the chart to bring greater clarity.

Source: Cosh & Caselli, CBR.

Figure 2.3 uncovers some important differences between KI and non-KI sectors. Whilst larger, fast-growing businesses dominate employment growth within KI sectors, there is a mixed picture within non-KI sectors.

Businesses with 1-9 employees have been the fastest growing companies in ‘Wholesale and retail distribution’ and ‘Construction and utilities’. However, the relatively small size of their bubbles shows that their impact on total employment growth was somewhat limited.

Examples of fast growth in the 1-9 employee businesses are Forefront RF, a fabless semiconductor company striving to simplify mobile radio front-end designs in mobile devices, and Maxion Therapeutics, a biotechnology company developing novel biologics via its proprietary technology platform.

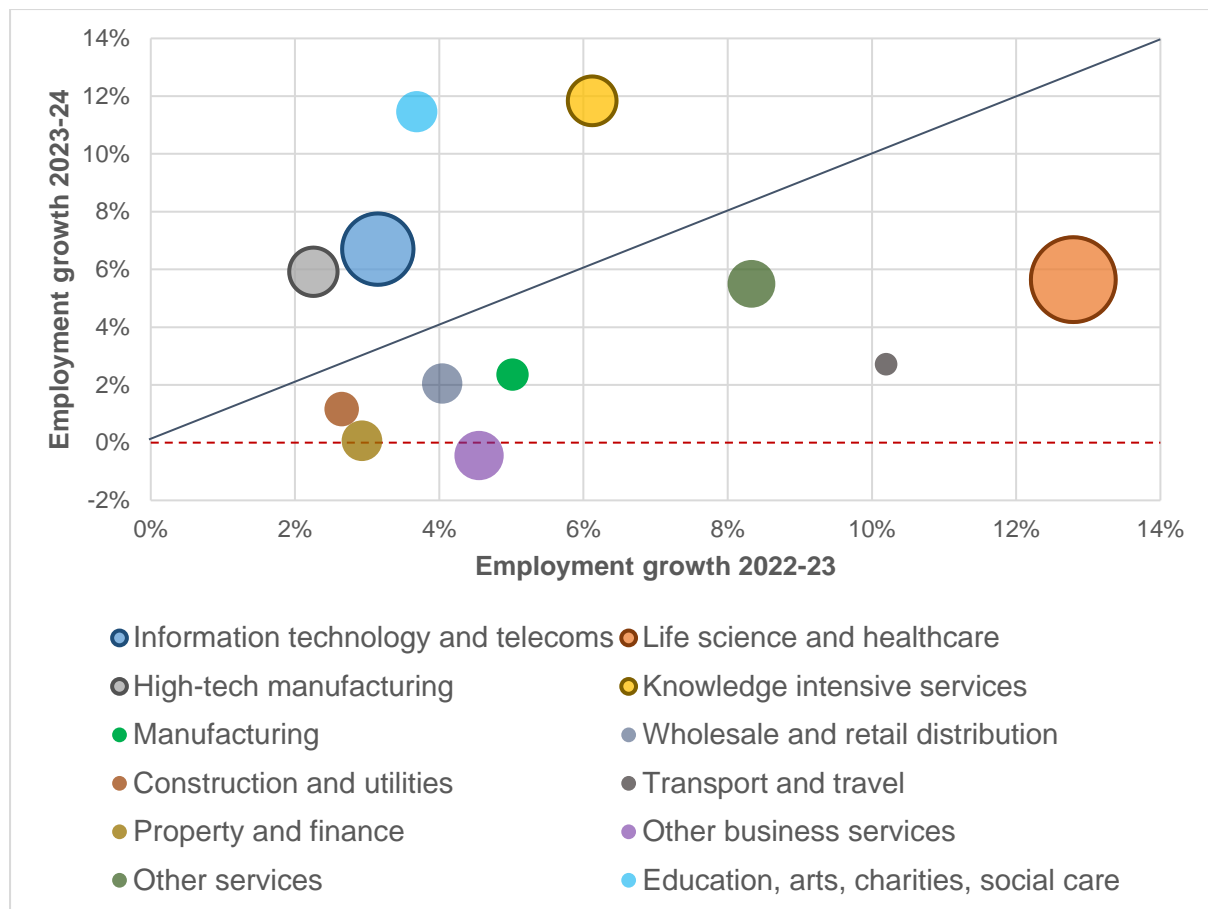
In turn, 10+ employee businesses exhibited particularly fast growth in ‘Education, arts, charities, social care’, ‘Knowledge intensive services’ and ‘Information technology and telecoms’.

The group of 10+ employee businesses tends to dominate employment growth given its large aggregate size. These businesses are significant contributors to the growth achieved

by sectors such as 'Information technology and telecoms' (e.g. Arm), 'Life science and healthcare' (e.g. Bicycle Therapeutics), 'High-tech manufacturing' (e.g. Hexcel Composites) and 'Other services' (e.g. Trust Home Care Solution).

Figure 2.4 compares the 13 industry sectors according to their employment growth during 2022-23 (horizontal axis) and their employment growth during 2023-24 (vertical axis). This chart allows us to compare the performance of sectors over time. The position of the sector marker relative to the 45° line shows whether the sector grew more (above 45° line) or less (below 45° line) fast than last year. Sectors with positive growth in 2023-24 are found above the horizontal axis and those with positive growth in 2022-23 appear to the right of the vertical axis.

Figure 2.4 Employment growth by sector in the Greater Cambridge area – 2023-24 vs 2022-23



Note: The size of each bubble is proportionate to the number of employees in 2022-23 on a continuous scale. Bubbles with an outline identify KI sectors. Employment growth for the 'Primary' sector has an extreme value in 2023-24 (-16.9%, or -83 employees) and therefore is not shown in the chart to bring greater clarity.
Source: Cosh & Caselli, CBR.

All KI sectors but 'Life science and healthcare' saw employment growth accelerate in the latest year.

Employment in 'Knowledge intensive services' grew by 11.8% in 2023-24 compared with 6.1% in 2022-23. This result was driven by fast growth at some of the largest 'Knowledge intensive services' companies in the area, including Science Group (36.2% in 2023-24), Cambridge Consultants (8.7%) and TTP Group (7.7%).

A similar result is found for the 'High-tech manufacturing' sector, where employment growth was 5.9% in the most recent year against a figure of 2.3% in the previous year. This was helped by the strong performance of Pragmatic (38.7%), AIXTRON (19.8%) and Hexcel Composites (13.5%).

Employment growth to 2024 in 'Information technology and telecoms' was high at 6.7%, up from 3.1% one year earlier. Key ICT employers such as IQGeo (48.1%), Bango (46.5%) and Arm (14.2%) all achieved faster growth in employment in 2023-24 than in 2022-23. The increase in staff numbers for Arm came after a fall in employment in 2022-23 (-17.0%) due to their organisational restructuring. Employment growth in 'Information technology and telecoms' would be 5.0% in 2023-24 and 9.0% in 2022-23 if Arm is dropped from the sample.

Employment growth in 'Life science and healthcare', the largest sector in Greater Cambridge, was high at 5.6% (down from an exceptional 12.8% in the previous year). 4basebio (57.1%), Bicycle Therapeutics (37.8%) and SPT Labtech (13.4%) are some of the companies with fast but lower growth last year compared with the previous year.

The contribution of the two sectors that lie at the heart of the Cambridge Phenomenon, Life Science and ICT, to corporate employment growth in Greater Cambridge will become apparent when employment change (rather than employment growth) will be examined (Figure 2.7).

We find a less positive picture for non-KI sectors.

Employment growth was faster last year than it was the previous year only in 'Education, arts, charities, social care' (11.5% and 3.7%, respectively). Among the businesses which saw employment growth accelerate in 2023-24 are The Edmund Trust (28.6%), Fauna & Flora International (24.4%) and The Bell Foundation (24.3%).

By contrast, employment growth slowed down in the other eight non-KI sectors.

A case in point is the 'Transport and travel' sector, where employment grew by 2.7% in 2023-24 compared with 10.2% in 2022-23. Nine out of ten transport and travel companies showed either no growth or a reduction in employment in the year to mid-February 2024.

Employment growth last year was positive but lower than one year earlier also in low- and med-low-tech 'Manufacturing' (2.4% and 5.0%, respectively), 'Wholesale and retail distribution' (2.0% and 4.0%), 'Construction and utilities' (1.2% and 2.6%) and 'Property and finance' (0.1% and 2.9%). Many of the companies operating in these sectors had their business impacted by supply chain disruptions and inflationary pressures.

Despite achieving robust employment growth in 2023-24 (5.5%), the 'Other services' sector had lower growth compared with 2022-23 (8.3%). Businesses such as house and pet sitting services provider Minders Keepers and gastrointestinal health company Cyted Health, which showed significant increases in employment during 2022-23, reported more modest growth during 2023-24.

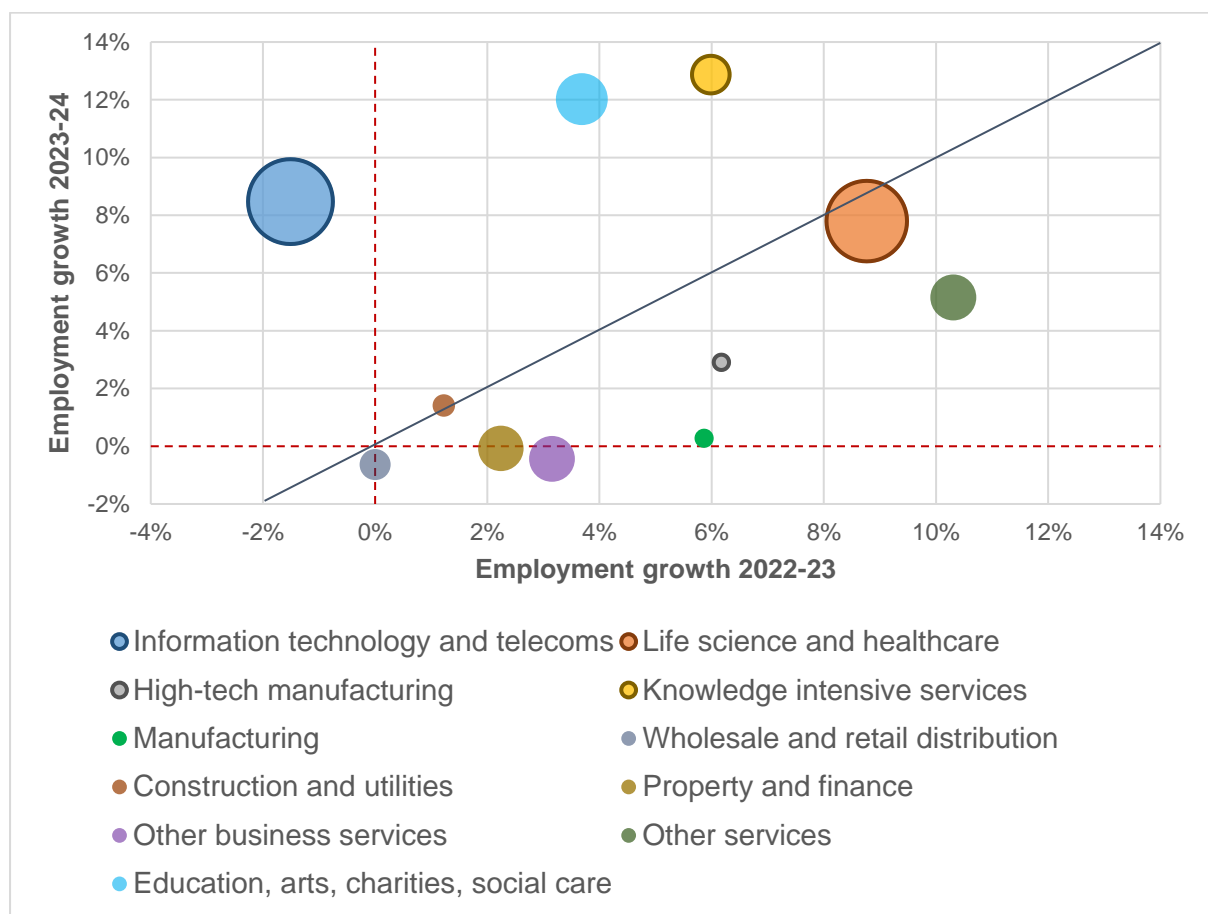
'Other business services' suffered a small reduction in employment of -0.4% in 2023-24, after seeing robust employment growth in 2022-23 (4.6%). Examples of companies with a drop in employment in the most recent year are commercial cleaning services company Quality Care Cleaning (-34.0%) and office design and commercial interiors specialist COEL (-10.0%).

Similarly, employment in the 'Primary' sector fell by 16.9% in 2023-24 (against a growth of 6.1% in 2022-23). This result is at odds with those from our April 2024 Update, which pointed to continued growth in a sector that has been confronted with the challenges posed by Brexit, Covid and the ongoing conflict in Ukraine. A possible reason for this difference relates to our sample coverage – 40% of corporate employment in the 'Primary' sector in Greater Cambridge in our October 2024 Update against 78% in our April 2024 Update.

Employment growth in Cambridge

Figure 2.5 compares sectors based on their employment growth during 2022-23 (horizontal axis) and their employment growth during 2023-24 (vertical axis), this time focusing on Cambridge.

Figure 2.5 Employment growth by sector in Cambridge – 2023-24 vs 2022-23



Note: The size of each bubble is proportionate to the number of employees in 2022-23 on a continuous scale. Bubbles with an outline identify KI sectors. Employment growth for the 'Primary' and 'Transport and travel' sectors has an extreme value in 2022-23 (38.1% and 40.7%, or 8 and 98 employees, respectively) and therefore is not shown in the chart to bring greater clarity.

Source: Cosh & Caselli, CBR.

Employment growth of Cambridge-based businesses was particularly fast in the 'Knowledge intensive services' sector, where it reached 12.9% in 2023-24 (up from 6.0% in 2022-23). This growth benefited from a continued increase in staff numbers at some large 'Knowledge intensive services' companies based locally, including The Cambridge Crystallographic Data Centre (12.2%) and Cambridge Mechatronics (8.1%). A number of smaller companies such

as Levidian, a University of Cambridge spinout whose patented technology uses methane gas to produce hydrogen and graphene, also showed fast growth in the year to mid-February 2024.

