Skills gap/needs in the Heritage Sector

A report for Historic England

April 2019

Cebr

Disclaimer

Authorship and acknowledgements
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Executive Summary

- The Centre for Economics and Business Research (Cebr) is pleased to present this report on behalf of Historic England, outlining the skills gaps and shortages that exist within the Heritage Sector. The report is an extension of the previous Cebr report[1], which embedded a robust and comprehensive definition of the Heritage Sector within national accounting frameworks.

Definitions

- **Skills gaps** occur when an employer considers that an *existing employee* lacks the skills, knowledge, experience or qualifications to be fully proficient at their job.
- **Skills shortages** occur when employers encounter difficulties finding staff with the appropriate skills, knowledge, experience or qualifications *to fill outstanding vacancies* at an appropriate wage.

Scope and methodology

- To define the Heritage Sector, Cebr continues to use the definition that resulted from the SIC-SOC analysis conducted by Cebr in their previous study.
- The data used in this report disaggregates the economy into 13 distinct sectors. By applying the previously derived heritage intensities, we are able to estimate the skill gaps and shortages within the Heritage Sector alongside the other recorded industries.

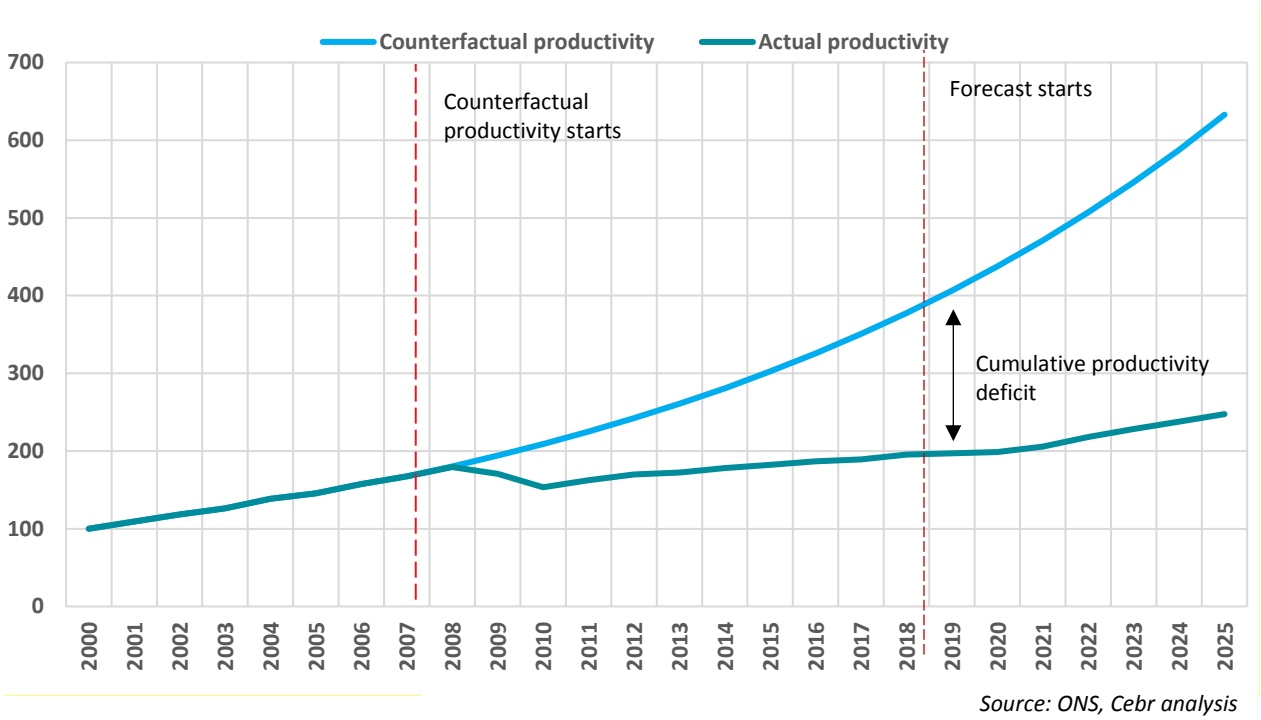
Trends in the labour market

- In 2016, the Heritage Sector in the UK **directly employed 196,000** people and paid an **average hourly wage of £13.16**.
- The sector also had a comparatively high productivity – with the average heritage worker producing around **£67,000 a year in Gross Value Added (GVA) contributions** in 2016. This was **61% higher than the UK non-financial sector average** of around £42,000 in GVA contributions per worker.
- Comparing productivity in the UK to the pre-financial crisis trend[2] demonstrates that a significant **'cumulative productivity deficit'** exists in the UK. This is illustrated in Figure A. This cumulative productivity deficit is at least in partly the result of the skills gap that exists in the UK.

[1] This study is published on Historic England`s website. https://historicengland.org.uk/research/heritage-counts/heritage-and-economy/

[2] Counterfactual productivity based on average productivity growth between 2000 and 2006.

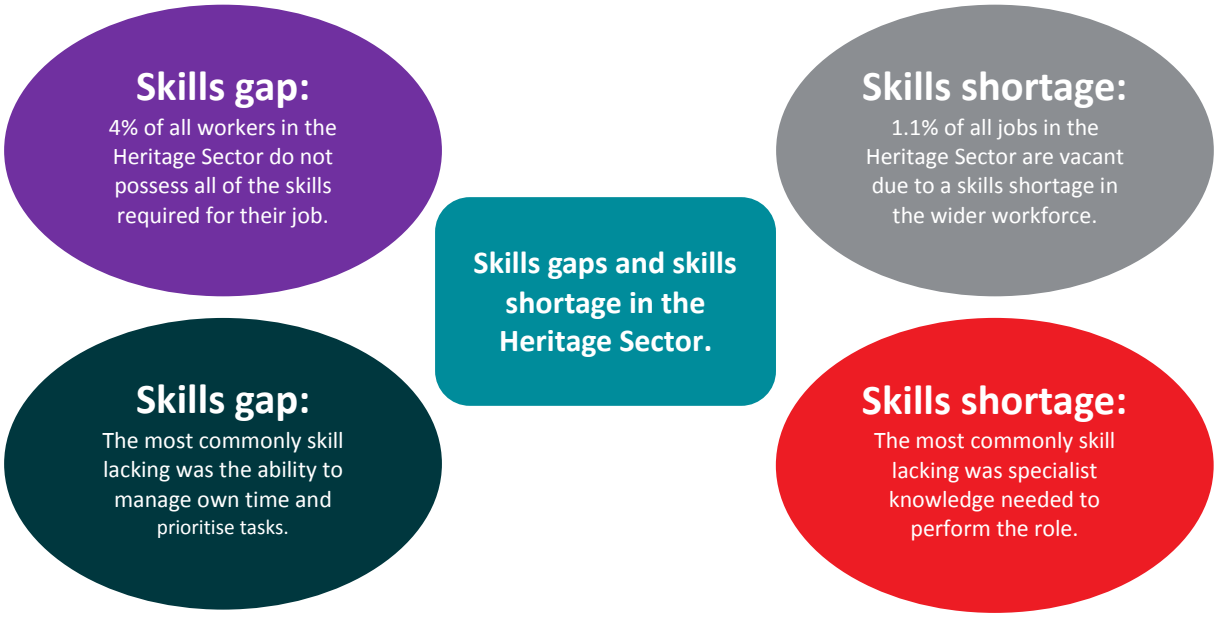
Figure A: UK productivity deficit



Source: ONS, Cebr analysis

Skills gaps and shortages in the Heritage Sector

Figure B: Skills gap and shortage in the Heritage Sector



Source: Employers Skills Survey 2017, Cebr analysis

Impact of skills gaps and shortages

- Comparing the incidence of skills gaps with GVA per worker across sectors, **there appears to be no overall trend.** This is not to say that skills have no impact on productivity. **Rather this report argues that this is reflective of the fact that productivity has many determinants**. For instance, the nature of sectors that rely heavily on interpersonal skills means that technology utilisation may be lower. This suggests a lower output-per-worker (and hence a lower productivity), but this is not reflective of the skills situation.
- Once these other determinants are held constant, evidence from the wider literature **demonstrates a positive trend between total skills and productivity**. As such, lower skills imply a lower productivity. This in turn may have negative implications on wages and economic growth.
- In all, it is estimated that approximately **£140 million worth of potential GVA was 'lost' in the Heritage Sector due to skills shortages in 2016**.

Avenues for improving skills

- **Undergraduate university courses are unlikely provide the best platform to improve skills** in the Heritage Sector. The reason behind this is two-fold. For highly specialist courses, **universities may find it difficult to attract sufficient numbers of students** in order to make the course economically viable to run. The specialist skills may also require **'hands-on' training** that universities struggle to provide. More specialised **postgraduate** studies and **vocational study programmes** may offer a better solution.
- The actions undertaken by employers in the Heritage Sector to address skills shortages predominantly focus around **recruitment**, with an estimated **38% of heritage organisations with skills shortages increasing advertising/recruitment spending** and **30% using new recruitment methods in response**.
- The main avenue available to address skills gaps focuses around **in-work training**. The Heritage Sector falls slightly behind the UK average in terms of proportion of staff receiving training. **36% of firms in the UK reported having their entire workforce engage in training in the previous 12 months, compared to an estimated 31% for the Heritage Sector**.

Risks associated with Brexit

- In 2016, it is estimated that **14,593 employees in the Heritage Sector were EU nationals**. This represents around **7.4% of the total heritage workforce**.
- An estimated **48% of heritage firms** that attempt to recruit non-UK nationals to fill hard-to-fill vacancies considered solely EU nationals. **Only 6% considered solely non-EU nationals**.
- Restrictions to the free movement of labour from the EU to the UK would mean such firms would find it more difficult to recruit EU nationals. This would exacerbate the skills shortage faced.
- In addition, the Heritage Sector receives an estimated **£450m in funding from the EU between 2006 and 2016**. Given that the primary way to reduce the skills gap is through on the job training, **a loss of funding not offset by increased UK funding, may further hinder training within the sector**, which would see the skills gap rise over time.

1 Introduction

The Centre for Economics and Business Research (Cebr) is pleased to present this report on behalf of Historic England, outlining the skills gaps and shortages that exist within the Heritage Sector. The report is an extension of the previous Cebr report[3], which embedded a robust and comprehensive definition of the Heritage Sector within national accounting frameworks.

1.1 Background to the report

In recent years, Historic England and sector partners have undertaken bespoke analysis of specific Heritage Sectors using qualitative methods. Despite this, isolating the added value or net impact of heritage from the activities related to it or embedded within it presented many challenges. This is largely due to the diverse industrial structure of the Heritage Sector and as such, its economic value stems from a variety of activities, ranging from conservation and preservation of historic buildings to activities in the natural environment.

To address this, Historic England commissioned the Centre for Economics and Business Research (Cebr) to conduct a statistical analysis and economic modelling to estimate the ongoing contribution of the Heritage Sector in England. Cebr`s estimates provided a robust and detailed statistical definition of Heritage using a SIC-SOC methodology in which occupations in the Heritage Sectors were mapped to specific industries.

This process enabled us to produce a credible workforce figure which was then used to produce GVA estimates for the Heritage Sector. The examination spanned the period from 2011 to 2016 (inclusive) and endeavoured to capture the full economic 'footprint'. As such, the study was not confined to direct ongoing contributions to GDP and employment through the Heritage Sector's operations and activities in England, but also provided assessments of the associated indirect and induced multiplier impacts.