Last year's employment growth in 'Life science and healthcare' was strong (7.8%), albeit somewhat lower than one year earlier (8.8%). There was a more marked slowdown in 'High-tech manufacturing', which saw employment increase by 2.9% in 2023-24 compared with 6.2% in 2022-23. Cycle Pharma ('Life science and healthcare') and Forefront RF ('High-tech manufacturing') are two companies with a steady increase in employment over the sample period.

The 'Information technology and telecoms' sector in Cambridge returned to growth after experiencing a drop in the previous year (8.5% and -1.5%, respectively), largely reflecting Arm's 2022 restructuring. If Arm is excluded from the sample, employment growth in the ICT sector in Cambridge would be 5.9% in 2023-24 and 7.3% in 2022-23.

Turning to non-KI sectors, employment continued to grow at pace in the 'Education, arts, charities, social care' sector (12.0% in 2023-24, up from 3.7% in 2022-23). Conservation charity Fauna & Flora International (24.4%) and language education provider The Bell Foundation (24.3%) were key drivers of this growth.

'Construction and utilities' had steady (but more moderate) growth in employment (1.4% in 2023-24 and 1.2% in 2022-23), while 'Wholesale and retail distribution' witnessed no growth over the past two years (-0.6% and 0.0%, respectively).

Conversely, employment growth in the year to mid-February 2024 slowed down in the other six non-KI sectors. Some of the businesses in these sectors appear to have been adversely impacted by the UK recession. Whilst employment growth in 2023-24 remained positive in 'Transport and travel' (5.9%, down from 40.7% in 2022-23), 'Other services' (5.2% and 10.3%) and 'Manufacturing' (0.3% and 5.9%), it fell in sectors such as 'Other business services' (-0.4% and 3.2%) and 'Property and finance' (-0.1% and 2.2%).

Employment growth in South Cambridgeshire

Figure 2.6 focuses on South Cambridgeshire and compares sectors based on their employment growth during 2022-23 (horizontal axis) and their employment growth during 2023-24 (vertical axis).

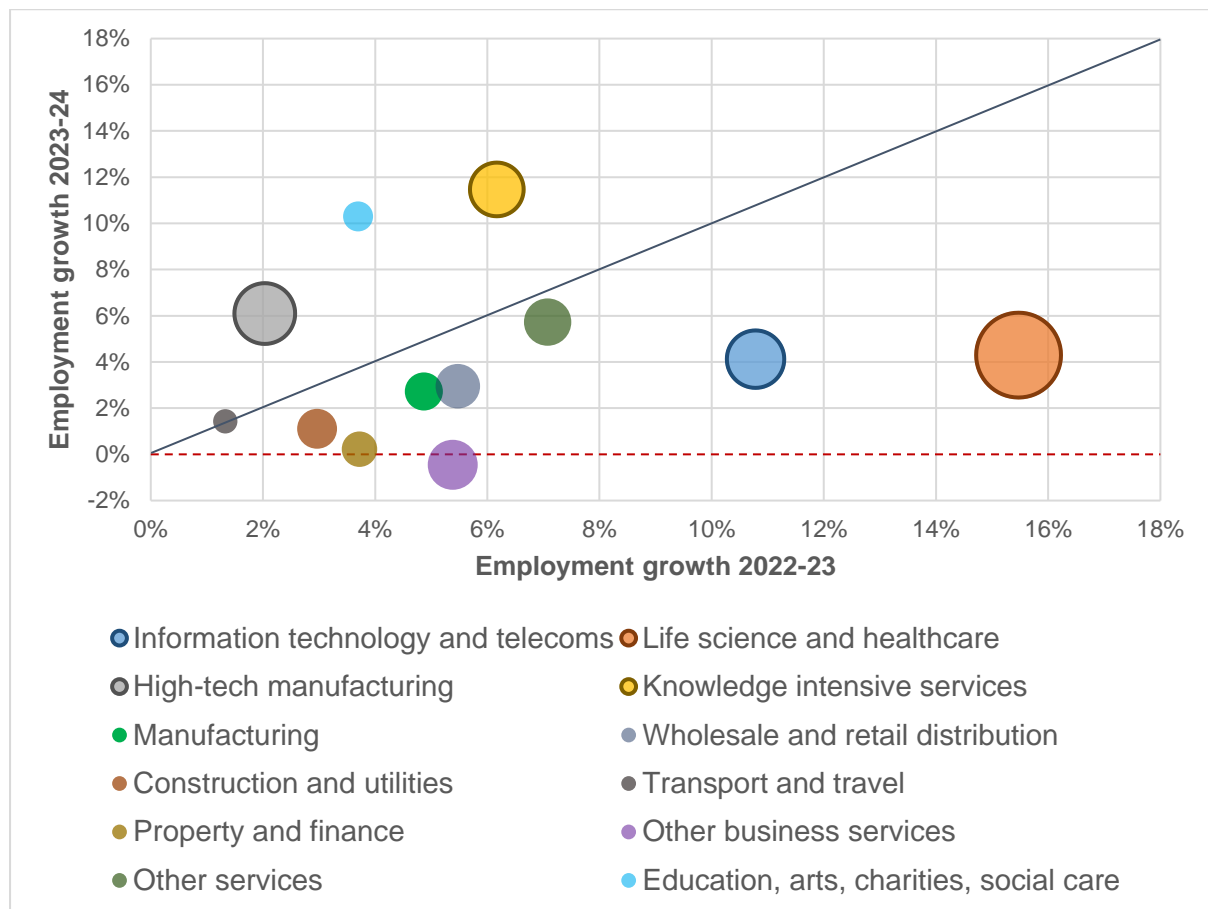
Similar to Cambridge, South Cambridgeshire-based companies in 'Knowledge intensive services' achieved fast employment growth in the most recent year. Employment growth in the sector accelerated from 6.2% in 2022-23 to 11.5% in 2023-24, helped by the strong performance of Science Group (36.2%), Cambridge Consultants (8.7%) and TTP Group (7.7%).

Another KI sector with faster employment growth in the year to mid-February 2024 is 'High-tech manufacturing'. Growth in the sector increased from 2.0% in 2022-23 to 6.1% in 2023-24, with high-tech manufacturers such as ENVEA (41.8%), Pragmatic (38.7%) and Hexcel Composites (13.5%) showing double-digit growth in the latest year.

Employment in 'Life science and healthcare', the largest sector in South Cambridgeshire, increased by 4.3% in 2023-24 (down from an exceptional 15.5% in 2022-23). 'Information technology and telecoms' exhibited a similar slowdown (4.1% and 10.8%, respectively).

The results for non-KI sectors are somewhat less encouraging.

Figure 2.6 Employment growth by sector in South Cambridgeshire – 2023-24 vs 2022-23



Note: The size of each bubble is proportionate to the number of employees in 2022-23 on a continuous scale. Bubbles with an outline identify KI sectors. Employment growth for the ‘Primary’ sector has an extreme value in 2023-24 (-17.8%, or -82 employees) and therefore is not shown in the chart to bring greater clarity.

Source: Cosh & Caselli, CBR.

Like Cambridge, ‘Education, arts, charities, social care’ is the only non-KI sector with stronger employment growth in the most recent year than in the previous year (10.3% and 3.7%, respectively). The increase in scale by provider of services to people with learning disabilities The Edmund Trust (28.6%) was a major contributor to this growth.

With the exception of ‘Transport and travel’, where employment growth was unchanged (1.4% in 2023-24 and 1.3% in 2022-23), all other non-KI sectors had lower employment growth in the latest year.

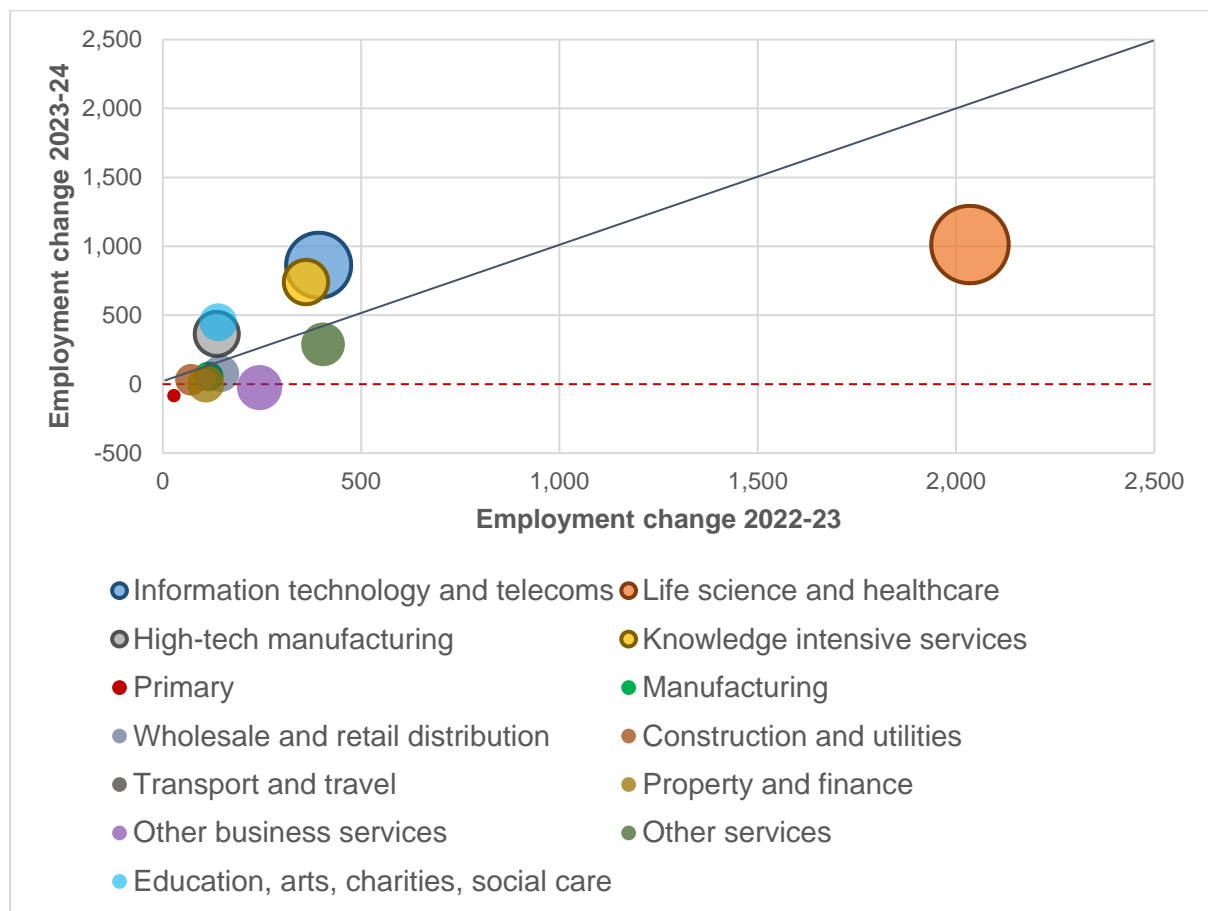
Among the non-KI sectors with a considerable slowdown in employment growth are ‘Other business services’ (-0.5% and 5.4%) and ‘Property and finance’ (0.2% and 3.7%). More than 95% of the companies operating in these sectors had either no growth or a fall in employment in the year to mid-February 2024.

We now turn to look at the absolute change in employment rather than its percentage change.

Absolute change in employment numbers in Greater Cambridge

Figure 2.7 offers another comparison across sectors, this time looking at their employment change (rather than their employment growth) during 2022-23 (horizontal axis) and 2023-24 (vertical axis). Similar to Figures 2.4-2.6, this chart allows us to compare the performance of sectors over time. The position of the sector marker relative to the 45° line indicates whether employment change in the sector was higher or lower than last year. Sectors with a positive change in employment during 2023-24 are found above the horizontal axis and those with a positive change during 2022-23 appear to the right of the vertical axis.

Figure 2.7 Employment change by sector in the Greater Cambridge area – 2023-24 vs 2022-23



Note: The size of each bubble is proportionate to the number of employees in 2022-23 on a continuous scale. Bubbles with an outline identify KI sectors.
Source: Cosh & Caselli, CBR.

Actual employment changes cannot be read simply from growth rates since they depend on sector size. Therefore, Figure 2.7 examines changes in employment in terms of the number of people employed. In this case, the findings from Figure 2.7 largely confirm those from Figure 2.4 and highlight the contribution of KI businesses to overall employment growth.

The two largest KI sectors in Greater Cambridge, ‘Life science and healthcare’ and ‘Information technology and telecoms’, added almost 1,900 employees combined in 2023-24. A large share of this additional employment is associated with Arm (‘Information technology and telecoms’), AstraZeneca and PPD Thermo Fisher Scientific (‘Life science and healthcare’).

'Knowledge intensive services', the sector with the fastest growth in the year to mid-February 2024, made an addition of 741 employees (361 employees one year earlier). Science Group (156 employees) and Cambridge Consultants (59 employees) contributed about one third of the employment change to 2024.

The employment change in 'High-tech manufacturing' was also significant, with 365 employees added in 2023-24 (136 in 2022-23). Almost half of the employment change in the most recent year is linked to Pragmatic (67 employees), Hexcel Composites (56 employees) and ENVEA (33 employees).

Employment change in the year to mid-February 2024 was lower than employment change in the previous year in eight out of nine non-KI sectors.

The exception was the 'Education, arts, charities, social care' sector, which had the largest employment change in 2023-24 among non-KI sectors (450 employees against 140 employees in 2022-23). Non-school organisations such as Fauna & Flora International, The Edmund Trust and CAMFED added over 200 employees combined in the most recent year.

By contrast, the results for the other non-KI sectors suggest that they have been more adversely impacted by the UK recession. Sectors such 'Other services' (289 and 404 employees), 'Property and finance' (3 and 109 employees) and 'Transport and travel' (32 and 109 employees) had a positive albeit lower change in employment relative to 2022-23, whilst the 'Other business services' sector (-25 and 244 employees) and the 'Primary' sector (-83 and 28 employees) suffered a fall in employment in the most recent year after showing an increase one year earlier.

Collectively, KI sectors added 2,982 employees during 2023-24, whereas non-KI sectors contributed 831 employees.

2.3. Analysis by firm size

Figure 2.8 shows employment growth in KI and non-KI sectors during 2022-23 (horizontal axis) and 2023-24 (vertical axis) by firm size. This chart allows us to compare the performance of size classes over time. The position of the size marker relative to the 45° line indicates whether the size class grew more or less fast than last year. Size classes with positive growth in 2023-24 are found above the horizontal axis and those with positive growth in 2022-23 appear to the right of the vertical axis.

Figure 2.8 points to some important differences between size classes.

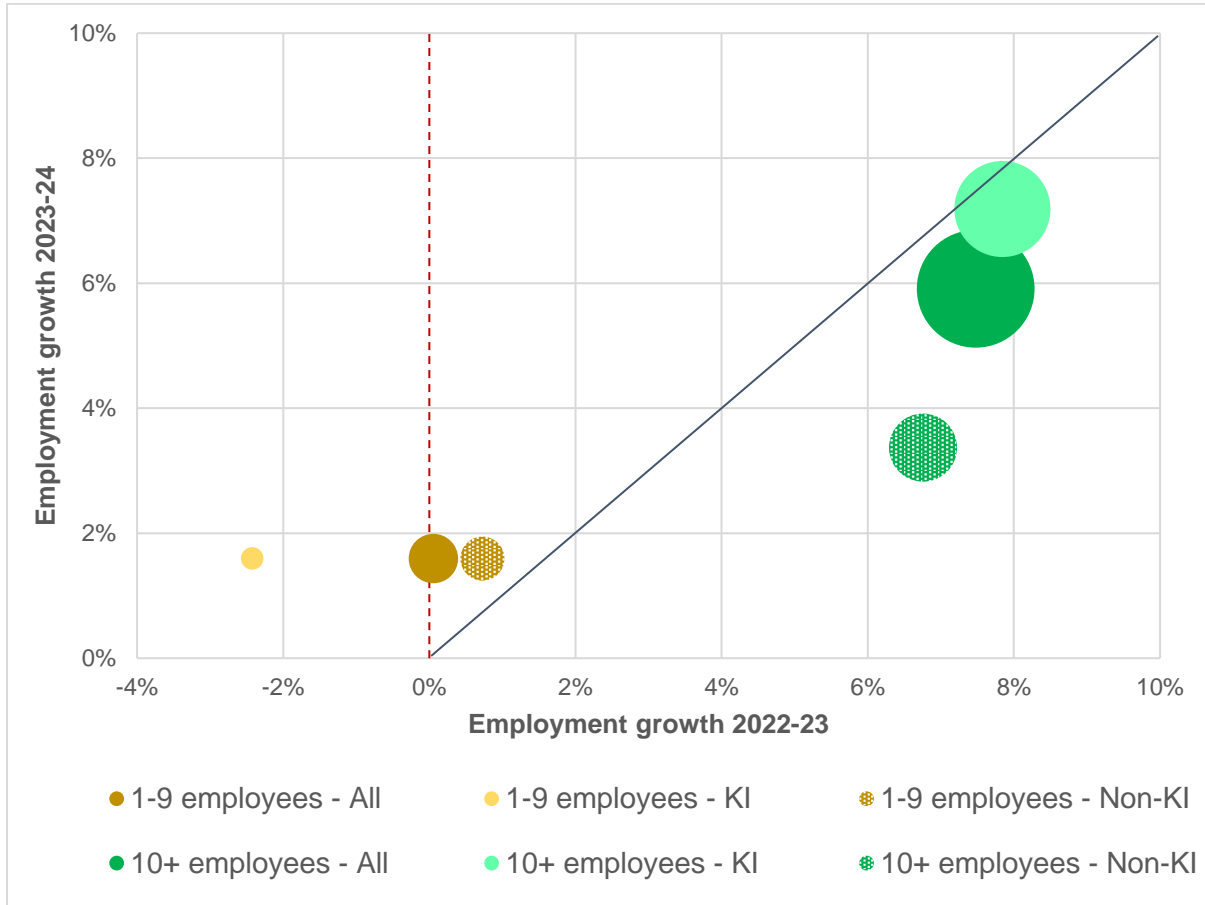
Employment growth of 1-9 employee businesses increased from 0.1% in 2022-23 to 1.6% in 2023-24. Both KI and non-KI sectors saw employment grow by 1.6% in the most recent year. Whilst employment of KI sectors in this size class fell by 2.4% in the previous year, employment of non-KI sectors increased by 0.7%.

The picture looks different for 10+ employee businesses. Although both KI and non-KI employment increased significantly faster in this size class than in the 1-9 employee group, 2023-24 growth slowed down from 2022-23 in both sectors. This slowdown was more pronounced for non-KI sectors, where employment growth was 3.4% last year against 6.8% one year earlier (7.2% and 7.8%, respectively, for KI sectors). As a result, employment growth of 10+ employee businesses was 5.9% last year, down from 7.5% one year earlier.

Given the large aggregate size of businesses employing 10 people or more, corporate employment in Greater Cambridge grew less fast during 2023-24 (5.3%) compared with

2022-23 (6.3%). However, this growth is still remarkable considering that it happened against a challenging macroeconomic backdrop, with inflation putting mounting pressure on businesses.

Figure 2.8 Employment growth by firm size in the Greater Cambridge area – 2023-24 vs 2022-23



Note: The size of each bubble is proportionate to the number of employees in 2022-23 on a continuous scale.

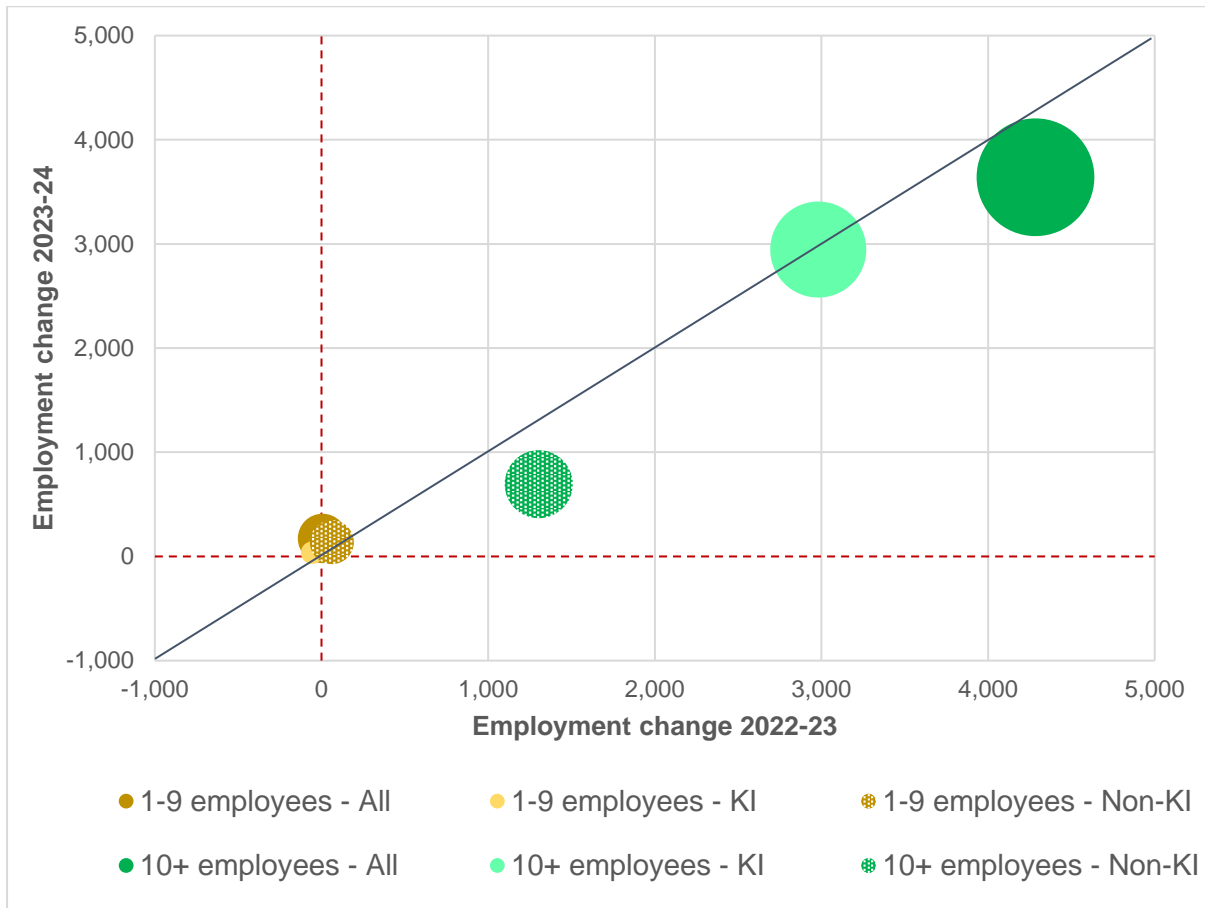
Source: Cosh & Caselli, CBR.

Figure 2.9 compares size classes based on their employment change during 2022-23 (horizontal axis) and 2023-24 (vertical axis). Similar to Figure 2.8, this chart allows us to compare the performance of size classes over time. The position of the size marker relative to the 45° line indicates whether employment change in the size class was higher or lower than last year. Size classes with a positive change in employment during 2023-24 are found above the horizontal axis and those with a positive change during 2022-23 appear to the right of the vertical axis.

The picture obtained from employment change data largely supports the conclusions drawn from employment growth data.

Employment change at 1-9 employee businesses was positive in 2023-24 and larger than in 2022-23 (173 and 6 employees, respectively). The employment change in the most recent year originated primarily in non-KI sectors (137 employees compared with 36 employees for KI sectors).

Figure 2.9 Employment change by firm size in the Greater Cambridge area – 2023-24 vs 2022-23



Note: The size of each bubble is proportionate to the number of employees in 2022-23 on a continuous scale.

Source: Cosh & Caselli, CBR.

The opposite finding holds for businesses with 10+ employees, which saw a smaller employment change in 2023-24 (3,640 employees) than in 2022-23 (4,285 employees). This reduction is associated primarily with non-KI sectors, where employment increased by 694 employees in the latest year (down from 1,304 in the previous year). In turn, employment change in KI sectors was only slightly smaller than in 2023-24 (2,946 employees) than it was in 2022-23 (2,981).

Overall, these results confirm that it is the group of 10+ employee businesses operating in KI sectors which have been driving growth in the Greater Cambridge area. Corporate employment change across all size classes was 3,813 in the year to mid-February 2024 compared with 4,291 in the year to mid-February 2023.

The next section examines the latest employment data from BRES.

3. Analysis of ONS BRES employment data

3.1. Overview of CBR/BRES work to date

Over the past seven years, we have carried out detailed analyses of employment data from the Business Register and Employment Survey (BRES) maintained by ONS. These analyses include a comparison with data from the CBR corporate database to identify any differences between the two sources and the potential reasons for this. With this work and our engagement with ONS, including meetings with the National Statistician and the BRES team over the years, our aim is to help ONS identify ways in which BRES could be improved.

We have also developed a measure of total employment in the local economy by combining the relative strengths of BRES and CBR. Our local knowledge and close monitoring of the corporate sector make us extremely confident about our measure of corporate growth. For this reason, we take the growth rates from the CBR corporate database for the five KI sectors and the first five non-KI sectors, where corporate employment dominates. On the other hand, BRES has some advantage in identifying growth for the last ten non-KI sectors, which tend to have a significant proportion of non-corporate employment. We use BRES growth rates for these last ten non-KI sectors.

These 'CBR/BRES' data, which tend to show faster employment growth for our region than suggested by BRES, have become an essential part of regional economic planning. The data have been feeding into a regional spatial growth model used by researchers at the Department of Architecture at the University of Cambridge to study housing and infrastructure constraints and solutions for the regional economy. This work formed a major part of the Cambridgeshire and Peterborough Independent Economic Review (CPIER), which provided evidence to the local region to enable it to plan and deliver major infrastructure improvements. Our data have also been informing approaches to modelling future employment growth in Greater Cambridge as part of the new Local Plan.

3.2. Overall employment growth and knowledge intensity

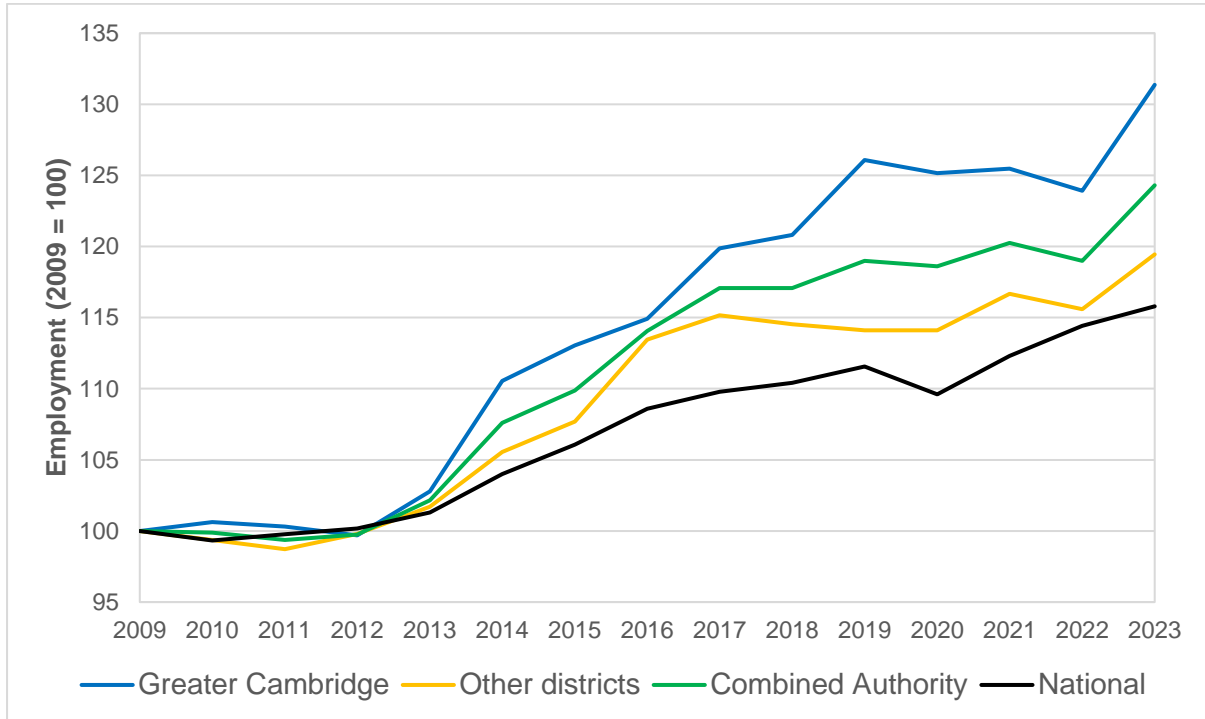
Against this backdrop, this section analyses the latest corporate and non-corporate employment data from BRES. The 2023 BRES results ('provisional results 2023, revised results 2022') were published in November 2024 and cover the growth period from September 2022 to September 2023. We begin with an analysis of employment growth in Greater Cambridge against the wider Cambridgeshire and Peterborough region ('Combined Authority' hereinafter) and the nation. This analysis is presented in Figure 3.1 across the whole period for which BRES data are available, namely from 2009 to 2023.