Building on this economic impact framework, Historic England and the Heritage Sector **seek a detailed understanding of skills needs and skills gaps in the sector by using standard statistical data sources to identify this.** Cebr is pleased to present this report, **outlining the skills gaps and shortages in the Heritage Sector.**

1.2 Core definitions

The report will be based around two key measures of skill needs:

- Skills gaps occur when an employer considers that an *existing employee* lacks the skills, knowledge, experience or qualifications to be fully proficient at their job.
- Skills shortages occur when employers encounter difficulties finding staff with the appropriate skills, knowledge, experience or qualifications *to fill outstanding vacancies* at an appropriate wage.

[3] This study is published on Historic England`s website. https://historicengland.org.uk/research/heritage-counts/heritage-and-economy/

1.3 Structure of the report

The report is structured as follows:

- Section 2 details the scope and methodology used in the report.
- Section 3 identifies key labour market trends, both for the UK economy as a whole and for the Heritage Sector in particular. The focus is on employment, wages and productivity. Doing so provides some important background into the state of the UK economy and the importance of addressing the UK's productivity crisis.
- Section 4 uses data from the Employers Skills Survey (ESS), amongst other sources, to illustrate the scale and nature of skills gaps and shortages in the Heritage Sector.
- Section 5 considers the implication of these skills gaps and shortages for the economy as a whole and for the Heritage Sector in particular.
- Section 6 considers the possible avenues available for addressing the skills gaps and shortages that exists in the Heritage Sector. It considers the importance of both formal methods of education and 'in-work' training.
- Section 7 evaluates the risks to the Heritage Sector associated with Brexit. It particular considers the labour market risks associated with restrictions to the free movement of labour from the EU.

2 Scope and methodology

This section outlines the scope and methodology of this report. It begins by providing the results of the SIC-SOC mapping calculated by Cebr in their previous study. It then proceeds to explain the methodology used in estimating the skills gaps and shortages that exist in the Heritage Sector.

2.1 Definition of the Heritage Sector

This report will use a SIC based definition of the Heritage Sector as identified by Cebr's previous report (2018). As discussed in that report, the diverse range of activities that are contained within the Heritage Sector means that the sector doesn't fit neatly within the standard classification codes. As such, Cebr employed a SIC-SOC based analysis, using occupations related to heritage activities to map a footprint for the sector within the Standard Industrial Classification codes. Table 1 below shows the results of the previous SIC-SOC mapping.

Table 1: Description on the Heritage Sector by SIC code

SIC	Industry	% share of total employment in Heritage Sector
43	Building completion and finishing	26.09%
44	Other specialised construction activities	18.83%
91	Museum activities	11.93%
71.11/1	Architectural activities	4.91%
84	General public admin activities	4.38%
91	Operation of historical sites & sim visitor attractions	4.27%
71.12/2	Engineering related science & tech consulting act	4.25%
71.12/9	Other engineering activities	2.45%
95	Activities of other membership organisations	2.22%
41.02/2	Construction of domestic buildings	1.89%
43	Construction other civil engineering projects	1.85%
91	Botanical & zoological gardens & nature reserve activities	1.65%
71.11/2	Urban plan & landscape architectural activities	1.60%
68	Real estate agencies	1.21%
91.01/2	Archive activities	1.19%
94	Activities of professional member organisations	1.12%
72	Other R&D on natural sciences & engineering	1.09%
41	Development of building projects	1.08%
41.20/1	Construction of commercial buildings	0.94%
85.42/1	First-degree level higher education	0.87%
84	Regulation of activities of providing social services	0.81%
74.90/1	Environmental consulting acts	0.76%
93	Other amusement and recreational activities	0.62%
74.90/2	Quantity surveying activities	0.37%
68.20/1	Renting & operating HA real estate	0.30%
91	Library activities	0.30%
68,021	Management real estate on fee/contract basis	0.21%
81	Landscape service activities	0.17%
70.22/9	Managing consultancy activities (excl. financial)	0.11%
	Other SIC sectors	2.51%

Source: Cebr analysis

2.2 Methodology

The current report on skills gaps and shortages will seek to use the same SIC based definition for the Heritage Sector. By doing so, we can utilise SIC-based data (such as the Employers Skills Survey) on skills gaps and shortages, while capturing the information provided by SOCs.

Due to data limitations some SIC codes will have to be aggregated for the analysis on skills. The data used (for example the Employers Skills Survey) tends to disaggregate the economy into 13 distinct sectors. By calculating the relative intensity of each one of these 13 sectors within heritage, we are able to provide an estimate for the Heritage Sector that can be used in conjunction with the official data on skills gaps and shortages in the UK.

While these results provide a useful empirical indication of the scale and scope of skills gaps and shortages in the Heritage Sector, there are of course limitations to such an approach. Perhaps the most significant of these is regarding 'within SIC sector' differences. The approach employed in this report implicitly assumes that the heritage part of a given SIC sector faces the same skills gaps and shortages as the SIC sector as a whole.

While data limitations prevent a more granular empirical estimate, to acknowledge this assumption, a review of the existing literature on the skills gaps and shortages in the Heritage Sector is also embedded in Section 4. This helps to reinforce and supplement the empirical estimates calculated. The particular focus of this review is on the construction sector – the single most important broad SIC sector for heritage activities, containing around 51% of the total Heritage Sector.

To provide some context on the skills gaps and shortages faced, Section 3 explores some broad trends in the labour market (both for the Heritage Sector and for the UK economy as a whole) since 2000. Our analysis is constructed using ONS data and Cebr's macroeconomic forecasts.

Productivity, and the 'cumulative productivity deficit' that has emerged since the financial crisis, is of particular relevance. As will be explored in Section 5, at least part this deficit is as a result of the skills gap/shortages that exist in the UK. Considering the trends in productivity, therefore, helps frame our analysis on skills.

Sections 6 and 7 look forward, and consider the avenues that could be used to address the skills gaps/shortages in the Heritage Sector and the possible implications resulting from the UK's decision to leave the European Union. They do so by using data from the Employers Skill Survey and the ONS to support a qualitative review on the topics.

3 Trends in the UK labour market since 2000

This section considers the broad trends that have occurred in the UK labour market since 2000. By doing so, it provides some background to the state of the UK labour market. The analysis on productivity is of particular relevance to the discussion on skills that follows.

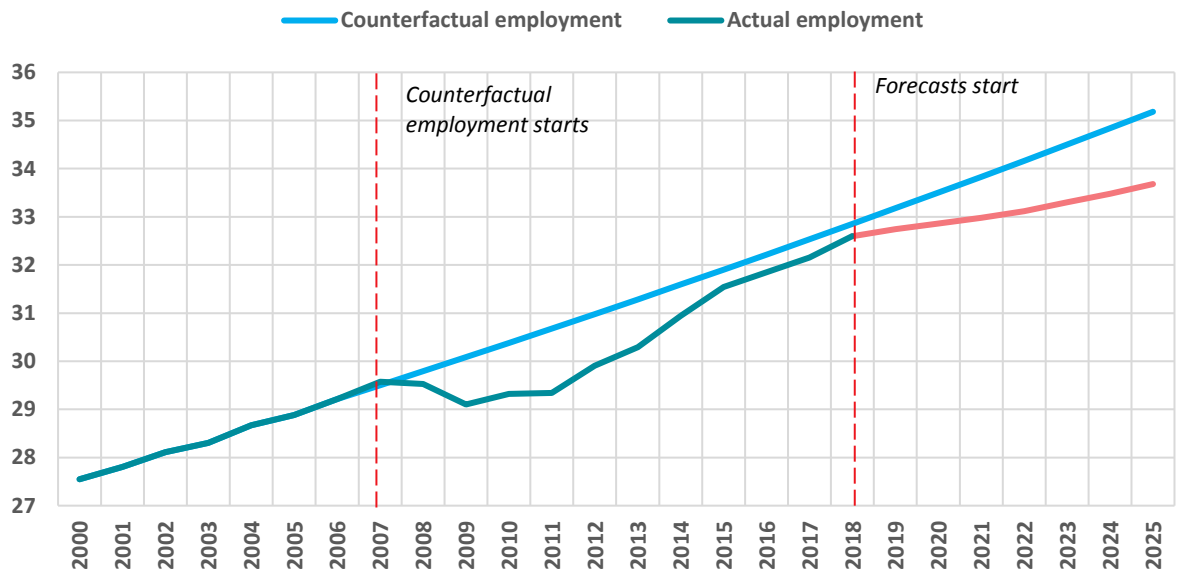
Section 3.1 concerns itself with employment. Section 3.2 illustrates the trends in wages. Finally, Section 3.3 considers productivity, and specifically the productivity deficit that has emerged in the UK after the financial crash of 2008. In each case, the trends experienced in the UK economy as a whole are compared to the specific trends experienced in the Heritage Sector.

3.1 Employment

Employment trends in the UK economy

Figure 1 illustrates the trends in average employment levels in the UK since between 2000 and 2018. It also includes Cebr forecasts for the employment levels up to 2025. Considering the level of employment (rather than the normally considered unemployment rate) provides a more holistic overview of the UK labour market, accounting for changes to both the level of unemployment and the participation rate in the labour force.

Figure 1: Employment in the UK, 2000-2025, millions of jobs



Source: ONS, Cebr analysis

Employment in the UK has increased from 27.5 million in 2000 to 32.6 million in 2018. This represents an increase of 18.3% in these 18 years.

This masked significant heterogeneity. Between 2000 and 2007 employment increased from around 27.5 million to around 29.5 million jobs. The financial crisis then had a significant impact, with employment falling by 400,000 jobs to 29.1 million in 2009. Growth in employment remained low until 2012. Since then, growth in employment has averaged 1.5% a year, with employment reaching 32.6 million by 2018.

The recovery of employment levels since 2007 is of particular interest. In addition to plotting the employment levels experienced since 2000, Figure 1 plots a 'counterfactual employment' line. This

represents the hypothetical levels of employment that would exist in the UK if the average growth rate in employment that occurred between 2000 and 2006 had continued thereafter.

The gap between the two curves therefore, could be seen by some represent the extent to which employment has been lowered due to the financial crash. Intuitively, this gap is significant in the immediate aftermath of the financial crisis, but the gap has declined in the years following. This suggests more limited long-term implications to employment from the 2007 financial crash.