This period has witnessed profound changes to the business environment, with the Covid-19 pandemic, the cost-of-living crisis and more recently the UK recession causing unprecedented disruption to supply chains and a marked decline in both business and consumer confidence. Despite the unfavourable macroeconomic environment, Figure 3.1 shows that Greater Cambridge achieved robust employment growth since 2009 and outperformed the nation by a considerable margin. In fact, during this period employment in Greater Cambridge grew by 2.0% pa compared with 1.1% pa for the nation. In turn, other districts performed largely in line with the national average.

Employment growth in Greater Cambridge was matched by employment growth in the wider Combined Authority in the first part of the period, particularly until 2013. During that period, employment growth in Greater Cambridge (0.7% pa) and in the Combined Authority (0.5%

pa) was not noticeably superior to employment growth nationally (0.3% pa). Since 2013, employment growth increased both in Greater Cambridge (2.5% pa) and in the Combined Authority (2.0% pa) and was much faster than national employment growth (1.3% pa).

Figure 3.1 BRES employment growth in Greater Cambridge and in the Combined Authority vs national: all sectors



Note: The line for ‘Other districts’ shows employment growth in East Cambridgeshire, Huntingdonshire, Peterborough and Fenland combined.

Source: CBR’s calculations based on data from BRES (Nomis).

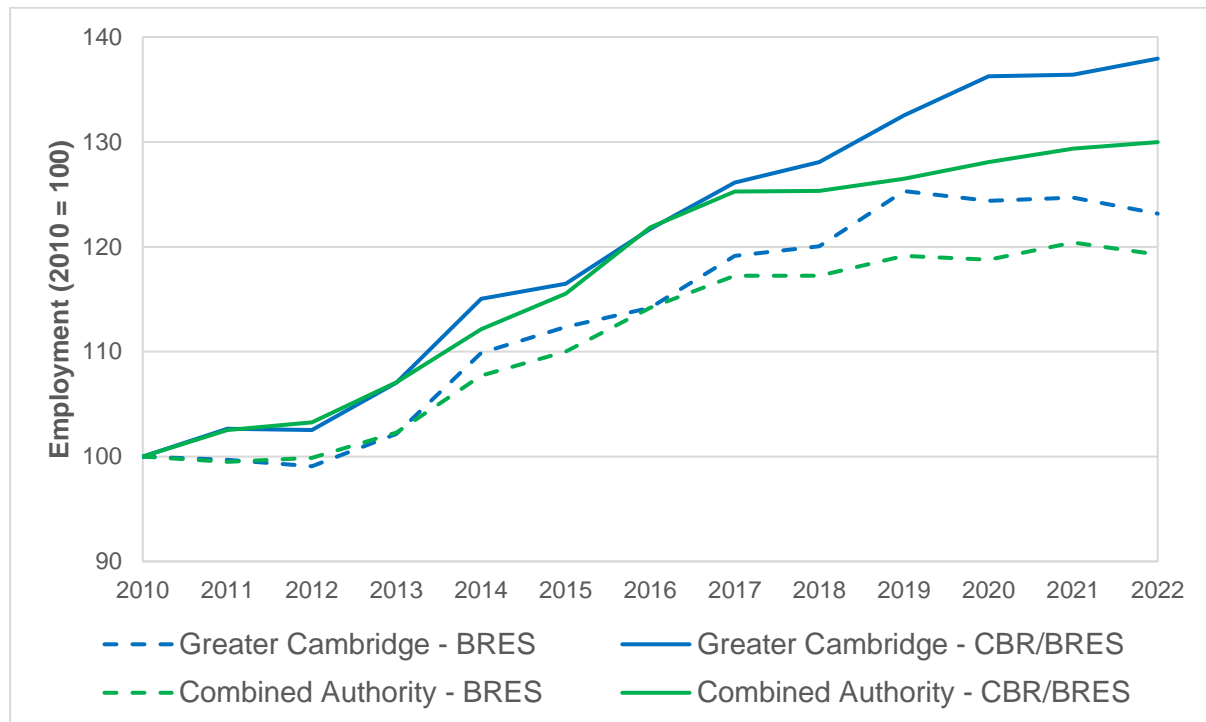
In summary, BRES portrays a picture of superior employment growth in Greater Cambridge relative to the Combined Authority and the nation, particularly after 2016. It is interesting to examine how this picture changes if we take into account CBR data alongside BRES data. The differences between CBR and BRES reflect different views about the first ten and last ten sectors. It must be noted that BRES has a different sectoral classification than the one used to produce CBR data. Whilst BRES is based purely on self-reported SICs, we take SICs as the point of departure and assign companies to purpose-built sectors that are economically relevant to the area. We also use word searches to classify relevant companies into a Life Science sector. A separate, comprehensive Life Science sector is absent altogether from the BRES sectoral classification, which is problematic given the large number of Life Science companies making up the Cambridge cluster.

Figure 3.2 provides a comparison of employment growth in Greater Cambridge and in the Combined Authority between BRES and CBR/BRES. We lose one year of data with this analysis, as our CBR/BRES combined measure is not available until February 2025.

The performance of the Greater Cambridge economy turns out to be even stronger when CBR data are combined with BRES data. Employment in Greater Cambridge grew by 2.7% pa according to CBR/BRES and by 1.8% pa according to BRES. This difference may sound small, but small differences in percentages over time may lead to large differences in employment levels. Overall, employment growth in Greater Cambridge outpaced

employment growth in the wider Combined Authority, particularly when measured by CBR/BRES. The gap between the continuous line (CBR/BRES) and the dotted line (BRES) is apparent both for Greater Cambridge and the Combined Authority and appears to have widened over time. A case in point is Greater Cambridge, where BRES reports a decline in employment since 2019 that is not mirrored by CBR/BRES.

Figure 3.2 BRES vs CBR/BRES employment growth in Greater Cambridge and in the Combined Authority: all sectors



Note: CBR data does not cover non-corporate non-KI organisations, nor does it cover companies that are active but not based in the area. CBR/BRES combined uses CBR data for the first ten sectors (where CBR has a better coverage) and BRES data for the last ten sectors (where BRES has a better coverage).

Source: CBR’s calculations based on data from BRES (Nomis).

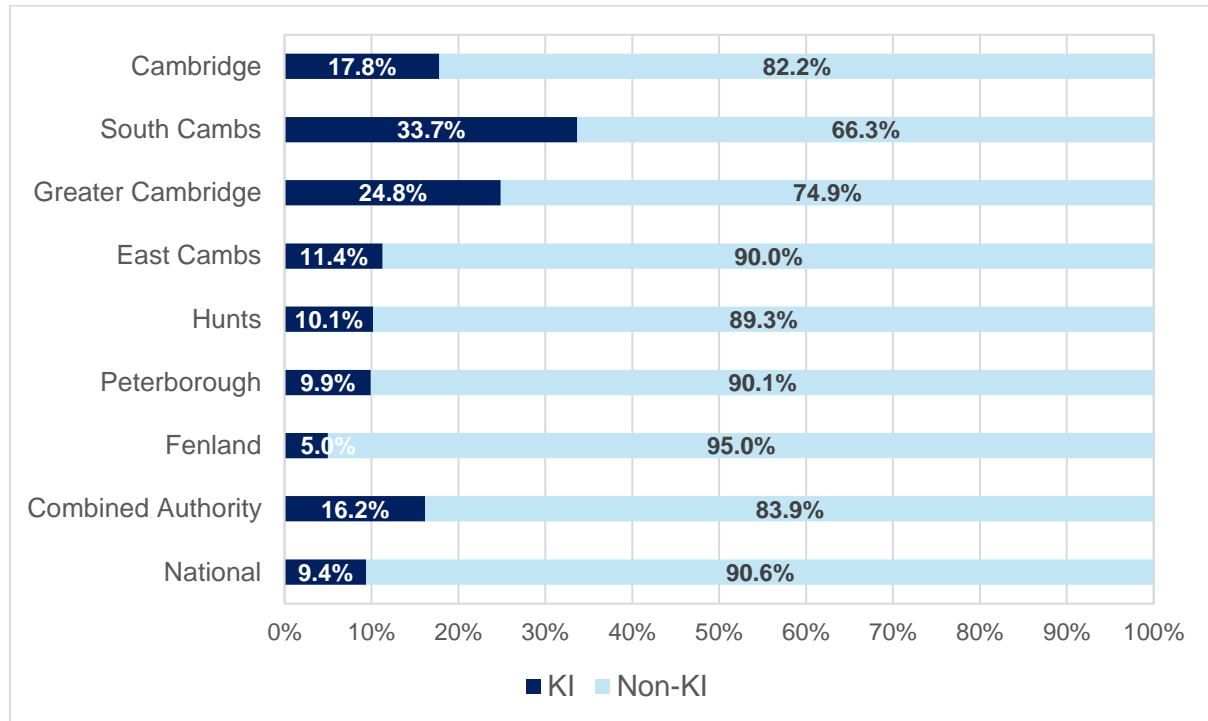
Our CBR/BRES measure confirms the different findings pre and post 2016 highlighted in Figure 3.1. Before 2016, both BRES and CBR/BRES suggest that employment in Greater Cambridge grew in line with the rate observed across the wider Combined Authority. Conversely, both employment measures point to faster employment growth in Greater Cambridge than the Combined Authority after 2016.

These differences in employment growth will depend on the sectoral composition of an area and on the performance of each sector over time. Figure 3.3 explores the influence of sectoral composition by illustrating differences in knowledge intensity between Greater Cambridge and other areas.

The scale of KI activity is one of the distinguishing features of the Greater Cambridge economy. The area is home to a world-leading scientific and high-technology cluster, which contributes a substantial share of the total jobs in the local economy. Leading chip designer Arm, global biopharmaceutical company AstraZeneca and developer of DNA sequencing technology Illumina are but a few examples of the KI companies based locally. A major part of this innovative milieu is the support structure offered by a number of business and science

parks, including the Babraham Research Campus, the Cambridge Biomedical Campus and Granta Park.

Figure 3.3 Knowledge intensity in Greater Cambridge and in the Combined Authority vs national



Note: For each area, 'knowledge intensity' is calculated as the ratio of KI employment to total employment in 2023.

Source: CBR's calculations based on data from BRES (Nomis).

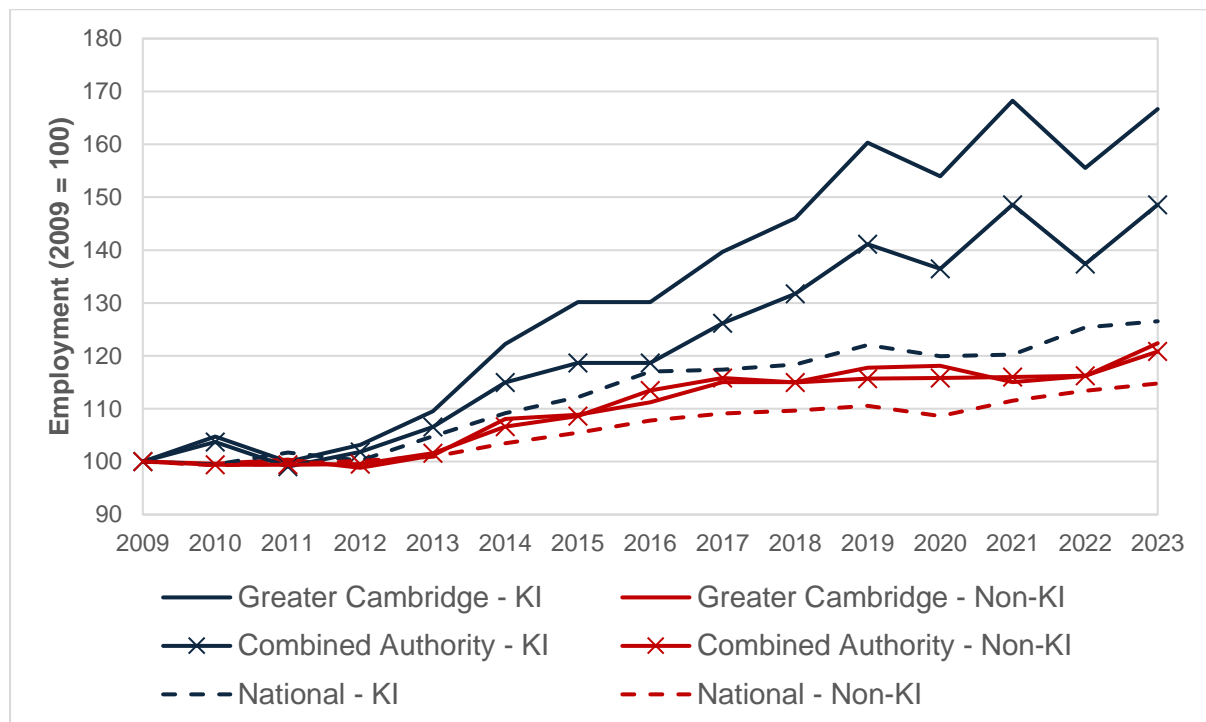
The latest BRES data reveal that about one-fourth of Greater Cambridge employment was in KI sectors. Knowledge intensity in the area has increased over time from 20% in 2009. The exceptional knowledge intensity of Greater Cambridge is apparent when examined alongside other areas. KI employment accounts for 11% of total employment in East Cambridgeshire and 10% in Huntingdonshire and Peterborough. Fenland has the lowest figure, with 5% of employment in KI sectors. Knowledge intensity in Greater Cambridge is also more than twice as high as the national average.

This chart offers some initial evidence suggesting that differences in sectoral composition may partly explain differences in overall employment growth between Greater Cambridge and other areas. We now turn to the influence of sectors' performance over time.

3.3. Employment growth in KI and non-KI sectors

Figure 3.4 depicts employment growth in Greater Cambridge and in the wider Combined Authority against the nation. The chart is based on the latest BRES data through to 2023. We distinguish between KI sectors (blue lines) and non-KI sectors (red lines).

Figure 3.4 BRES employment growth in Greater Cambridge and in the Combined Authority vs national: KI and non-KI sectors



Source: CBR’s calculations based on data from BRES (Nomis).

Figure 3.4 shows that KI sectors were a key driver of the superior performance of Greater Cambridge relative to the nation over the period 2009-2023. KI employment in Greater Cambridge increased much faster than the national average (3.7% pa and 1.7% pa, respectively). In the wider Combined Authority, the growth of KI sectors was high yet somewhat lower than in Greater Cambridge (2.9% pa), implying that KI growth in the other four districts was not as fast as in Greater Cambridge.

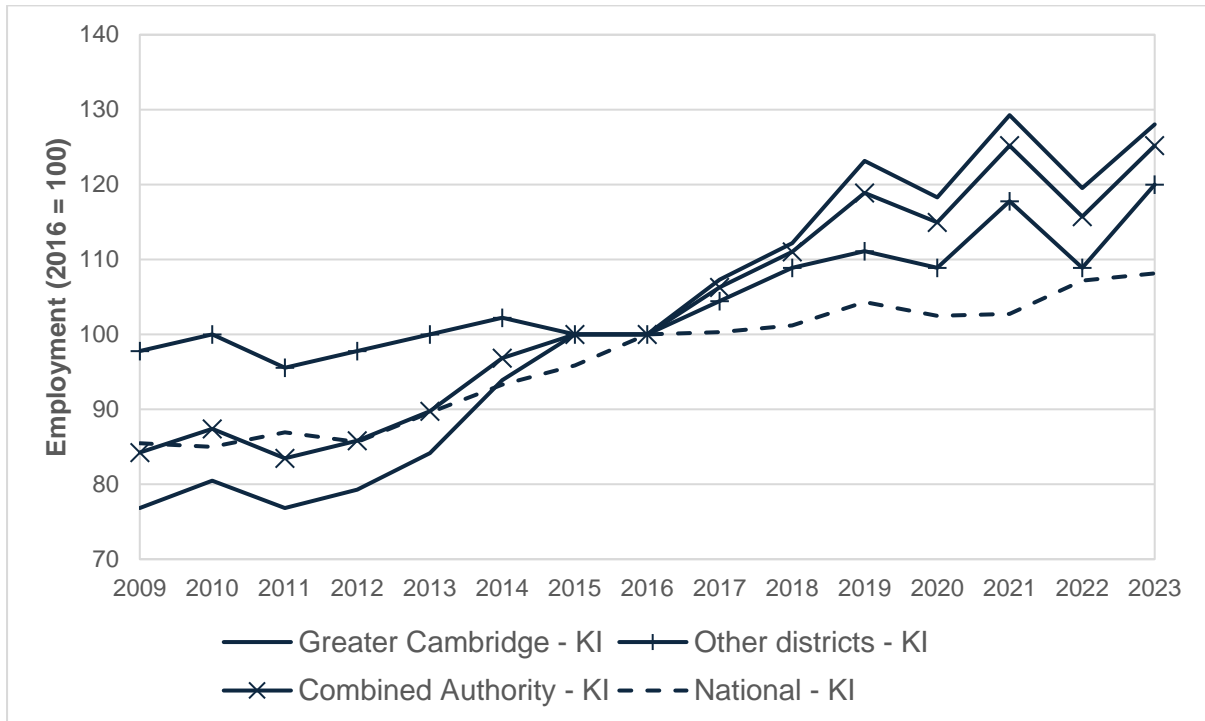
Turning to non-KI sectors, employment growth was broadly similar in Greater Cambridge and in the Combined Authority (1.5% pa and 1.4% pa, respectively). Nevertheless, non-KI sectors in both areas slightly outperformed the national average (1.0% pa). Having a dominant and successful KI economy could create a crowding out effect on non-KI sectors. Alternatively, KI sectors could have positive spillover effects and increase demand in non-KI sectors. These results appear to suggest that the fast expansion of the Cambridge scientific and high-technology cluster has not come at the expense of other sectors in the economy.

The superior performance of Greater Cambridge relative to the national economy is particularly apparent in the period after 2016. We explore this finding in more detail in Figure 3.5, which looks at KI sectors separately and has employment indexed to 100 in 2016 to bring greater clarity.

Although Greater Cambridge outperformed the nation both before and after 2016, the chart confirms that this gap in performance was larger post 2016 than it was pre 2016. KI employment growth in the Combined Authority was not superior to the national average in the period to 2016, reflecting a lower performance of KI sectors in the other districts. Since 2016, KI employment growth across the Combined Authority outperformed the nation. This faster growth in the Combined Authority in the latter part of the period was partly the result of

an acceleration in KI employment growth in the other districts, which performed much more strongly than the nation.

Figure 3.5 BRES employment growth in Greater Cambridge and in the Combined Authority vs national: KI sectors



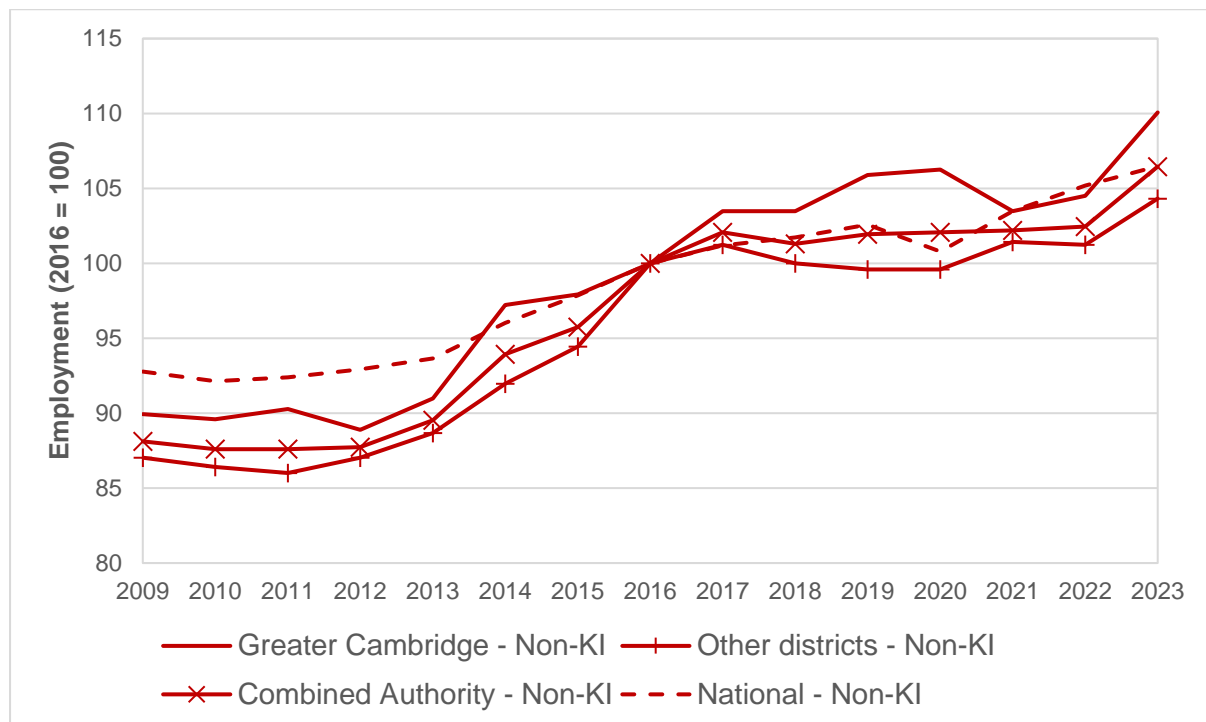
Source: CBR's calculations based on data from BRES (Nomis).

This result could be interpreted as evidence of an expanding footprint of the Greater Cambridge KI economy, whose growth may have benefited KI sectors beyond Cambridge city and South Cambridgeshire. Importantly, we can see that KI sectors in all areas outperformed the nation in the period after 2016.

Figure 3.6 provides an equivalent analysis for non-KI sectors.

The picture for non-KI sectors reinforces the superior performance of Greater Cambridge relative to the other districts within the Combined Authority. Whilst non-KI sectors in Greater Cambridge outperformed the nation both before and, to a lesser extent, after 2016, non-KI sectors in the other districts performed more strongly than the nation only in the years up to 2016. Since then, employment growth of non-KI sectors in the other districts was aligned with the national average. As a result, non-KI employment in the Combined Authority as a whole also grew in line with the nation post 2016, after outperforming the national average pre 2016. Therefore, we find no evidence that the superior performance of both KI and non-KI sectors in Greater Cambridge had a negative effect on non-KI sectors across other districts within the wider Combined Authority.

Figure 3.6 BRES employment growth in Greater Cambridge and in the Combined Authority vs national: non-KI sectors



Source: CBR’s calculations based on data from BRES (Nomis).

Figure 3.7 examines whether the exceptional performance of KI sectors in Greater Cambridge highlighted in the previous figures is confirmed by our CBR/BRES combined measure. Similar to Figure 3.4, the chart distinguishes between KI sectors (blue lines) and non-KI sectors (red lines). The analysis stops in 2022, the last year for which CBR/BRES data are currently available.

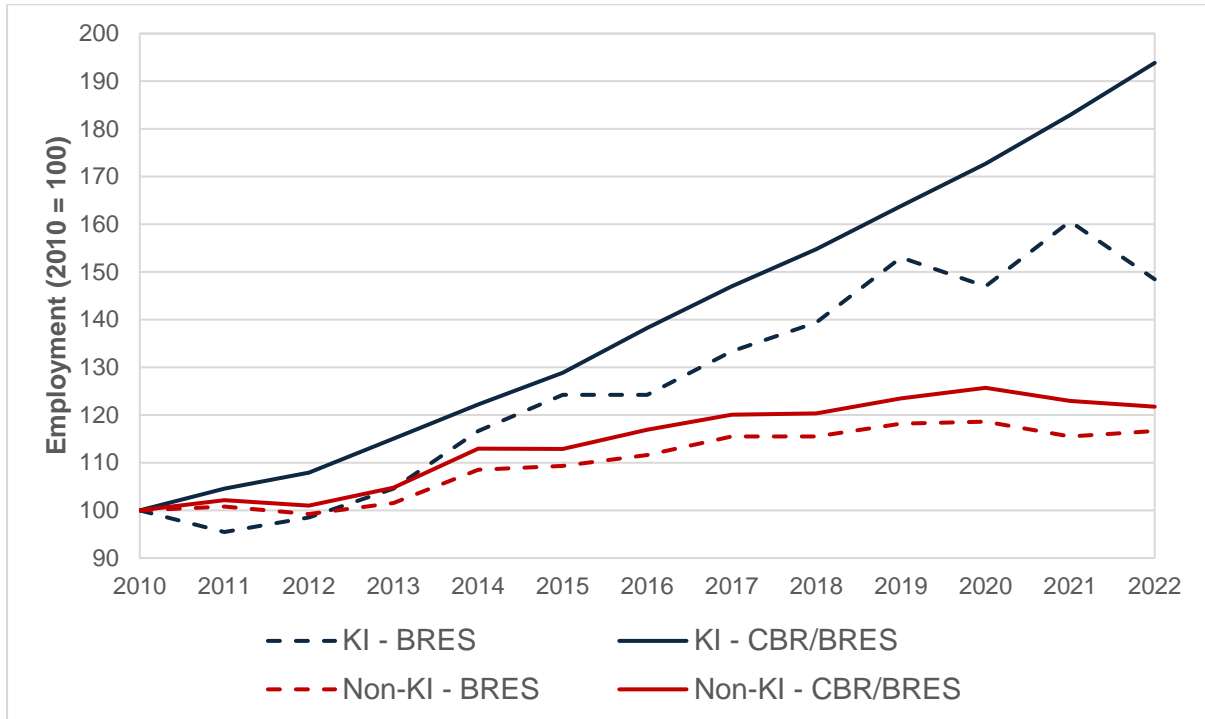
When CBR data are combined with BRES data, we find an even stronger performance of the Greater Cambridge economy. The CBR/BRES estimates point to higher KI employment growth than BRES, particularly since 2019 (5.8% pa and -1.0% pa, respectively). Among the KI companies contributing to this growth are surgical robotic system manufacturer CMR Surgical, global leader in AI cyber security Darktrace and video game developer Frontier Developments.

The BRES series also exhibits large volatility over the past few years. The widening gap between BRES and CBR/BRES over time partly reflects very different views about KI employment growth in 2022. Whilst CBR data points to continued growth in the local KI economy, helped by an increase in employee numbers at some of the largest KI companies based locally (e.g. Bango, Bicycle Therapeutics and Cambridge Consultants), BRES data reports a substantial fall in KI employment in that year.