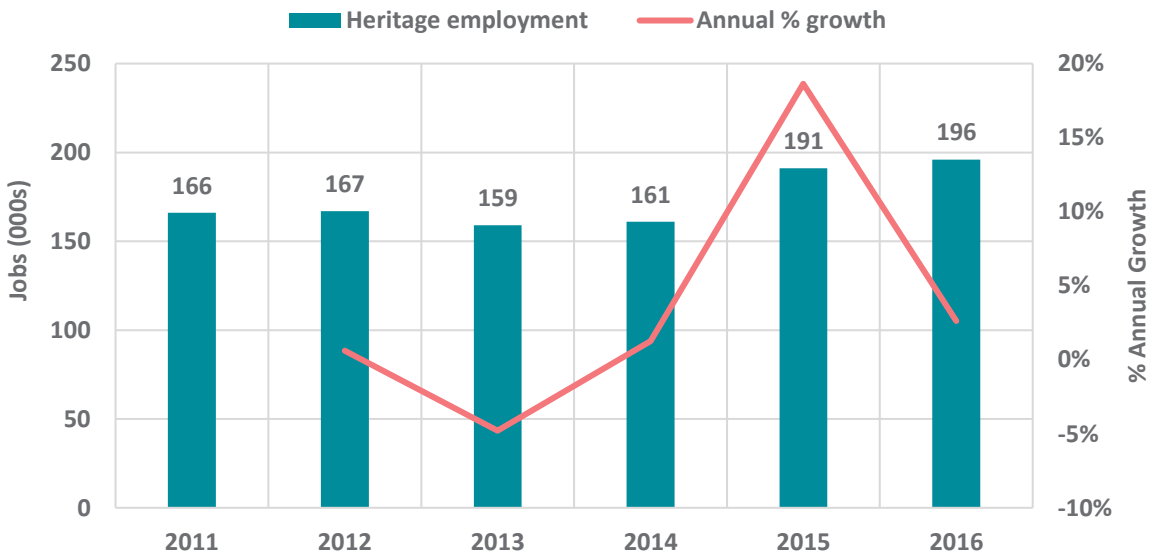
Employment trends in the Heritage Sector

Generally speaking, employment in the Heritage Sector also has an upward trend. Figure 2 illustrates the employment in the Heritage Sector disaggregated by year that results from the SIC-SOC mapping conducted by Cebr in their previous report on the Heritage Sector.

Across the entire period 2011-2016, employment increased from 166,000 to 196,000 – representing a rise of 18%. This is in comparison to a 9% rise in UK employment as a whole across the same period.

However it is important to note that the rise in employment in the heritage sector masks significant volatility. Indeed, employment in the Heritage Sector decreased from 2011 through to 2013 (from 166,000 to 159,000). It then increased slightly to 161,000 in 2014. In 2015 employment increased past its 2013 level, reaching 191,000 in 2015 and 196,000 in 2016.

Figure 2: Employment in the Heritage Sector, 2011-2016



Source: ONS, Cebr analysis

3.2 Wages

Wage trends in the UK economy

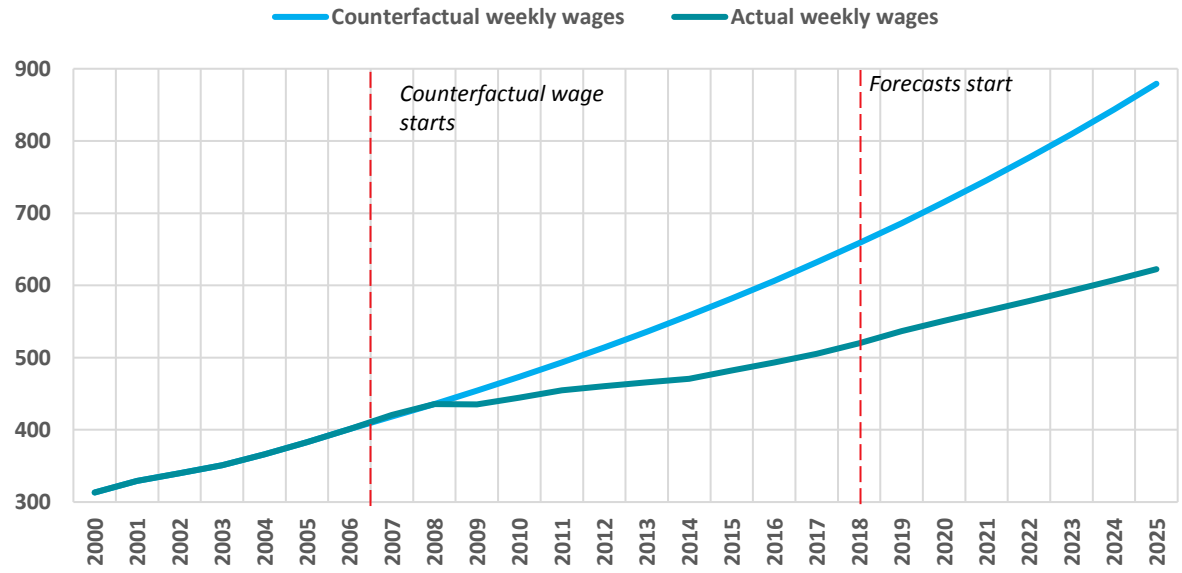
Figure 3 illustrates average nominal weekly wages in the UK between 2000 and 2018. It also includes Cebr forecasts for average wages until 2025.

Average weekly wages rose from £313 in 2000 to £520 in 2018 – representing a rise of 66%.

The growth in wages in the UK economy has been far less volatile than the growth in employment. Average weekly wages increased from £313 in 2000 to £434 in 2008. It then stagnated for a year before beginning to rise relatively steadily once again, reaching £520 in 2018. Cebr estimates that the average weekly wage will continue to rise, reaching £622 a week in 2025.

Once again, a hypothetical 'counterfactual weekly wages' curve is plotted – illustrating the level weekly wages would have been at had the average wage growth rate from 2000 to 2006 continued. Unlike the case of employment, the delta that emerged during the financial crisis has persisted, and indeed become more significant in the following years. Indeed, as discussed below, the trends in wages since the financial crisis reflect the trends observed in productivity far more closely.

Figure 3: Average weekly wages UK, 2000-2025, £ nominal



Source: ONS, Cebr analysis

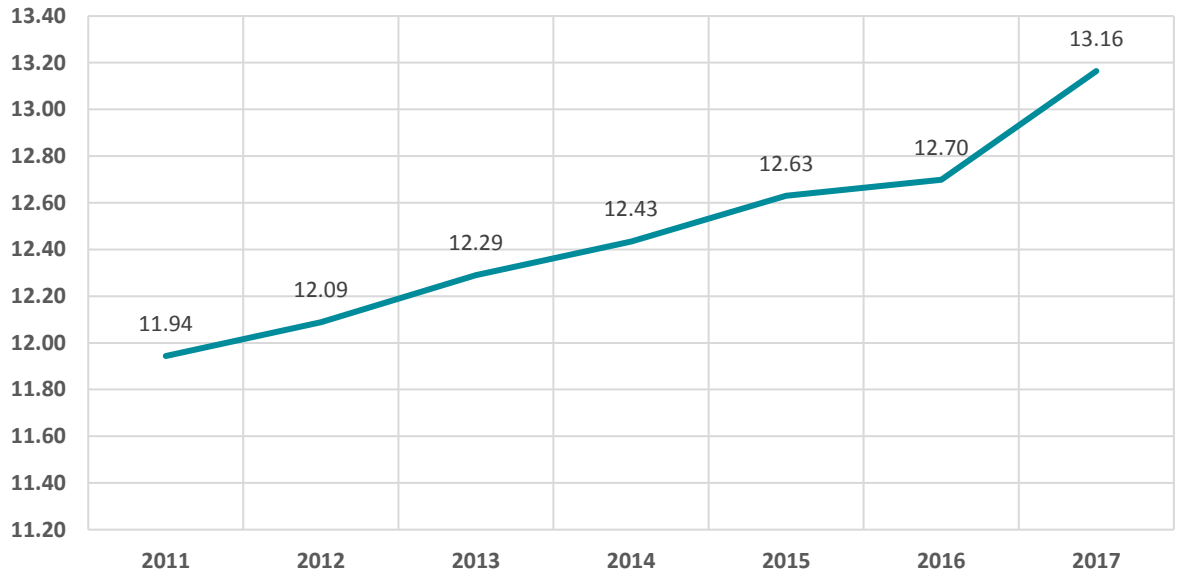
Wage trends in the Heritage Sector

Figure 4 illustrates the trends in median wages of employees working within the Heritage Sector between 2011 and 2017.

Much like the UK-wide trend, the median wage of employees in the Heritage Sector increased from £11.94 to £13.16 per hour between 2011 and 2017. This represents an increase of 10.2% across the period.

The increase has been relatively uniform, with wages increasing every year in the period considered although it is worth noting that the rate of growth slowed significantly between 2015 and 2016, increasing by just 0.5%. This was followed by a year of significant wage growth between 2016 and 2017 where median hourly wages of employees in the Heritage Sector grew by 3.7%.

Figure 4: Median wage for employees working in the Heritage Sector, 2011-17, £



Source: ONS Annual Survey of Hours and Earnings (ASHE) 2011-17, Cebr analysis

By combining Cebr's SIC definition of the heritage sector with information on yearly earnings provided by the ONS, it is estimated that the median annual wage for a heritage employee was approximately £29,000 in 2017[4].

3.3 Productivity

Productivity in the UK economy

Productivity provides significant insights into the differences in the recovery of employment and wages after the financial crisis.

Figure 5 illustrates the trends in productivity (defined in terms of output per worker) in the UK economy between 2000 and 2018. It also includes Cebr forecasts up until 2025. It is presented in index form, with the value of productivity in 2000 being nominalised to 100.

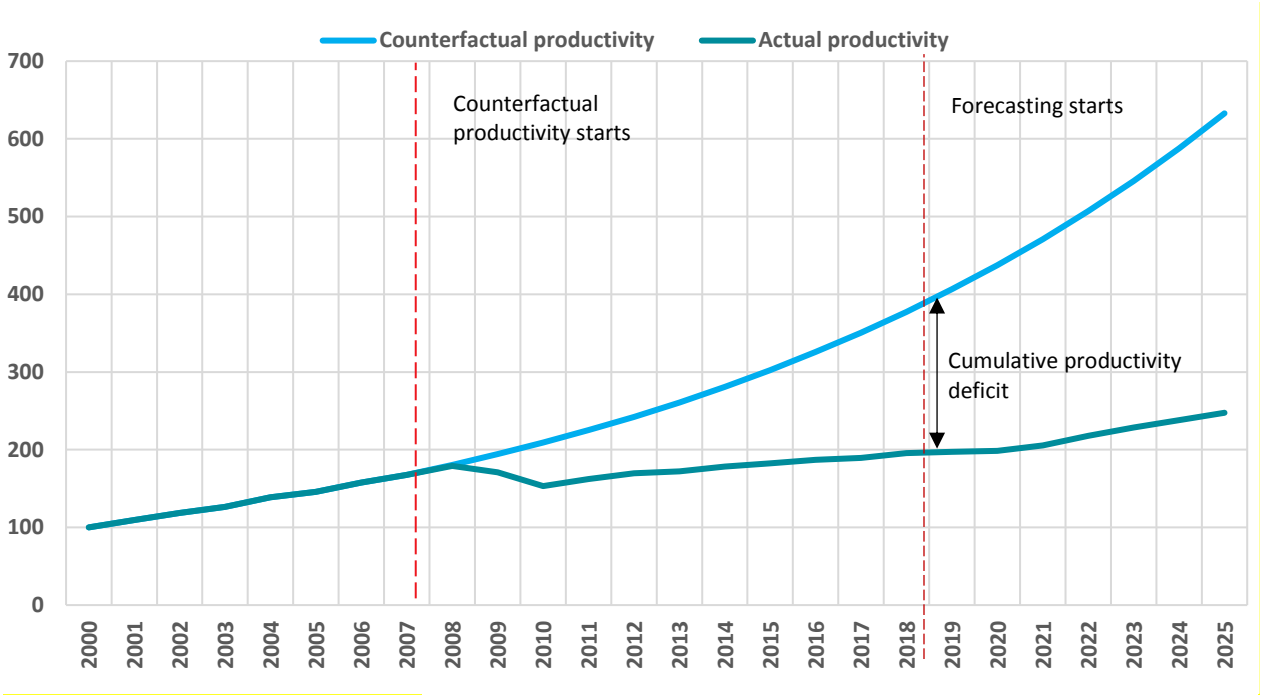
Productivity increased by 79% between 2000 and 2008. The financial crash of 2007/8 then had a significant negative impact, with productivity decreasing from an index value of 179 in 2008 to 153 in 2010. It has since been increasing, but as is clear in Figure 5, this increase has been at a much slower rate compared to before the financial crash.