BRES figures for 2022 are puzzling, particularly if we move to a more disaggregated sectoral level. An example is the ‘ICT’ sector in Cambridge, where BRES reports a 3.8% growth pa over the entire period compared with 8.3% pa from CBR. What is particularly puzzling is the massive drop in BRES employment in the latest year, -12.5% (corresponding to a loss of 1,000 employees). Even if we take into account Arm’s reduction in Cambridge employment following their 2022 restructuring, we would find a much more modest reduction of 0.8% (-70 employees). Similarly, there is an extremely large difference between BRES and CBR for the

'ICT' sector in South Cambridgeshire, with CBR showing growth of 8.7% and BRES a drop of 17.6% in the most recent year. The large drop in BRES employment during 2022-23 fails to recognise the growth that has happened locally with companies like Frontier, Darktrace and Bango.

Figure 3.7 BRES vs CBR/BRES employment growth in Greater Cambridge: KI and non-KI sectors



Note: CBR data does not cover non-corporate non-KI organisations, nor does it cover companies that are active but not based in the area. CBR/BRES combined uses CBR data for the first ten sectors (where CBR has a better coverage) and BRES data for the last ten sectors (where BRES has a better coverage).

Source: CBR's calculations based on data from BRES (Nomis).

Overall, BRES appears to be under-recording the growth of KI sectors in the local economy, possibly because of the limitations associated with the SIC classification. We find BRES data, particularly for the most recent year, very concerning and we will explore this further as part of our 2023-24 comparison in February next year.

Our CBR/BRES measure also gives slightly higher employment growth amongst non-KI sectors compared with BRES, although both sources have a very similar pattern. Many non-KI companies based locally showed continued growth over the past decade despite the unprecedented disruption caused by the pandemic, the cost-of-living crisis and the recession. Law firm Mills & Reeve, bus operator Whippet Coaches and mechanical services contractor CPS Building Services are some of the non-KI companies with steady growth over the years. By contrast, other non-KI companies had their business impacted by the challenging macroeconomic environment. Examples are school meal provider Lunchtime Co., commercial cleaning services provider Nightingale Cleaning, owner of Quay Mill Hotel & Spa Quay Investments and punting company Scudamore's Punting. The gap between BRES and CBR/BRES for non-KI sectors has remained largely unchanged over time.

The high variability in BRES figures observed during the past few years calls for a more disaggregated analysis. Table 3.1 provides a detailed comparison of employment growth across the districts making up the Combined Authority, distinguishing between three separate periods: a first period of relatively limited volatility in BRES figures (2009-2021); a second period with a large fall in employment growth across the local region (2021-22); and a third period with fast employment growth (2022-23).

Table 3.1 BRES employment growth across the Combined Authority vs national

BRES employment District	% KI 2023	All			KI			Non-KI		
		1 year 2022-23	1 year 2021-22	12 years 2009-21	1 year 2022-23	1 year 2021-22	12 years 2009-21	1 year 2022-23	1 year 2021-22	12 years 2009-21
Cambridge	18%	5.4%	-0.4%	2.0%	2.4%	-6.8%	4.8%	6.0%	1.1%	1.4%
South Cambridgeshire	34%	6.9%	-2.2%	1.8%	10.5%	-8.1%	4.2%	5.1%	0.9%	0.9%
Greater Cambridge	25%	6.0%	-1.2%	1.9%	7.1%	-7.5%	4.4%	5.3%	1.0%	1.2%
East Cambridgeshire	11%	2.9%	-4.2%	2.5%	14.3%	-17.6%	3.7%	3.3%	-1.6%	2.2%
Huntingdonshire	10%	3.7%	0.6%	0.7%	6.3%	-11.1%	1.0%	2.7%	1.4%	0.7%
Peterborough	10%	3.4%	-0.4%	1.4%	9.1%	-4.3%	0.8%	2.8%	-0.5%	1.5%
Fenland	5%	3.9%	-1.3%	1.1%	6.7%	7.1%	2.0%	2.7%	0.0%	1.0%
Other 4 districts combined	10%	3.3%	-0.9%	1.3%	10.2%	-7.5%	1.6%	3.0%	-0.2%	1.3%
Combined Authority	16%	4.5%	-1.1%	1.5%	8.2%	-7.5%	3.4%	3.9%	0.3%	1.2%
National	9%	1.2%	1.9%	1.0%	0.9%	4.3%	1.5%	1.2%	1.7%	0.9%

Source: CBR's calculations based on data from BRES (Nomis).

The results further illustrate the superior performance of Greater Cambridge relative to the Combined Authority and the nation. Overall, employment in Greater Cambridge grew by 1.9% pa in the 12 years to 2021, compared with 1.3% pa for the other districts combined, 1.5% pa for the Combined Authority and 1.0% pa for the nation. This superior performance was driven by KI sectors, which saw employment grow much faster in Greater Cambridge (4.4% pa) than in the other areas (1.6% pa, 3.4% pa and 1.5% pa, respectively). The relatively high share of employment in KI sectors in Greater Cambridge (25% of total employment in the area) also means that this fast KI growth had a significant impact on overall employment growth in the area. By contrast, non-KI growth was broadly similar in Greater Cambridge and in the other districts (1.2% pa and 1.3% pa, respectively), with both areas slightly outperforming the national average (0.9%).

The table vividly highlights the variability in BRES figures over the last two growth periods. Employment fell by 1.2% in Greater Cambridge and by 0.9% in the other districts during 2021-22, whilst it increased by 1.9% at the national level. This fall in employment was caused by a substantial drop amongst KI sectors (-7.5% in Greater Cambridge and in the other districts), which is at odds with the 4.3% increase for the nation as a whole. Non-KI employment continued to grow by 1.0% in Greater Cambridge but dropped by 0.2% in the other districts. In the year to 2022, all districts within the Combined Authority exhibited lower non-KI growth compared with the nation (1.7%).

Last year saw a completely opposite picture. Overall employment growth in Greater Cambridge was considerably faster than the national average (6.0% and 1.2%, respectively). The other districts also outperformed the nation, albeit less markedly (3.3%). Both KI and non-KI sectors achieved fast growth during 2022-23. KI employment grew by 7.1% in Greater Cambridge, 10.2% in the other districts and 8.2% in the Combined Authority, much faster than the 0.9% growth for the nation. However, we must note that this fast growth in KI sectors occurred after an almost symmetrical drop in the previous year – total KI employment in Greater Cambridge and in the wider Combined Authority during 2023 remained at the same level as in 2021. In turn, non-KI employment growth was 5.3% in Greater Cambridge and 3.0% in the other districts, taking non-KI employment growth in the wider Combined Authority to 3.9%. This growth looks exceptional when considered alongside the 1.2% growth across the nation as a whole.

3.4. Sectoral analysis

Table 3.2 delves deeper into the influence of sectoral composition on overall employment growth in the Greater Cambridge economy. It compares the sector's share of Greater Cambridge's employment against the sector's share of national employment ('location quotient'). A location quotient above 100% implies that Greater Cambridge has a higher concentration of employment in that sector compared with the nation.

The greater specialisation of the Greater Cambridge economy in KI sectors relative to the nation is apparent when examined with location quotients. KI employment accounted for 25% of total employment in Greater Cambridge during 2023, a share that is 2.6 times higher than the equivalent share for the nation as a whole. This specialisation has also increased over time, from 228% in 2009 to 265% in 2023.

The two sectors that lie at the heart of the Cambridge Phenomenon, 'ICT' and 'R&D' in the table, have played an increasingly dominant role. In the most recent year, the share of Greater Cambridge's employment in the 'ICT' sector was 1.7 times that of the nation. The concentration of employment in the 'R&D' sector was even more remarkable (18.1 times that of the nation). The fast growth achieved by these two sectors over the past decade means that their contribution to total employment in Greater Cambridge has gone up significantly over time.

We find a different picture for non-KI sectors. Greater Cambridge has a lower concentration in non-KI sectors relative to the nation – the share of non-KI employment in Greater Cambridge was 83% that of the nation in 2023 and has gone down over time (from 88% in 2009). Greater Cambridge is more specialised than the nation only in two non-KI sectors – 'Publishing' and 'Education'. Greater Cambridge and the nation are equally specialised in 'Health services', whilst Greater Cambridge is less specialised than the nation in all the other non-KI sectors.

Table 3.2 Sectoral composition in Greater Cambridge vs national

	2009			2023		
	Total employment	Share of GC's total	Location quotient	Total employment	Share of GC's total	Location quotient
High-tech manufacturing	6,000	4%	142%	5,500	3%	119%
Life sciences manufacturing	1,250	1%	277%	1,250	1%	217%
ICT	8,500	5%	163%	15,000	7%	171%
R&D	10,000	6%	1473%	20,500	10%	1813%
Knowledge intensive services	5,500	3%	171%	10,500	5%	225%
5 KI sectors	31,500	20%	228%	52,500	25%	265%
Primary	2,125	1%	67%	1,750	1%	52%
Other manufacturing	4,750	3%	51%	5,000	2%	48%
Property and construction	9,000	6%	80%	11,000	5%	76%
Utilities	2,125	1%	66%	2,125	1%	52%
Publishing	1,250	1%	147%	2,375	1%	366%
Transport and travel	5,000	3%	57%	6,000	3%	48%
Wholesale distribution	9,000	6%	139%	5,000	2%	65%
Retail distribution	13,000	8%	74%	12,000	6%	66%
Hotels, pubs and restaurants	8,000	5%	74%	13,500	6%	81%
Other business services	14,000	9%	82%	21,000	10%	75%
Public services	5,500	3%	64%	4,250	2%	44%
Other services	6,000	4%	81%	8,500	4%	88%
Education	26,500	16%	183%	33,500	16%	190%
Finance and professional services	4,000	2%	49%	5,000	2%	50%
Health services	19,000	12%	94%	28,000	13%	97%
15 non-KI sectors	129,500	80%	88%	158,500	75%	83%
All sectors	161,000	100%	100%	211,500	100%	100%

Note: The location quotient measures Greater Cambridge's sectoral specialisation relative to the nation. It is calculated as the sector's share of total employment in Greater Cambridge divided by the sector's share of the national total. A location quotient of 100% means that Greater Cambridge and the nation are equally specialised in that sector, while a location quotient above (below) 100% means that Greater Cambridge has a higher (lower) concentration in that sector than the nation.

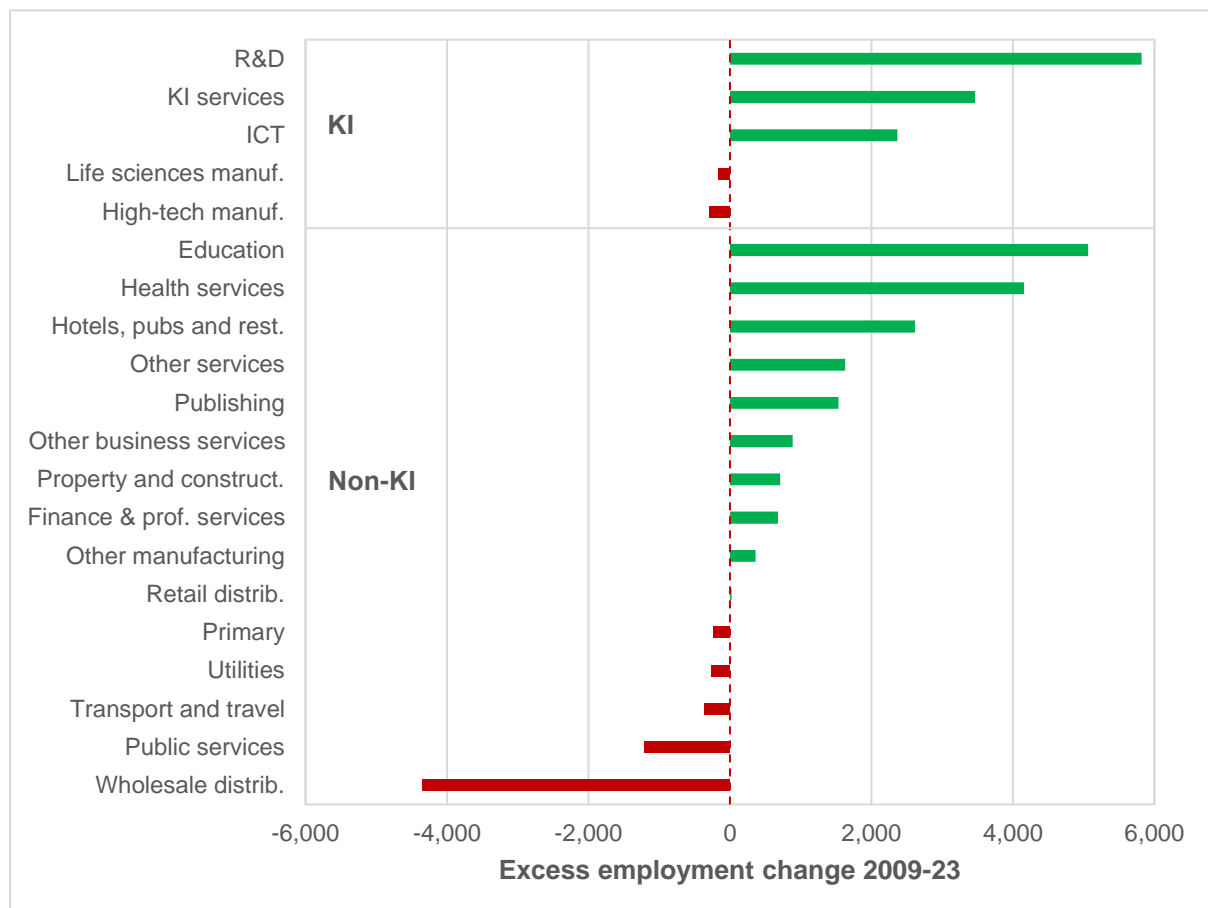
Source: CBR's calculations based on data from BRES (Nomis).

Therefore, the greater specialisation of Greater Cambridge in dynamic sectors such as 'ICT' and 'R&D' partly explains the superior performance of the local economy relative to the nation, where non-KI sectors tend to play a more dominant role. These results augment those from Figure 3.3 and highlight the important role played by sectoral specialisation alongside sectors' performance in explaining Greater Cambridge's superior performance compared with the national average.

Finally, we further explore the effects of sectors' performance while taking into account the absolute size of each sector in Greater Cambridge. We estimate the difference between the actual change in employment in Greater Cambridge between 2009 and 2023 in comparison with what it would have been had Greater Cambridge's sectors grown at the same rate as their national equivalents. For each sector, we take Greater Cambridge's employment in 2009 and apply the growth rate for the nation in that sector. This gives an estimate of employment in 2023 that can then be compared with the actual employment in that year. We call the difference between the actual and the estimated employment the 'excess' employment.

The results are presented in Figure 3.8. The 5 KI sectors are listed at the top of the chart, whereas the 15 non-KI sectors appear at the bottom of the chart. The length of each bar is the combination of two elements: the difference in employment growth between Greater Cambridge and the nation for that sector; and the absolute size of that sector in Greater Cambridge.

Figure 3.8 BRES 'excess' employment change in Greater Cambridge



Note: The bars measure 'excess' employment change in Greater Cambridge relative to the national average. The employment in each sector in 2023 is estimated on the basis that each sector grows in line with the national employment growth rate for that sector. This is then subtracted from actual employment in that sector in 2023 to give 'excess' employment. Green bars identify Greater Cambridge's sectors with positive excess employment change, whereas red bars refer to sectors with negative excess employment change.

Source: CBR's calculations based on data from BRES (Nomis).

The 'R&D' sector stands out when examined in terms of excess employment change. A total of 5,819 employees were added over the period 2009-2023 compared with what would have happened had the Greater Cambridge's sector grown in line with its national equivalent. The excess employment change generated by the 'KI services' sector (3,468) and the 'ICT' sector (2,365) was also significant, highlighting the very fast expansion of the local KI economy in just over a decade.

In turn, 10 out of 15 non-KI sectors showed positive excess employment change (see the green bars for non-KI sectors). A case in point is the 'Education' sector (5,063), which benefited from the fast growth in employment by both school and non-school organisations in and around the city of Cambridge. Amongst non-KI sectors, 'Health services' (4,160), 'Hotels, pubs and restaurants' (1,630) and 'Publishing' (1,536) also added a considerable number of employees in excess of the counterfactual. Conversely, non-KI sectors such as 'Wholesale distribution' (-4,341) and 'Public services' (-1,215) had negative excess employment change (see the red bars for non-KI sectors), suggesting that they have underperformed their national equivalents.

These results cast further light on the drivers of the superior performance of Greater Cambridge relative to the nation. While three KI sectors alone ('R&D', 'KI services' and 'ICT') accounted for about half of the cumulative excess employment change in the area, several non-KI sectors such as 'Education', 'Health services', 'Hotels, pubs and restaurants' and 'Publishing' also contributed a substantial number of employees above and beyond what would have occurred had these sectors grown as their national average.

3.5. Summary of key findings and conclusions

The analysis of the latest BRES results presented in this section shows that Greater Cambridge has achieved remarkable growth in employment over the last decade. The area outperformed the nation, driven by its fast-expanding KI economy. Our results reveal that the superior performance of Greater Cambridge relative to the nation was due to the combined effect of its sectoral composition and performance. The local economy has strong specialisation in 'ICT', 'R&D' and other KI sectors, which tended to grow much faster than non-KI sectors. These KI sectors, along with 10 out of 15 non-KI sectors, have outperformed their national equivalents and generated employment change in excess of what it would have been had Greater Cambridge's sectors grown in line with the national average for those sectors.

The results of our analysis also show that the difference in employment growth rates between CBR and BRES data, albeit less extreme than it used to be when we first started this work, still remains. A source of concern in relation to BRES data is the high volatility in the time series. BRES data exhibit large fluctuations from one year to the next, with some evidence that these fluctuations may have become more accentuated than in the past.

These results highlight the importance of considering BRES data alongside other sources when studying the employment growth of local areas and industry sectors. Three main features differentiate the CBR data from BRES. First, we provide a more consistent view for KI sectors. Our annual census of Greater Cambridge-based companies, supported by local knowledge and word searches to identify KI companies across a variety of SICs, allows for an accurate picture of what has happened to the local KI economy. Second, we can talk about individual companies. Our granular approach identifies the specific companies that are behind the growth of a geographic area and industry sector. Third, we can locate companies on a map. The exact business growth location is vital for planning housing and transport

infrastructure. We will return to our comparison of CBR data with BRES in February 2025, when our 2023-24 annual draw data will be available.

We now turn to the results of the October 2024 snapshot analysis.

4. October 2024 snapshot results

This section summarises the results of the October 2024 snapshot. This ‘stop press’ analysis allows us to provide an even more up-to-date picture than the employment update and BRES. We have lost two of our snapshot sample companies through acquisition. Abcam was acquired late last year by Danaher for \$5.7bn and IQGeo was acquired in September this year by KKR for £333m. Consequently, this section uses just the seven companies that have presented interim results for the six-month periods ending in either May or June 2024. Only turnover data is available and together they represent a combined current annual turnover of about £168m and have over 1,850 employees.

The gain from focusing on interim results for six-month periods is that most of the activity reported in the accounts took place in 2024. For each company we look at turnover growth in the same six-month period in 2023 and 2024.

4.1. Turnover growth

Total turnover for this reduced group of companies **fell** by 11% in the first six months of the 2024 financial year compared with a fall of 1% in the same period last year for the same companies. These figures demonstrate the consequences of the flatlining economy in 2023-24.

4.2. Companies’ comments on coping with the recession

We report below some comments from the companies’ latest reports. They offer some further insights into the impact of the recession on their business. These reports, published in recent months, appear to show that business conditions have remained challenging in the first half of 2024.

For the six months ended 30 June 2024, Group Adjusted Operating Profit increased to a record first half of £11.0 million (H1 2023: £10.4 million) on revenue of £53.7 million (H1 2023: £56.1 million). Adjusted basic earnings per share increased to 18.1 pence (H1 2023: 16.6 pence) and cash generated from operations in the period was £10.7 million (H1 2023: £7.2 million). Reflecting a strong prior year comparator and the widely reported slowdown across the consultancy market over the past year, Science Group half revenue was £53.7 million (H1 2023: £56.1 million). With a robust balance sheet, including significant cash resources and undrawn debt facilities, combined with ongoing operating cash generation, Science Group continues to explore corporate opportunities while also increasing the capital allocated to the share buy-back programme.

Science Group PLC: Science and technology consultants

The first half of 2024 saw continued softer customer demand across a broad range of customers and sectors. This trend, first highlighted in the trading update we issued in January 2024, reflects an ongoing process of destocking by customers as they seek to reduce cash tied up in inventory due to higher costs of capital. Many customers built significant stock balances through 2021 and 2022 to safeguard against supply chain shortages. Alongside the need to reduce these elevated stock levels, slowing economic activity through 2023 led to reduced demand for industrial goods and therefore these stock balances have taken longer than anticipated to reduce. As a result, Group revenues during

the first half were down 14% year on year to \$48.2m (H1 2023: \$56.3m), against a strong comparator which benefitted from the easing of component shortages. This H1 performance is in line with the wider industry, with five of the largest publicly listed global industrial PC manufacturers.

Nexteq (Quixant) PLC: Products for the global gaming and broadcast industries

The first half of 2024 has seen trading conditions consistent with those reported in March, with customers choosing to delay capital expenditure due to the macroeconomic conditions. Despite the success of our product development strategy, closer customer engagement and the popularity of the products, revenue from customers in new sectors has been offset by the significant decline of our ceramics business, masking the underlying progress that we have made. Global volume production of ceramic tiles has fallen by over 50% since peaking in 2020/21, most significantly in China which is by far the largest producer worldwide. Indications are that these market conditions will remain for a period before growth is restored in the medium term.

This has made our task of delivering overall revenue growth more difficult as there is an inevitable time lag between product launches in new sectors and sales growth as volumes ramp up. The result is slower overall progress in revenues for Xaar. Despite this, we expect further OEM product launches during the second half of the year and our high-quality pipeline of opportunities in new markets and in new applications means we remain optimistic about future growth prospects for the Group. We believe that in most cases there are strong economic drivers as to why customers should choose Xaar, and our priority is to make it as easy as possible for them to make that choice. As sales volumes improve and energy costs stabilise, we expect gross margins to improve in the medium term. We remain cautious on providing precise timing given the current market backdrop and uncertainty caused by economic and geopolitical effects.

Xaar PLC: Digital inkjet printing technology

Group revenue for the period increased by 10% to £16.1m (2023: £14.6m); the Company's core fleet business represents more than 99% of revenues, 94% of this revenue derives from recurring subscriptions. Operating profit and profit before tax for the period increased by 13% to £2.7m (2023: £2.4m). The Company has made very substantial progress in the first half of the year, and the outlook for the remainder of the year is positive. Remaining costs associated with the Konetik acquisition have been incurred or provided for in these accounts and costs have been controlled well during the period. The issues faced by the Company in 2023 have now been put behind it, enabling it to structure for further growth. The Company will make targeted investments for growth in each of its 6 geographic markets. This is expected to underpin further significant financial progress in 2025 and beyond.

Quartix Technologies PLC: Vehicle GPS tracking

Management actions have now reduced the Group's cost base in line with the expected reduction in revenues and our teams are aligned behind the Group's strategic goals. Since 31 May 2023 these actions have reduced annualised operating costs by \$14.5 million and annualised capital expenditure by \$5.0 million. Following the cost reduction actions taken 24i is making progress in line with its focus on improving cash flow. It has also seen new customer deployments and multiple contract extensions being delivered in the first half of the

year. Positively, Amino has seen an increase in sales order intake for video streaming devices in the first half and gross profit margin has improved to 55%. Although devices revenue has decreased by 74% year on year, volumes of higher margin Digital Signage and Enterprise device sales and sales orders in H1 2024 have exceeded management expectations.

Aferian PLC: Global media and entertainment technology

The first six months of 2024 have gone to plan and are in-line with the Trading Update issued in July. The payments business continues to deliver growth, providing cash to fund expansion of the Digital Vending Machine® (DVM), which continues to be adopted as the defacto standard platform for subscription bundling by the world's largest companies. The addition of Disney+ to the Bango eDisti program is further evidence of this and will help accelerate time-to-revenue from DVM deals. With 4 new DVM wins in the 1H and a further 3 in Q3, the pipeline built over the past years continued to deliver results and provides confidence in meeting market expectations for the full year. The subscriptions market is vast and growing, and the percentage of subscriptions bundled through channels is increasing. Bango's leadership position in this market is strengthening with the DVM now playing a key role in the customer acquisition and engagement strategies of major content brands. We are excited by the opportunity ahead and remain on track to continue our strong growth trajectory and return to a positive net cash position in FY25.

Bango PLC: Technology and services helping global businesses to grow

As announced previously at the time of the fundraising in May 2024 and in the trading update published in July 2024, market conditions remained challenging in H1 2024. Revenue for the period was at a similar level to the same period in 2023. Nevertheless changes to the Company's cost base have delivered a significant positive improvement of £1.9 million at the adjusted operating profit level, with the adjusted operating loss reduced from £2.0 million in H1 2023 to £0.1 million for H1 2024. The changes made to the commercial team have resulted in an expanded pipeline of new business opportunities. As a result, we have increasing confidence that this will increase the long-term value of our contracted order book and underpin future revenue generation.

Cambridge Cognition Hldgs PLC: Digital solutions to assess brain health

5. Concluding remarks

The October 2024 Update is the eleventh of a series of updates that provide timely data on corporate employment changes in the Greater Cambridge area. The findings in this report are drawn from a large sample of 5,501 companies with accounting year ends between December 2023 and April 2024. Therefore, it captures the worst impacts of recession and early recovery. We compare this period with the same period the previous year, which covers the effects of the unfolding cost of living crisis.

The picture that emerges is one of continued but lower employment growth in Greater Cambridge in the year to mid-February 2024. Growth in the area slowed down from 6.3% in 2022-23 to 5.3% in 2023-24, suggesting that the UK recession in the second half of 2023 had some impact on business. Nevertheless, the employment performance of the Greater Cambridge corporate economy was far superior to the performance of the national economy over the same period. This robust employment growth was driven by a dynamic KI economy. All KI sectors but 'Life science and healthcare', which achieved an exceptional growth in the previous year, reported faster growth in the most recent year. Whilst the resilience of the Greater Cambridge corporate economy to the recession also benefited from the continued growth of non-KI sectors, non-KI employment growth slowed down from 4.9% in 2023-24 to 2.8% in 2022-23.

Our analysis of the latest BRES data shows that Greater Cambridge has outperformed the nation, driven by its fast-expanding KI economy. The results reveal that the superior performance of Greater Cambridge was due to the combined effect of its sectoral composition and performance. We also find that the difference in employment growth rates between CBR and BRES data, albeit less extreme than it used to be when we first started this work, still remains. A source of concern in relation to BRES data is the high volatility in the time series. Three main features differentiate the CBR data from BRES: we provide a more consistent view for KI sectors; we can talk about individual companies; and we can locate companies on a map.

We complement these findings by providing a snapshot for companies with interim accounts ending in either May or June 2024. This sample is much smaller than the update sample and is further reduced this time, as two companies (Abcam and IQGeo) were acquired and exited the sample. Total turnover for this group of companies (all knowledge intensive) fell by 11% in the first six months of the 2024 financial year compared with a fall of 1% in the same period last year. These findings demonstrate the consequences of the flatlining economy in 2023-24 even for these successful businesses. The perusal of their interim reports also reveals that business conditions have remained challenging in the first half of 2024.

Overall, the results of our October 2024 Update continue to show a resilient corporate economy in Greater Cambridge against a challenging macroeconomic backdrop, with inflation still putting significant pressure on businesses. There is evidence that the UK recession in the third and fourth quarters of 2023 was felt by some businesses, particularly amongst non-KI sectors. It remains to be seen how swiftly the local corporate economy will recover from the worst impacts of recession. Our next update will explore this and any further developments.