Once again, a hypothetical productivity line is plotted – illustrating the level productivity would have reached had the 2000-2006 growth trend continued. The difference between the two lines is significant – illustrating that productivity has been lowered since the financial crash. This not only provides an insight

[4] This figure is based on ONS data from the Annual Survey of Hours and Earnings (ASHE). It is worth noting that the data available on annual wages is less granular (provided at a 1-digit SIC level) than the data provided on median hourly wages (provided at the 4-digit SIC level). As such, one needs to treat any direct comparison with caution.

into why wages have not recovered in the same way as employment (economic theory suggests that in a competitive market, wages should represent productivity), but also provides a diagrammatic illustration of the cumulative productivity deficit faced in the UK. While discussed in greater detail in Section 5, this productivity gap is at least partly the results of the skills gaps that exist in the UK.

Figure 5: Productivity in the UK economy, 2000-2025



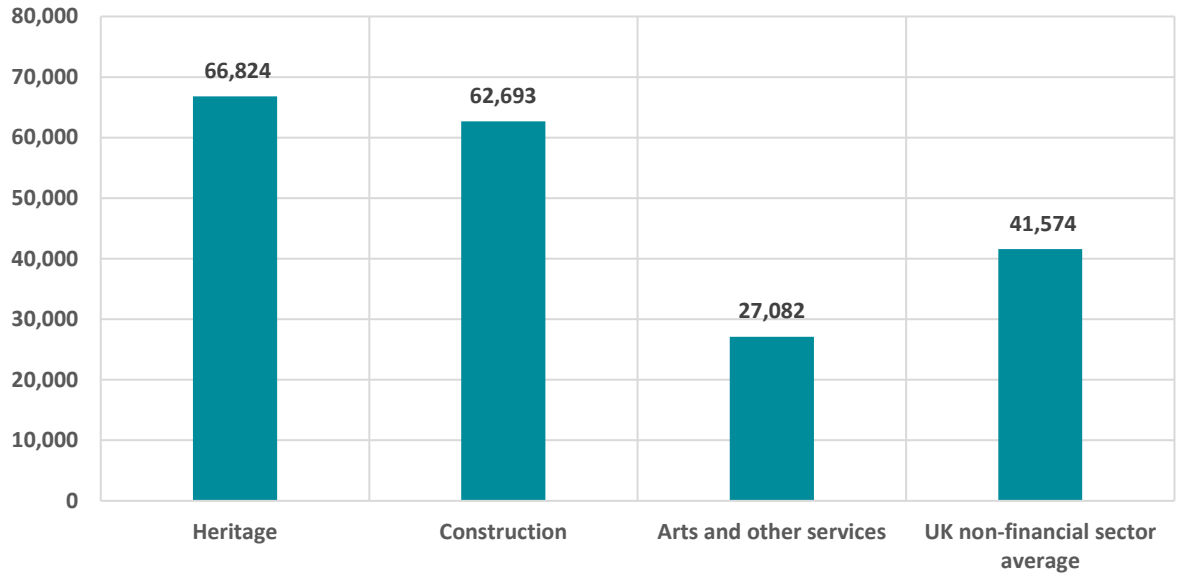
Productivity in the Heritage Sector

Figure 6 illustrates productivity in the Heritage Sector, measured in terms of Gross Value Added (GVA)[5] per worker. For comparison purposes, the GVA per worker for two other sectors – construction and arts, entertainment & other services as well as results for the UK economy as a whole are also illustrated.

The results show that the Heritage Sector has a comparatively high productivity. In 2016, the average employee in the Heritage Sector produced £66,824 in GVA – almost 61% higher than the UK average for non-financial sector workers of £41,574.

[5] GVA or gross value added is a measure of the value from production in the national accounts and can be thought of as the value of industrial output less intermediate consumption. That is, the value of what is produced *less* the value of the intermediate goods and services used as inputs to produce it. GVA is also commonly known as income from production and is distributed in three directions – to employees, to shareholders and to government. GVA is linked as a measurement to GDP – both being a measure of economic output. That relationship is (GVA + Taxes on products - Subsidies on products = GDP). Because taxes and subsidies on individual product categories are only available at the whole economy level (rather than at the sectoral or regional level), GVA tends to be used for measuring things like gross regional domestic product and other measures of economic output of entities that are smaller than the whole economy.

Figure 6: Productivity (GVA per worker) in England, 2016, £



Source: ONS, Cebr analysis

4 Skills gaps and shortages in the Heritage Sector

Before considering their implications, it is necessary to identify the scale and nature of skills gaps and shortages that exist both in the Heritage Sector and the wider UK economy – the focus of this section. To do so, data from the Employers Skills Survey is combined with the SIC-based mapping of the Heritage Sector detailed in Section 2.

This section proceeds as follows. Section 4.1 expands on the definition used for skills gaps and shortages used in the Employers Skills Survey. Section 4.2 considers the incidence of skills gaps and shortage in Heritage Sector. Specifically, it focuses on the number of employers reporting skills gaps/shortages and the number of employees/vacancies that it effects. Section 4.3 explores the specific skills that employers in the Heritage Sector cite as lacking amongst workers and candidates.

4.1 Definition of skills gaps and skills shortages

This section is focused around identifying the skills gaps and shortages that exist in the Heritage Sector, as well as the broad SIC sectors that exist in the economy more generally. This allows for an effective comparison of the relative skills gap/shortages that exist within the Heritage Sector.

It is worth reiterating the definitions of skills gaps and skills shortages as they are crucial to this section:

- Skills gaps occur when an employer considers that *an existing employee* lacks the skills, knowledge, experience or qualifications to be fully proficient at their job.
- Skills shortages occur when employers encounter difficulties finding staff with the appropriate skills, knowledge, experience or qualifications *to fill outstanding vacancies* at an appropriate wage.

The Employers Skills Survey (ESS) used throughout this section, presents the results of a survey conducted with employers on the skills gaps and shortages that they face. The results are disaggregated by the 13-broad SIC sectors identified by the Office for National Statistics (ONS). To calculate results for the Heritage Sector in particular, this report relies on Cebr's SIC-based definition of the Heritage Sector – outlined in Section 2. By taking a weighted average of the results for the broad SIC sectors that contain heritage, the skills gaps and shortages in the Heritage Sector are estimated.

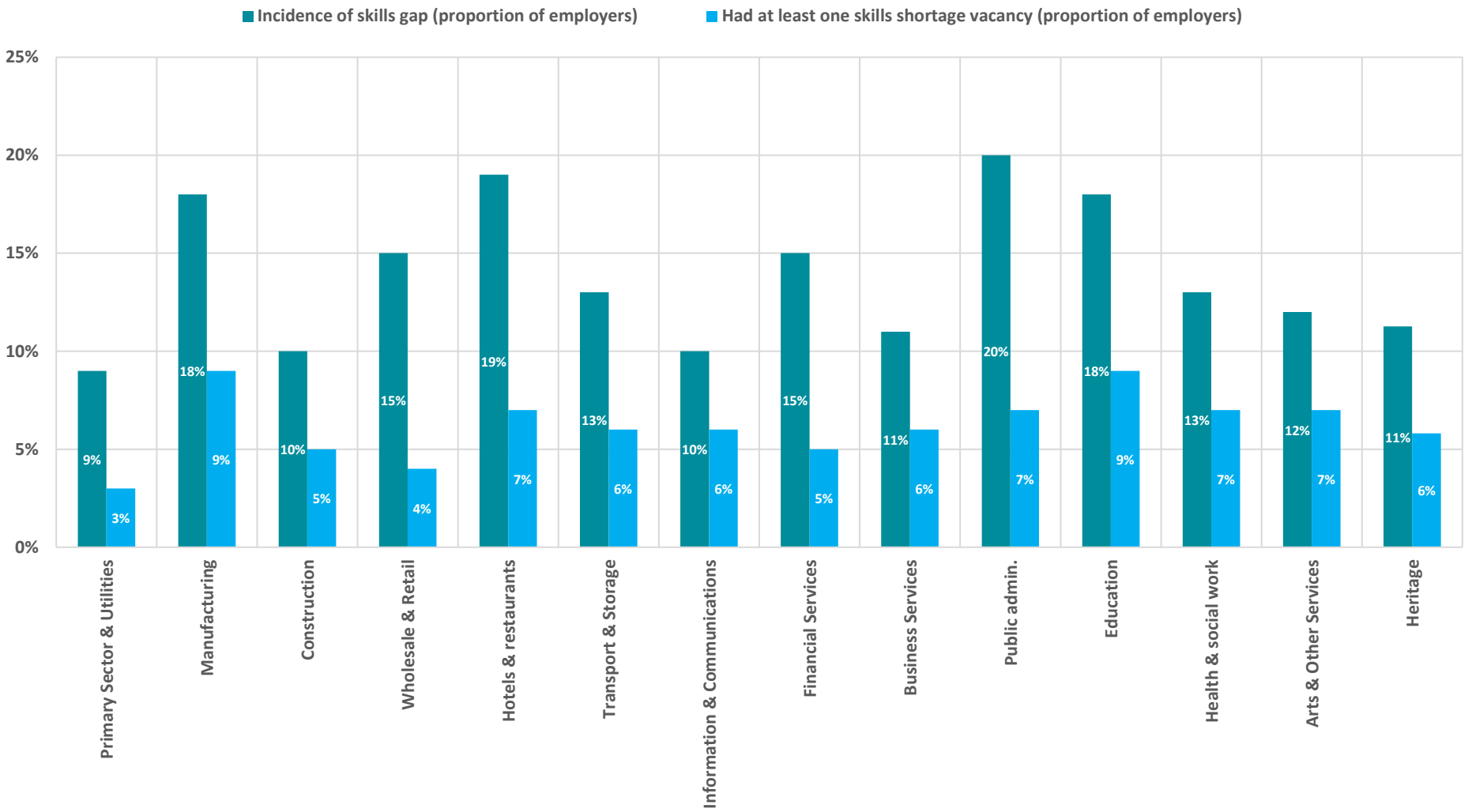
4.2 Incidence of skills gaps and shortages in the Heritage Sector

Figure 7 illustrates the incidence of skills gaps and shortages in the Heritage Sector. For comparison purposes, the incidence of skills in a range of other broad SIC sectors are also illustrated.

It is estimated that 11% of firms in the Heritage Sector have a skills gap in their workforce. By way of comparison, firms operating in the field of 'Hotels and Restaurants' had the highest incidence of skills gap – with 19% of firms operating within these industries reporting a skills gap in their workforce. Firms operating within the field of 'Primary services and utilities' had the lowest incidence of skills gaps – with just 9% of firms operating within these industries reporting a skills gap in their workforce.

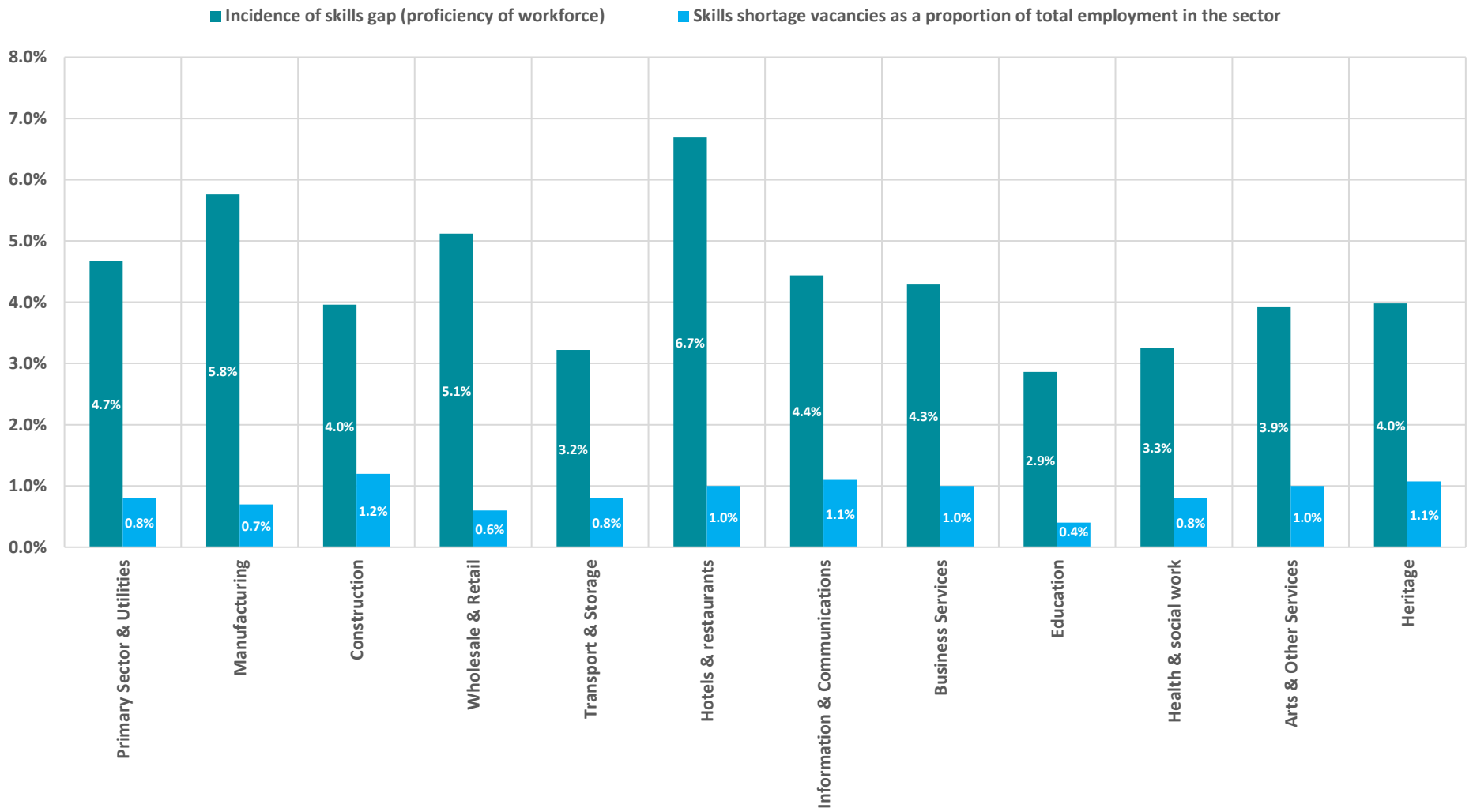
The distribution of skills shortages (defined as firms who had at least one skills shortage vacancy) is also provided. 6% of firms operating within the Heritage Sector had at least one skills shortage vacancy. 'Primary services and utilities' again had the lowest incidence – with just 3% of firms citing at least one skills shortage vacancies. Education and Construction have the highest rate of skills shortages – with 9% of firms citing at least one skills shortage vacancy.

Figure 7: Skills gaps and shortages by broad SIC sector by proportion of employers reporting, 2017



Source: Employers Skills Survey 2017, Cebr analysis

Figure 8: Skills gaps and vacancies by broad SIC, proportion of workforce/vacancies, 2017



Source: Employers Skills Survey 2017, Cebr analysis

While Figure 7 considers the proportion of employers reporting skills gaps and shortages, the granularity of analysis can be increased further by considering the incidence of skills gaps and shortages as a proportion of the workforce in each sector. By doing so, we not only account for the number of employers citing skills gaps and shortages (Figure 7), but also account for the number of workers/vacancies each employer cites as affected by skills gaps and shortages.

Figure 8 illustrates the results. It is estimated that 4.0% of all workers in the Heritage Sector are 'not fully proficient' in their jobs. Once again, this result is estimated using the relevant SIC sectors and the results from the ESS. It refers to workers who don't have all the skills required for their current job (and hence a skills gap).

It is estimated that workers in the hotels and restaurants industry had the largest skills gap (with 6.7% of workers being deemed 'not fully proficient').

Furthermore, it is estimated that 1.1% of all jobs in the Heritage Sector are vacant due to a skills-shortage in the wider labour force. This figure implies that the Heritage Sector has a comparatively large skills-shortage, with only the broad sector of construction having a larger skills shortage (1.2% of all jobs vacant due to a skills-shortage in the wider workforce).

The relationship between skills gaps and skills shortages

Figure 7 suggests that there is a relationship between skills gaps and shortages. This indicates a degree of interchangeability between the two concepts, as sectors that have a relatively high number of employers reporting a skills gap also tended to have a relatively high number of employers reporting a skills shortage.

The relationship between the two appears weaker in Figure 8. This suggests that although the trends in the number of employers reporting skills gaps was similar to the trends in the number reporting skills shortages, the relative intensity of skills gaps/shortages reported varied more.

Interestingly, the trend between skills gaps and shortages in Figure 8 appears to be more closely related for industries that are predominately service orientated (generally towards the right hand side of the graph), compared to industries that involve goods. This is perhaps suggestive of the fact that it is easier to retrain existing staff to undertake new roles within service industries – hence meaning that skills shortages and skills gaps are more interchangeable. It could also suggest that there are fewer labour market frictions within service orientated industries.

The Heritage Sector

While the results generated in this section provide a useful empirical indication of the scale and scope of skills gaps and shortages in the Heritage Sector, it is important to acknowledge the limitations to the approach used. Specifically, by taking a weighted average of other SIC sectors to form a proxy for the skills gaps and shortages present in the Heritage Sector, this report implicitly assumes that the heritage part of a given SIC sector faces the same skills gaps and shortages as the SIC sector as a whole.

The wider literature gives us reasons to believe that such an assumption may lead to an underestimation of the skills gaps and shortages that exist within the Heritage Sector.

For instance, a report on the Skills Needs in the repair, maintenance and retrofit of traditional buildings[6] highlights reasons why the incidence of skills gaps may be higher than the weighted average. It finds that

[6] Skills Needs Analysis 2013: Repair, Maintenance and Energy Efficiency Retrofit of Traditional (pre-1919) Buildings in England and Scotland.

89% of contractors working on traditional buildings are general mainstream construction companies and 75% of contractors have not undertaken any training specific to pre-1919 buildings. Not only do these contractors face the generic skills gaps and shortages that exist in construction, but they also experience specific skills lacking with regards to the heritage work they undertake.

While difficult to quantify therefore, we would perhaps expect the incidence of skills gaps and shortages in the Heritage Sector to be larger than the weighted average calculated.

4.3 Specific skills lacking in the Heritage Sector

As well as the scale of the skills gap in each SIC sector, it is useful to consider the specific skills that employers report to be lacking within their workforce.

Figure 9 illustrates the estimated proportion of heritage employers with skills gaps and skills shortages reporting a given skill as lacking amongst their workforce/job candidates. It is disaggregated by a range of technical and personal skills included in the Employers Skill Survey.

Analogous to the discussion in the previous section, the specific skills lacking in the heritage workforce (skills gaps) appear to be related to the specific skills lacking in candidates (skills shortages). This once again indicates a degree of interchangeability between the two concepts. This makes intuitive sense; an employer who needs a worker with a certain skill has two options – they could either hire a new worker with the required skill or alternatively they could attempt to utilise a current employee.

'The ability to manage own time and prioritise own tasks' is estimated to be the most common skill lacking amongst the heritage workforce (with an estimated 59% of all heritage employers with a skills gap facing this as a specific skill lacking amongst their workforce).

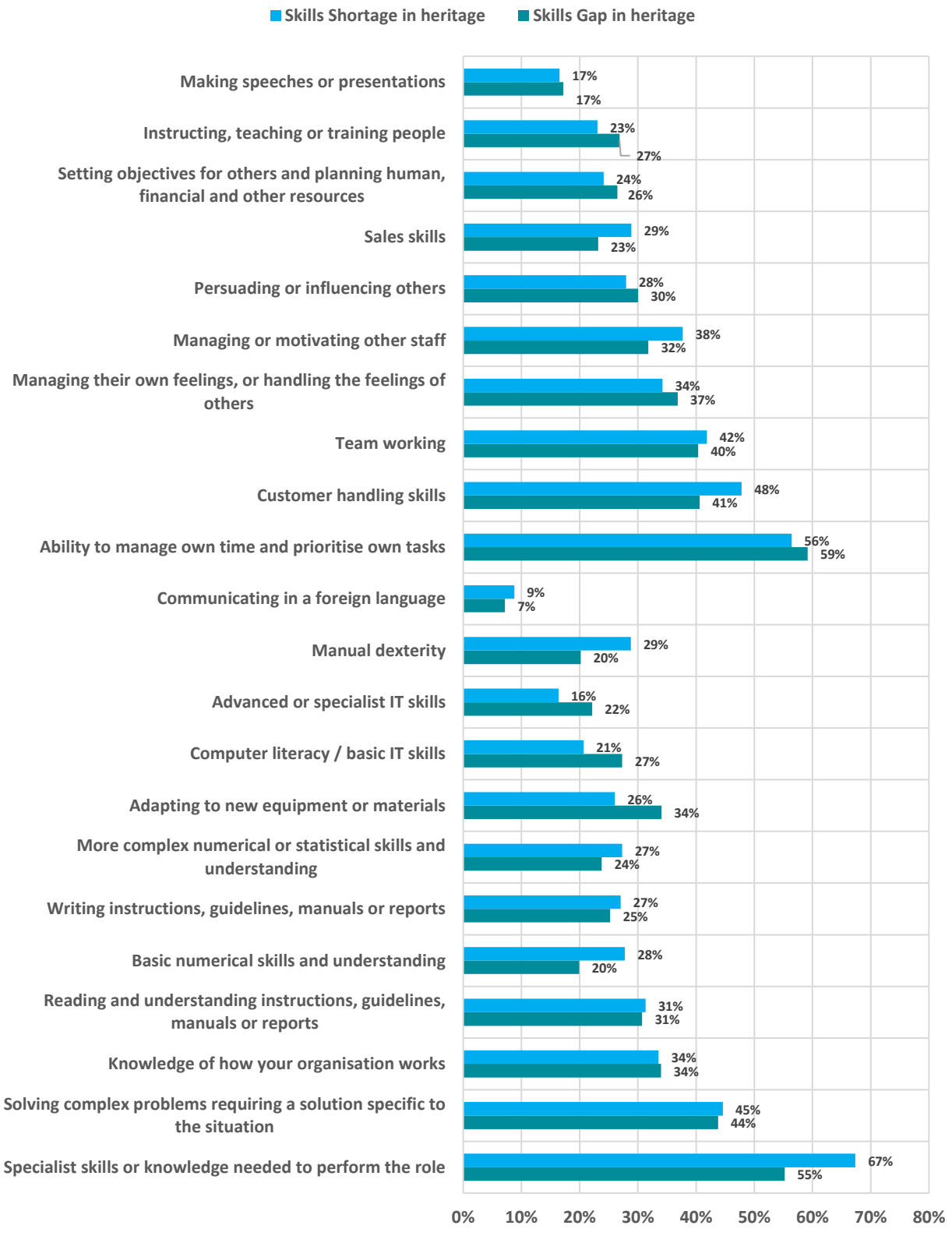
Similarly, 'specialist knowledge needed to perform the role' is estimated to be the most common skill lacking amongst candidates for jobs in the Heritage Sector (with an estimated 67% of all heritage employers with a skills shortage vacancy facing this as a specific skill lacking amongst candidates).