Andy Cosh & Giorgio Caselli
Centre for Business Research, University of Cambridge
November 2024

Appendix A1. Employment growth by sector in the Greater Cambridge area

October 2024 Update	Number of companies	Total empl 2023-24	Total empl 2022-23	% of GC total 2022-23	Empl growth 2023-24	Empl growth 2022-23
KNOWLEDGE INTENSIVE SECTORS						
Information technology and telecoms	727	13,739	12,876	71.4%	6.7%	3.1%
Life science and healthcare	235	18,956	17,943	87.9%	5.6%	12.8%
High-tech manufacturing	157	6,532	6,167	77.0%	5.9%	2.3%
Knowledge intensive services	232	7,000	6,259	83.9%	11.8%	6.1%
TOTAL KI SECTORS	1,351	46,227	43,245	80.2%	6.9%	7.3%
OTHER SECTORS						
Primary	106	407	490	40.4%	-16.9%	6.1%
Manufacturing	222	2,475	2,418	60.0%	2.4%	5.0%
Wholesale and retail distribution	450	3,836	3,759	67.8%	2.0%	4.0%
Construction and utilities	548	2,785	2,753	59.5%	1.2%	2.6%
Transport and travel	92	1,210	1,178	66.2%	2.7%	10.2%
Property and finance	804	3,816	3,814	66.5%	0.1%	2.9%
Other business services	995	5,579	5,604	56.8%	-0.4%	4.6%
Other services	628	5,543	5,254	54.3%	5.5%	8.3%
Education, arts, charities, social care	305	4,371	3,922	32.2%	11.5%	3.7%
TOTAL NON-KI SECTORS	4,150	30,022	29,191	53.4%	2.8%	4.9%
TOTAL ALL SECTORS	5,501	76,249	72,436	66.7%	5.3%	6.3%

Source: Cosh & Caselli, CBR.

Appendix A2. Employment growth by sector in Cambridge

October 2024 Update	Number of companies	Total empl 2023-24	Total empl 2022-23	% of Camb total 2022-23	Empl growth 2023-24	Empl growth 2022-23
KNOWLEDGE INTENSIVE SECTORS						
Information technology and telecoms	293	8,283	7,636	83.2%	8.5%	-1.5%
Life science and healthcare	95	7,451	6,912	96.2%	7.8%	8.8%
High-tech manufacturing	38	354	344	26.2%	2.9%	6.2%
Knowledge intensive services	91	1,859	1,647	70.1%	12.9%	6.0%
TOTAL KI SECTORS	517	17,947	16,539	82.6%	8.5%	3.5%
OTHER SECTORS						
Primary	12	28	29	18.1%	-3.4%	38.1%
Manufacturing	62	362	361	50.4%	0.3%	5.9%
Wholesale and retail distribution	156	940	946	64.0%	-0.6%	0.0%
Construction and utilities	129	503	496	60.9%	1.4%	1.2%
Transport and travel	30	359	339	64.9%	5.9%	40.7%
Property and finance	358	2,028	2,030	65.1%	-0.1%	2.2%
Other business services	401	2,052	2,061	47.1%	-0.4%	3.2%
Other services	261	2,183	2,076	48.2%	5.2%	10.3%
Education, arts, charities, social care	144	2,963	2,645	36.6%	12.0%	3.7%
TOTAL NON-KI SECTORS	1,553	11,418	10,983	48.3%	4.0%	5.0%
TOTAL ALL SECTORS	2,070	29,365	27,522	64.4%	6.7%	4.1%

Source: Cosh & Caselli, CBR.

Appendix A3. Employment growth by sector in South Cambridgeshire

October 2024 Update	Number of companies	Total empl 2023-24	Total empl 2022-23	% of S Cambs total 2022-23	Empl growth 2023-24	Empl growth 2022-23
KNOWLEDGE INTENSIVE SECTORS						
Information technology and telecoms	434	5,456	5,240	59.1%	4.1%	10.8%
Life science and healthcare	140	11,505	11,031	83.4%	4.3%	15.5%
High-tech manufacturing	119	6,178	5,823	86.9%	6.1%	2.0%
Knowledge intensive services	141	5,141	4,612	90.2%	11.5%	6.2%
TOTAL KI SECTORS	834	28,280	26,706	78.8%	5.9%	9.7%
OTHER SECTORS						
Primary	94	379	461	43.8%	-17.8%	4.5%
Manufacturing	160	2,113	2,057	62.1%	2.7%	4.9%
Wholesale and retail distribution	294	2,896	2,813	69.2%	3.0%	5.5%
Construction and utilities	419	2,282	2,257	59.1%	1.1%	3.0%
Transport and travel	62	851	839	66.7%	1.4%	1.3%
Property and finance	446	1,788	1,784	68.2%	0.2%	3.7%
Other business services	594	3,527	3,543	64.5%	-0.5%	5.4%
Other services	367	3,360	3,178	59.2%	5.7%	7.1%
Education, arts, charities, social care	161	1,408	1,277	25.8%	10.3%	3.7%
TOTAL NON-KI SECTORS	2,597	18,604	18,209	57.0%	2.2%	4.8%
TOTAL ALL SECTORS	3,431	46,884	44,915	68.2%	4.4%	7.7%

Source: Cosh & Caselli, CBR.

Appendix A4. Greater Cambridge Employment Update methodology

This appendix describes the purpose and methodology of regular updates of the corporate database.

Annual draw

Dr Cosh and Dr Caselli at the CBR hold a corporate database of local companies with data going back thirteen years. The current database goes from 2010-11 to 2022-23 audited company data and covers the accounting periods of companies ending in the 2022-23 financial year. The results of the 2023-24 annual draw will be made available in February 2025. The reasons for the delay in publication relative to the accounting periods are:

- The need to wait until most companies have filed their accounts at Companies House.
- The incorporation of all company births and deaths.
- The careful checking of any changes in ownership, or corporate structure.
- The investigation of changes of location by companies into and out of the area.

This yields a comprehensive picture each year of the total employment of all companies that are based in the Cambridgeshire and Peterborough Combined Authority, Greater Cambridge, or Cambridge Ahead (Cambridge City Region) areas. It enables us to analyse the composition of growth split into growth of continuing businesses, less the decline due to companies dying or moving out of the area, plus the contribution to growth of company births and businesses moving into the area.

A full description of the methodology used can be found at:

<https://www.jbs.cam.ac.uk/wp-content/uploads/2024/06/8-cbr-database-methodology.pdf>

Various analyses can be found at:

<https://www.jbs.cam.ac.uk/centres/business-research-cbr/research/research-projects/project-the-cambridge-corporate-database-regional-growth/>

Updates

Timings

The current circumstances for business make it important to attempt to have more timely data. This can be achieved by using a sampling approach drawing upon the most recently published accounts.

We carry out two updates each year and this can be seen in Table A1. If we look at 2024, we have conducted April and October updates which yield estimates of growth for the years to mid-October 2023 and mid-February 2024. These periods capture: the impact of the onset of recession in the second half of 2023 (April update); and the worst impacts of recession and early recovery (October update). However, it must be remembered that the update takes no account of births or deaths, or of changes in location.

Table A1 Summary of Greater Cambridge Employment Updates

Draw Name	Sample or All	Accounting year ends within:	Median growth period	Release date	Insight into:
<i>Annual draw 2021-22*</i>	All companies	6 th April 2021 to 5 th April 2022	Year to early December 2021	April 2023	Recovery from worst impacts of Covid
<i>Update April 2023**</i>	Sample	May 2022 to December 2022	Year to mid-October 2022	May 2023	Impact of the ongoing conflict in Ukraine on recovery from Covid
<i>Update October 2023**</i>	Sample	December 2022 to April 2023	Year to mid-February 2023	November 2023	Effects of unfolding cost of living crisis
<i>Annual draw 2022-23*</i>	All companies	6 th April 2022 to 5 th April 2023	Year to early December 2022	February 2024	Impact of the ongoing conflict in Ukraine and unfolding cost of living crisis
<i>Update April 2024**</i>	Sample	May 2023 to December 2023	Year to mid-October 2023	May 2024	Impact of the onset of recession
<i>Update October 2024**</i>	Sample	December 2023 to April 2024	Year to mid-February 2024	November 2024	Worst impacts of recession and early recovery

Notes: * commissioned and sponsored by Cambridge Ahead, Arm, Cambridgeshire and Peterborough Combined Authority, Greater Cambridge Partnership, Marshall of Cambridge and Mills & Reeve; ** commissioned and sponsored by the Greater Cambridge Partnership and Cambridge Ahead.

Update Sample (using October 2024 Update example)

We download data from FAME for any company in Cambridge, South Cambridgeshire, Huntingdonshire, or East Cambridgeshire that has available accounts for the periods ending between December 2023 and April 2024. We then check 2021-22 and 2022-23 employment data against the existing figures on the database. Differences can occur for a number of reasons and are corrected to ensure that consistency and accuracy are maintained across the years under review.

We eliminate companies from the update sample that do not have actual employment data for the last two years. Finally, we create a file with the following information for those remaining in the update sample (**3,569** companies this time representing total employment of **48,739**):

- Company name
- Company registration number
- LA District
- Sector
- KI or non-KI
- Size class in 2022-23 – 1 = 1 employee, 2 = 2-9 employees, 3 = 10 or more employees
- Latest employment 2023-24 (on average mid-February 2024)
- Employment 2022-23 (on average mid-February 2023)
- % change in employment over last year (i.e. on average to mid-February 2024)

Next, we produce a table showing the number of companies in each of the four KI sectors and nine non-KI sectors and their total employment in the latest and previous year. This table is then reproduced separately for our three size classes.

We then create three measures of growth over the latest year: the unweighted arithmetic mean, the median and the weighted mean. The first suffers from extreme values and also attaches the same importance to a large company as that for a small company. The second will often have the values of zero since a large proportion of companies do not change size. Therefore, it is the latter that we use for the next stage of the work.

Updating the corporate database for the Greater Cambridge area

We take from our corporate database all companies currently alive that are based in Cambridge or South Cambridgeshire. We select a sample of those companies that have accounting periods ending between December 2023 and April 2024 (whether, or not, they have yet reported). For companies that were included in the update sample we enter their employment data for the last three years. For the remaining companies that have not yet reported in 2023-24 we next download the latest FAME data and check employment data for the last three years against the existing figures on the database. Following this, we create a file with all the companies based in the Greater Cambridge area (**5,501** companies representing total employment of **76,249**) with the following information:

- Company name
- Company registration number
- Local Authority District
- Sector
- KI or non-KI

- Size class in 2022-23 (as above)
- Employment 2021-22
- Employment 2022-23
- Employment 2023-24
- % change in employment between 2022-23 and 2023-24

We now use the estimates of growth by size and sector from the update sample to create an estimate of the size of each company and sector in 2023-24. This allows us to examine the most recent growth of each sector and size class over the most recent year 2023-24 in comparison with the year 2022-23 for this sample of companies. The year 2023-24 covers the worst impacts of recession and early recovery, whereas the year 2022-23 captures the effects of the unfolding cost of living crisis. Since the UK economy exited recession in the first quarter of 2024, companies with a 2024 year end had a lower proportion of months during the recession period compared to other companies in the sample.

The resulting sample is shown in Appendices A1-A3 and these tables highlight how significant these companies are, representing about 67% of corporate employment in Greater Cambridge. The sample has a high coverage of total employment in this update because many large businesses have a March or December year end and so are captured in this update.

Analyses

Using the methodology described above we can compare the performance of our sectors over time and identify those sectors with the strongest growth in employment. A powerful tool for doing this is one that has as the horizontal axis the sector's employment growth rate in the year 2022-23 and as the vertical axis the annual growth shown in the update sample for 2023-24 – see Figure 2.4 above for an example. The position of the sector marker relative to the 45° line shows those growing more or less fast than last year. Sectors with positive growth in 2023-24 are found above the horizontal axis and those with positive growth in 2022-23 appear to the right of the vertical axis. This can be shown more informatively by having the size of the marker related to the total employment in that sector.

This type of chart can be used to examine different sectors, districts or company sizes. It is reinforced by an appendix that provides detailed tables (see Appendices A1-A3).

Appendix A5. Analysis of ONS BRES employment data

Table A2 BRES vs CBR/BRES employment growth across the Combined Authority

District	All sectors				KI sectors				Non-KI sectors			
	6 years 2016-22		6 years 2010-16		6 years 2016-22		6 years 2010-16		6 years 2016-22		6 years 2010-16	
	BRES	CBR/BRES	BRES	CBR/BRES	BRES	CBR/BRES	BRES	CBR/BRES	BRES	CBR/BRES	BRES	CBR/BRES
Cambridge	1.5%	2.2%	2.3%	2.5%	4.2%	6.9%	3.5%	5.6%	0.9%	1.0%	2.0%	1.9%
South Cambs	1.0%	2.0%	2.2%	4.5%	2.6%	5.0%	3.4%	5.5%	0.3%	0.3%	1.7%	4.0%
Greater Cambridge	1.3%	2.1%	2.2%	3.3%	3.0%	5.8%	3.7%	5.5%	0.7%	0.7%	1.9%	2.6%
East Cambs	0.5%	0.6%	3.4%	4.9%	1.2%	4.1%	2.8%	6.8%	0.3%	0.2%	3.8%	4.7%
Hunts	0.1%	0.1%	1.5%	2.4%	0.0%	1.9%	-1.0%	5.1%	0.1%	-0.1%	1.7%	2.1%
Peterborough	0.3%	-0.1%	2.4%	3.2%	1.6%	0.8%	0.0%	2.3%	0.2%	-0.2%	2.7%	3.3%
Fenland	0.7%	1.2%	2.2%	3.5%	3.8%	3.5%	0.0%	4.3%	0.7%	1.1%	2.3%	3.4%
Combined Authority	0.7%	1.1%	2.2%	3.3%	2.5%	4.6%	2.3%	5.0%	0.4%	0.3%	2.2%	3.1%

Note: CBR data does not cover non-corporate non-KI organisations, nor does it cover companies that are active but not based in the area. CBR/BRES combined uses CBR data for the first ten sectors (where CBR has a better coverage) and BRES data for the last ten sectors (where BRES has a better coverage).

Source: CBR's calculations based on data from BRES (Nomis).