Evidence from the wider literature helps to provide some more detail on what this 'specialist knowledge' refers to in the context of the Heritage Sector – although, given the diversity of the sector there is likely to be significant heterogeneity. For instance, a report from UCL[7] on the skills gaps, shortages and needs in the heritage science sector perhaps unsurprisingly highlights handling digital collections and data as a key technical skill that was lacking. By comparison, in the archaeological sector[8], the most cited skills shortages were concerning specific skills on artefact conservation, fieldwork and post-fieldwork analysis.

[7] Skills gaps, shortages and needs in the Heritage Science Sector - UCL

[8] Charted Institute for Archaeologists. (2017). 'Archaeological Market Survey 2017'.

Figure 9: Specific skills lacking in the Heritage Sector, 2017



Source: Employers Skills Survey 2017, Cebr analysis

5 Impacts of skills gaps and shortages

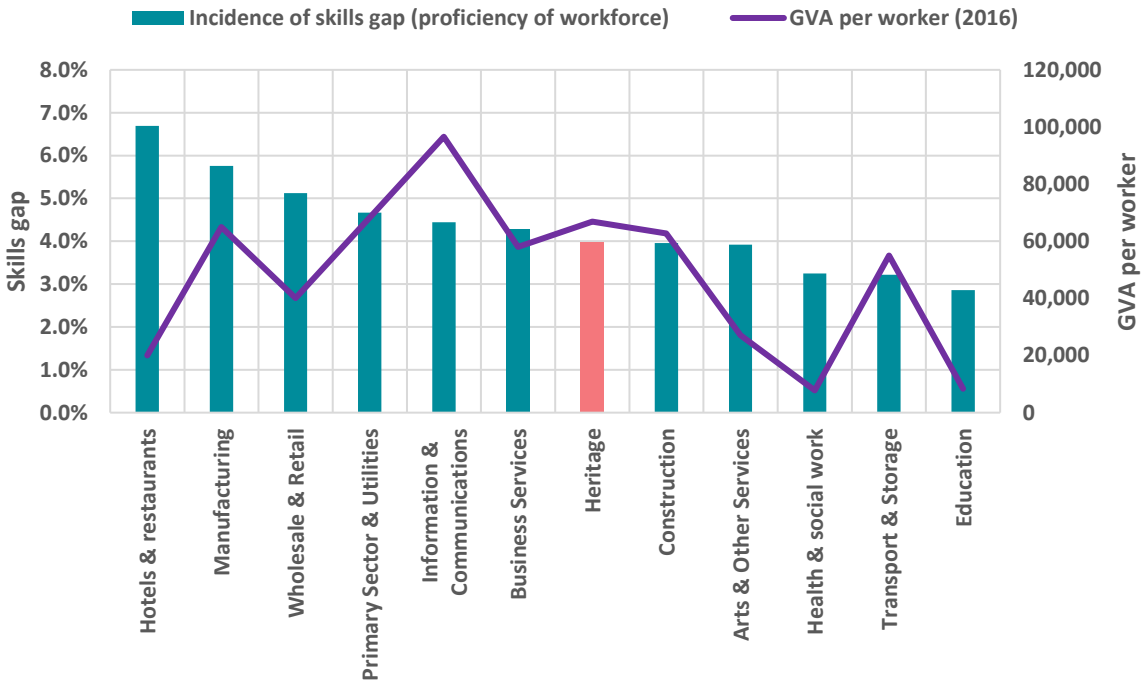
The skills gaps and shortages identified have broad impacts on productivity, wages and growth in the UK economy. This section explores these implications, both generally and for the Heritage Sector in particular.

It proceeds as follows. Section 5.1 considers the relationship between skills, productivity and growth in the UK economy as a whole. Section 5.2 then applies the implications discussed more directly to the Heritage Sector.

5.1 Skills and productivity and growth in the UK economy

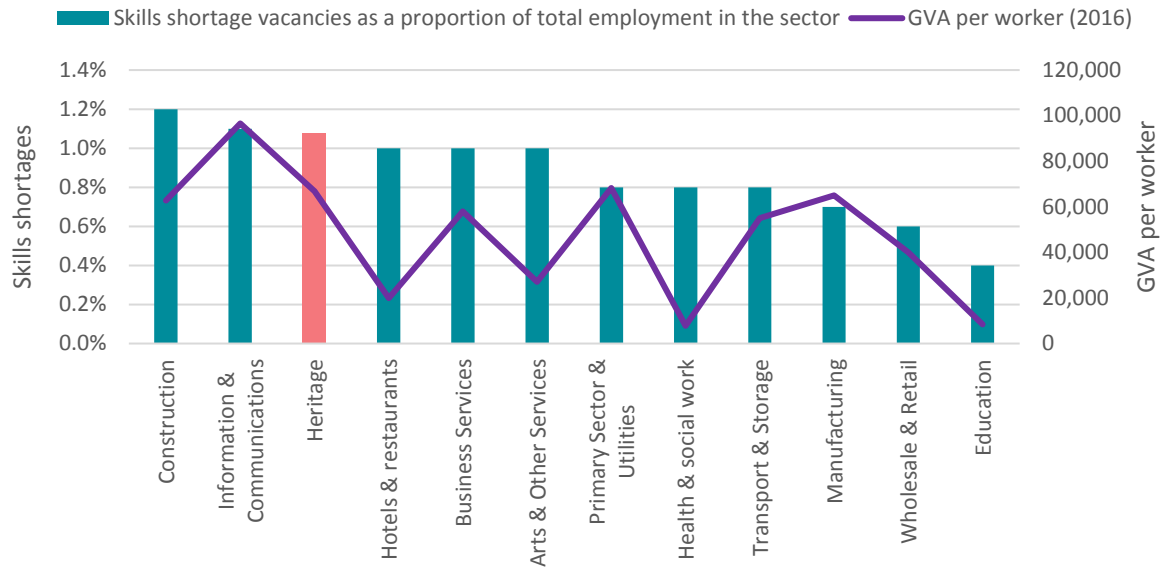
Figure 10 and Figure 11 compare the relationship between skills gaps and skills shortages, disaggregated by industry and productivity (defined in terms of Gross Value Added per worker). The implications of the relationship between skills and productivity is important, given the context of the UK productivity deficit detailed in Section 3.

Figure 10: Relationship between skills gap and GVA per worker, 2017



Source: ONS, BRES, Employers Skills Survey 2017, Cebr analysis

Figure 11: Relationship between GVA per worker and productivity



Source: ONS, BRES, Employers Skills Survey 2017, Cebr analysis

In the case of skills gaps, sectors such as hotels & restaurants and manufacturing have a relatively high incidence of skills gaps and a relatively low level of GVA per worker. This appears to suggest a negative relationship between skills gaps and GVA per worker – put another way, the bigger the skills problem the lower the productivity.

However this trend is not consistent across all sectors. At the other extreme, there are sectors that have a low incidence of a skills gap and but also a relatively low level of GVA per worker. There are also a series of sectors, generally in the middle of the graph, which appear to average incidences of skills gaps but above average levels of GVA per worker.

The case of skills shortages, illustrated in Figure 11 also shows only a minimal trend between shortages and productivity. Part of this is perhaps reflective of the fact that skills shortages inevitably link less closely with productivity as they also reflect labour market frictions and the ability of employers to find the right candidates.

One way to reconcile these seemingly contradictory patterns is to acknowledge that skills aren't the sole factor that can influence productivity.

Short run frictions

In the short run, various frictions can influence the relationship between skills and productivity. Employers who identify a skills gap in their workforce may, for instance, engage in additional monetary motivations (such as generous overtime pay or bonuses for working longer hours) in order to temporarily boost output despite the skills gap that exists.

This might also be the case for sectors facing large skills shortages – in the absence of being able to recruit workers with the required skills, employers attempt to encourage and incentive existing employees to increase the output they produce.

This is perhaps most applicable to rapidly growing industries (such as Information and Communications) who face the pressure of meeting increased demand despite any skills gaps that exist.

The implication of this is that, in the short term at least, the sector may experience a relatively high GVA per worker, despite the existence of a significant skills gap.

Long run differences in productivity

There are also likely to be other long run determinants of productivity.

Part of these long run differences are likely a result of inaccuracies in measuring productivity in some industries. Noticeable cases of this can be seen by considering industries such as education, health & social work and arts & other service activities. These industries find themselves on the right-hand side of Figure 11, meaning that compared to other sectors they have a relatively small skills gap reported. They also seem to have a relatively low GVA per worker.

The vast majority of these sectors are largely government funded. In such cases, the effectiveness of GVA per worker as a measure of productivity can be brought into question. By its nature, GVA measures economic value added. Many of these sectors have significant 'social' spillovers that aren't captured through GVA per worker metrics and therefore in these cases the measured productivity is lower than it perhaps should be.

There are also likely to be other structural constrains on the productivity of industries. A good example of this is technology. Technology does not benefit all sectors equally - by its nature it is best suited to conducting repetitive, routinized tasks. Sectors such as education, health and social work, arts and other services involve a far higher degree of interpersonal skills – something that is not easily supplemented by technology. This inevitably means a lower 'steady-state' level of GVA per worker – but this reflects something more structural about the incidence of technology in industry as oppose to anything about the skills situation in such an industry.

The relationship between skills and productivity

Crucially, these other short run frictions and long run determinants of productivity can obscure the true relationship between skills and productivity when conducting cross-sectoral analysis.

To try and avoid this problem, a possible solution is to consider the link between skills and productivity at the national-level. To the extent that in the absence of other long run determinants, a sector follows the national relationship between skills and productivity, this can help provide an indication of the implications of the skills gap on productivity.

On the whole, a review of the existing literature suggests a positive correlation between skills and productivity. While one needs to treat the magnitudes with caution. Table 2 provides an overview of some previous studies.

Table 2: Literature on the relationship between skills and productivity

Study	Details
Machin et al. (2003)	Uses vocational qualifications as a proxy for skills. Found that the level of qualification impacted the extent to which there were positive productivity benefits - with Level 4 qualifications (degree and higher) having significant effects but less robust effects for Level 2 (GCSE) qualifications.
Mason et al. (2007)	Finds a positive relationship between human capital and productivity. Find that a 1% increase in human capital in the UK leads to a 0.09% increase in productivity. They also find that the relationship between human capital and productivity becomes stronger in the medium - long run.
Haskel et al. (2003)	Considers the relationship between skills and productivity in the manufacturing sector. Find that more productive firms hired workers with more skills than the least productive firms.
Galindo-Rueda and Haskel (2005)	Uses data from the Annual Business Inquiry (ABI) and data from the Employers Skills Survey (ESS) to consider the impact of skills on company performance. Find that increased levels of educational attainment is associated with higher productivity and higher skills.

Source: Cebr analysis

Assuming the same relation holds at the sector-level, a higher skills gap implies a lower productivity, holding the other determinants discussed constant. This makes intuitive sense. All else being equal, workers with better and more appropriate skills are able to conduct their jobs with greater efficiency and hence are more productive.

Productivity, wages and growth

A broader question to consider is why the productivity of a sector is in itself important.

A crucial implication of better underlying productivity is the manifestation of higher wages. As discussed in Section 3, the trends in productivity and wages since 2000 have followed a very similar pattern – with a significant change in the growth rate of both wages and productivity in the aftermath of the 2007 financial crisis. This is unsurprising. Under a competitive market environment, one would expect the wages an employee earns to be represent their 'value added' – in other words their wages to reflect their productivity. To the extent that this relationship holds, low productivity implies low wages.

Productivity also has implications for economic growth. Intuitively, if all workers are able to produce more in a given period of time (greater productivity) then there is an increase in total output produced.

In the short run, this relationship can become obscured by changes in the total amount of labour available. In terms of economic output, it makes little difference whether production involves one productive worker or two less productive workers. Employers may also be indifferent if, like described previously, wages reflect productivity, and hence unproductive workers get paid less.

In the longer run, and particularly with the possibility of severe restrictions to the free movement of labour from the EU in light of the UK's decision to leave the European Union, productivity becomes more important. If economic output can't be raised by employing more labour, firms will become more reliant on raising the productivity of the available workers to meet increased demand. In this sense, productivity in the UK economy generally also has implications on economic growth.

5.2 Implication of skills gaps and shortages in the Heritage Sector

Skills gaps

As illustrated in Figure 10 and Figure 11 in the previous section, the Heritage Sector is by no means an anomaly with regards to its incidence of skills gaps and shortages. The sector falls roughly in the middle of the economy-wide distribution with regards to the reported incidence of skills gaps (with an estimated 4% of employees in the sector not having fully proficient skills) but also has an above average productivity level (with a GVA per worker of roughly £67,000 in 2016). This suggests that some of the short-term frictions and long term determinants of productivity discussed in the previous section apply here.

Given the nature of the Heritage Sector however, there are likely to be some further implications of skills gaps that need to be considered. As discussed in Cebr's previous report, the Heritage Sector is associated with significant social spillovers. These range from the enjoyment received by users engaging in heritage activities to the impact the Heritage Sector has on the regeneration of local areas. In the crudest sense, if the skills gaps in the Heritage Sector (and therefore the lower productivity) reduces the quantity and quality of heritage activities available, the benefits received through these spillover channels are also inevitably reduced.

While these 'social consequences' of a skills gap in the Heritage Sector are difficult to quantify, it is important to acknowledge that for a sector like heritage, the implications of a skills gap go further than the narrow economic implications.

Skills shortages

As illustrated in Figure 11, the Heritage Sector has a relatively high incidence of skill shortage vacancies – with 1.1% of all jobs in the heritage being vacant as a result of skill shortages. At the same time, workers in the Heritage Sector had a high level of productivity, with the average GVA produced per worker standing at £67,000 a year in 2016.

Using the data provided in the Employers Skills Survey on the incidence of skills shortages in the UK economy, and the figures for employment and Gross Value Added (GVA) in the Heritage Sector calculated in Cebr's previous report it is possible to calculate an estimate for the economic cost of skills shortages in the Heritage Sector on the UK economy.

The methodology used is as follows:

- Data from Cebr's previous report on the number of workers in the Heritage Sector was applied to data from the ESS on the proportion of all jobs in the Heritage Sector that remain vacant due to a skills shortage in the wider workforce. By doing so, we calculate a figure for the number of jobs in the Heritage Sector that are left vacant due to skills shortages.
- By applying this figure to the average Gross Value Added per worker in the Heritage Sector, we obtain an estimate for the total amount of Gross Value Added contributions to the economy that is 'missing' due to skills shortages in the Heritage Sector.

In all, it is estimated that approximately £140 million worth of potential GVA was 'lost' due to skills shortages in the Heritage Sector.

Such a calculation needs to be appropriately caveated though. The figure doesn't account for the dynamic nature of the economy, in which an increase in employment in one sector likely means a decrease in employment in other sectors (assuming the increase in employment is not solely due to immigration). In this case, what we actually observe is a *'transfer'* in GVA from one sector to another. The extent to which

this results in a net gain of GVA for the economy as a whole depends on the relative productivity of the Heritage Sector and these other sectors.

It is also important to acknowledge, once again, that such an approach is confined to considered the 'economic value added' by the Heritage Sector. The wider spillover effects are unquantified in this analysis.

6 Avenues for improving skills in the Heritage Sector

This section considers the avenues available for improving skills in the Heritage Sector. It considers both formal means of education and 'in-work' training. Section 6.1. focuses on skills shortages and Section 6.2. concerns skills gaps.

6.1 Actions to overcome skill shortages in the Heritage Sector

To overcome skill shortages, the labour market needs to engage with the skills required by employers. An active route this can occur through is universities. However, a disparity between courses taught and skills required magnifies the shortage at hand. In areas of high speciality such as the Heritage Sector, undergraduate courses at universities may not be training individuals as effectively as desired.

The reason behind this is twofold. The first is student numbers; universities that cannot attract students in enough numbers to make a course economically viable, will not run the courses. Salford University have commented that "if there isn't the employment opportunities or financial rewards of commercial surveying, then it might be difficult for universities to recruit economic numbers of students into specialist undergraduate conservation courses".[9] The skills lacking within the broader Heritage Sector, such as conservation, thatching and surveying are highly specialist. Courses at universities as a result may not be able to fill undergraduate courses to viable levels and as such do not offer such courses.

A second issue surrounding specialist undergraduate courses at universities concerns how the skills are taught. It is evident that university courses on specialist skills can have a significant impact on professional competency and has the spillover effect of engaging students in the sector beyond the course itself.[10] However, Salford University comments that the way in which the courses are generally taught is not sufficient to provide the specialist skills to students. Such vocational skills cannot be covered in depth with an average of 48 hours of lecture tuition per module. Rather, a hands-on approach may be needed to adequately equip students with the necessary skills required within the sector.[11]

By comparison, the greater specialisation provided by postgraduate degrees means they may have better success at addressing the skills shortages in sector such as Heritage. Indeed, this is an avenue currently being pursued by Historic England to address the skills shortages in the sector. For instance, their Collaborative Doctoral Partnership (CDP) provides funding for PhD students whose proposals advance thinking on the Heritage environment[12].

Similarly, highly specialised skills may be better pursued through vocational training with a German style approach. Germany has long been known for its coupling of vocational skills and higher education, where students learn core subjects such as maths and German alongside the job-specific skills needed for their intended vocation.[13] The German dual approach to education has been partly accredited for Germany's low youth unemployment at a time where other European countries have had rising rates; it was found that 66% of apprenticeship graduates remained employed by the firms that they were trained in. The

[9] University of Salford. (2016). 'Can universities help in bridging the skills gap in building conservation surveying'. p.3

[10] Ibid.

[11] Ibid.

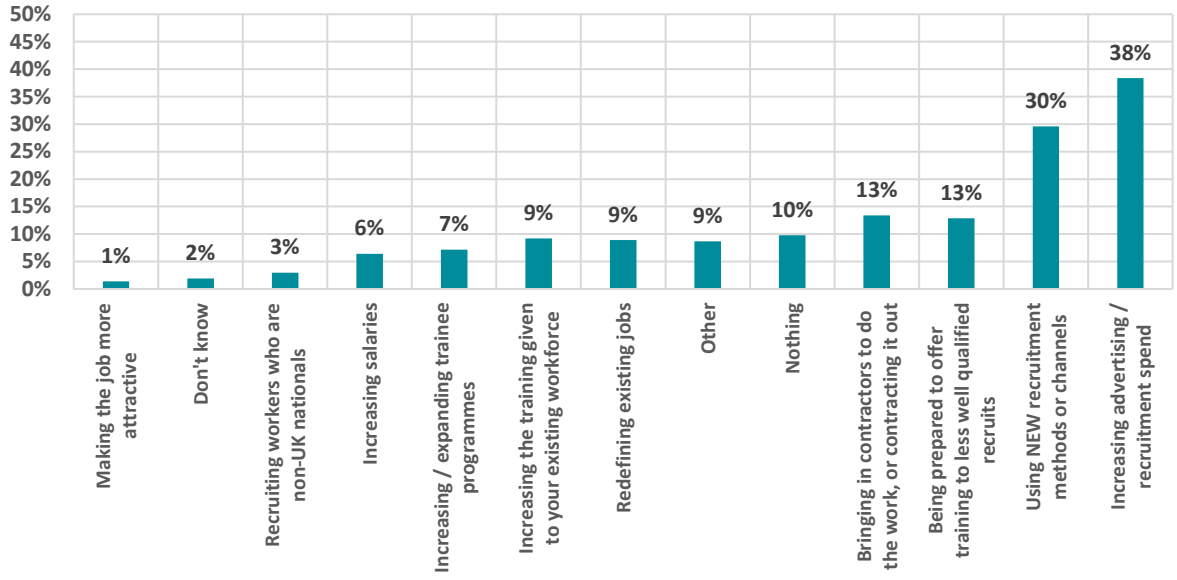
[12] Historic England. 'Collaborative Doctoral Partnership'

[13] Heikie, S. et al. (2014). 'The German vocational education and training system: Its institutional configuration, strengths, and challenges'. WZB Discussion Paper, No. SP I 2014-502.

importance of Historic England's apprenticeships and other work-based training programmes is clear in this context[14].

However, these are long-term solutions. Companies still face shortages now, and are attempting to find new ways of bridging the gap themselves. The actions taken by firms in the Heritage Sector predominantly focus around recruitment methods. This is illustrated below in Figure 12.

Figure 12: Estimated actions taken by employers to overcome skills shortages, 2017



Source: Employer Skills Survey 2017, ONS, Cebr analysis

In addition to that, the lack of skilled recruits has led to 13% of firms contracting out their work. Contracting out, or 'skills buy-in' occurs frequently within the archaeology sub-sector. In the Archaeological Market Survey 2018 by the Charted Institute for Archaeologists (CIfA), it was found that 68% of firms have contracted work for artefact conservation and fieldwork, and 44% for post-fieldwork analysis.[15]

The Employer Skills Survey also found that 13% of firms within the Heritage Sector responded that they were now offering training to less well qualified recruits, solving the skills shortage internally in response, and 9% are increasing training to their existing workforce.

Therefore, it is appropriate to conclude that investment into vocational education to directly train the appropriate skills that the labour force is lacking would benefit both employees and employers. Continued investment into university courses alone may not solve this issue.

6.2 Actions to overcome skills gaps

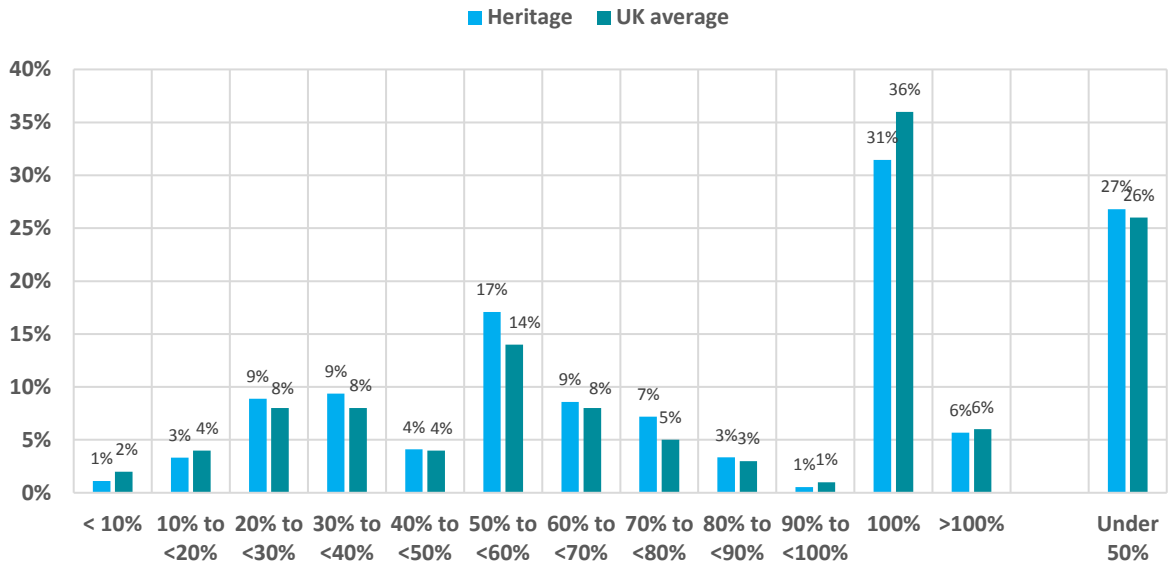
Skills gaps occur when employees within a workforce lack the required skills to effectively do their job. The main way in which employers can overcome this is through on the job training, providing access to the skills required for the employee to improve.

[14] Historic England. 'Work-Based Training'.

[15] Charted Institute for Archaeologists. (2018). 'State of the Archaeological Market 2018'.

Training, however, is both time intensive and costly. Although beneficial, the immediate cost to employers may deter them investing. From the Employer Skills Survey, it was projected that 27% of firms in the Heritage Sector would have had less than 50% of their staff engage in training in the previous 12 months. This is illustrated below in Figure 13.

Figure 13: Percentage of staff engaged in training, 2017



Employer Skills Survey 2017, ONS, Cebr analysis[16]

The Heritage Sector also falls slightly behind the UK average in terms of proportion of staff receiving training. 36% of firms in the UK reported having their entire workforce engage in training in the previous 12 months, compared to an estimated 31% for the Heritage Sector. This is significant as skills within the Heritage Sector tend to be more niche than the UK average, such as thatching, artefact conservation and stained glass window preservation.

Within the archaeological sub-sector, support of internal training was found to be low, despite the significant skills gaps. The Archaeological Market Survey in 2017 run by the CIfA found that only 33% of employers supported their staff in acquiring the Level 3 NVQ Certificate in Archaeological Practice. Moreover, only 11% supported their staff members who wished to engage in the 'Historic Environment Practice' apprenticeship.[17]

This is striking as coupling the skills gap with the persistent skills shortage in the Heritage Sector, training is a significant method to overcome the shortfalls in skills. However, this emphasises that there may be an unwillingness within the sector, more so than the rest of the economy on average. The advantage of training is not only in closing the skills gap, but routine training ensures that the gap remains minimised; skills are less likely to deteriorate.

However, there is another route which firms could take to potentially lower the skills gap. The Employment Skills Survey in 2017 found that a significant proportion of employees had qualifications in advance of the

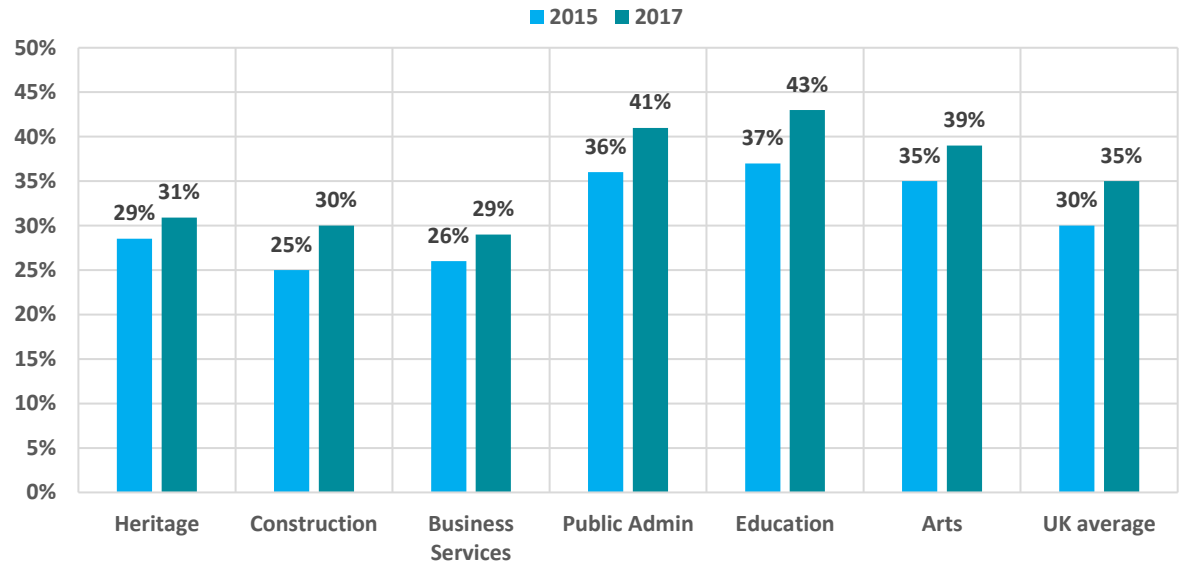
[16] The '>100%' category refers to situations where an employer has trained employees who have since left the company. Hence, over the course of the year, they have trained more employees than their current staff numbers.

[17] Charted Institute for Archaeologists. (2017). 'Archaeological Market Survey 2017'.

requirements of their current role. This implies a misallocation of employee resources, whereby skill gaps may have the potential to be lowered through making use of these underutilised skills.

This is a major route in which the gap could be lowered. Since 2015, every sector surveyed was found to have an increase in the proportion of underutilised employees. This is illustrated below in Figure 14 the Heritage Sector fares well in this comparison, with only an estimated 31% of employees underutilised compared to the UK average of 35%, and also experienced a smaller growth in the proportion from 2015.

Figure 14: Underutilised staff by sector



Source: Employer Skills Survey 2017, ONS, Cebr analysis

Therefore, there are two clear avenues in which the skills gap could be lowered. The first is through internal training; firms that commit to training will directly benefit from employees acquiring the skills required to effectively do their jobs. Second is the better allocation of employees; reorganising the workforce to better utilise those with skills in advance of their current roles.

7 Risks associated with Brexit

Brexit poses significant uncertainty for the Heritage Sector within the skills shortage and skills gap narrative. Should the UK leave the EU with no clear agreement on the free movement of labour between the UK and EU, firms face an immediate fall in their potential supply of labour. Part of the effect is expected to be a potential worsening of the skills shortage situation.

EU employment within the Heritage Sector is significant. In total, it is estimated that around 15,000 EU nationals were employed in the Heritage Sector in 2015 – representing 7.4% of the total workforce. This is summarised below in Table 3.

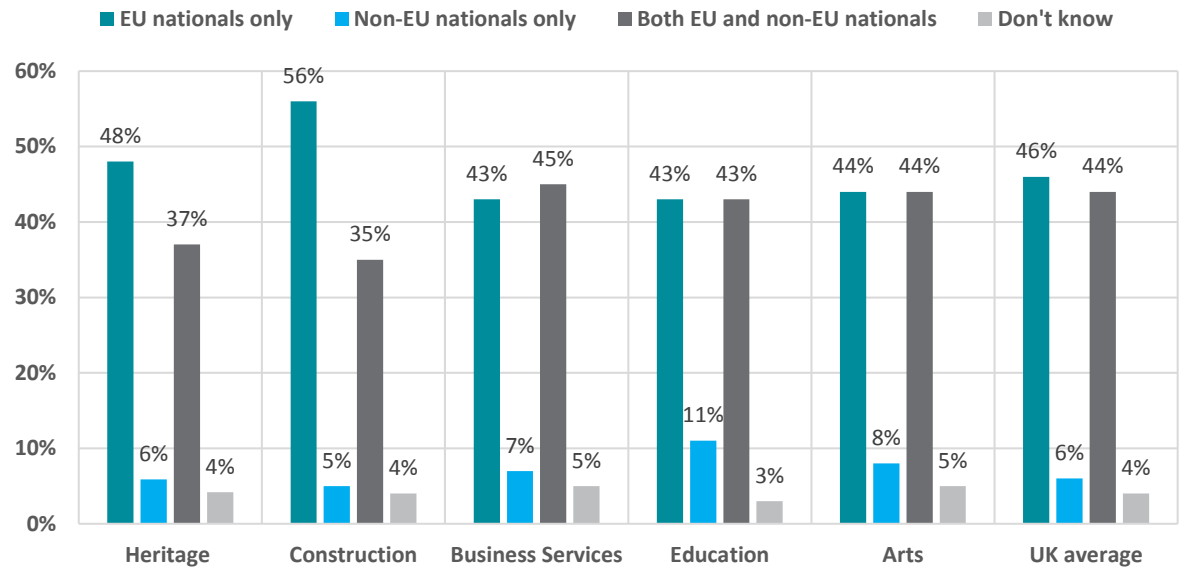
Table 3: Heritage employment by one digit SIC, 2016

	Total heritage employment	EU proportion, %	EU employment in heritage
Construction	105,223	8.8%	9,207
Arts	53,573	5.6%	3,000
Business Activities	25,552	7.5%	1,909
Public Administration	10,154	4.0%	409
Education	1,692	4.0%	68
Total	**196,193**	**7.4%**	**14,593**

Source: ONS, Employment Skills Survey 2017, Cebr analysis

Restricting the labour supply to only UK nationals and residents will make the hard-to-fill vacancies more difficult to recruit for. As it stands, of those firms that recruit non-UK nationals, the primary labour supply is the EU. This is illustrated below in Figure 15.

Figure 15: Estimated proportion of firms that attempted to recruited non-UK nationals for hard-to-fill vacancies



Source: Employer Skills Survey 2017, ONS, Cebr analysis

This potential restriction to labour supply has significant implications on the relationship between productivity and growth discussed in Section 5. With a restricted labour supply, productivity growth can only manifest through growth in technology and growth in skills. Substantial inward investment into reducing the skills gap and skills shortage will likely be required once the labour supply is restricted to maintain the current level of productivity and attempt to improve it. Targeted vocational education and training schemes may become more important to both the general economy and the Heritage Sector as a result.

The funding of the Heritage Sector may also be affected by Brexit. Between 2007 and 2016, it is estimated that the EU provided £450m worth of funding for the broad Heritage Sector in the UK.[18] Should the UK government not match this funding, ongoing projects and proposed projects which have the potential to boost job creation, regional development, cultural industry and smart cities have an uncertain future.[19]

This lack of funding also has second round effects of potentially increasing the skills gap in the sector. Given that the primary way to reduce the skills gap is through on the job training, a loss of funding may further limit the training within the sector, which would see the gap rise over time. This is especially important as cases like the Archaeological Market Survey in 2017 found that firms appear to be unwilling to support training of their staff, which may only worsen with restricted funding.

Likewise, an underfunded sector may also result in the increase in skill shortages. Individuals choosing what educational course to do (be it vocational or university) may be off put by the limited job opportunities and limited projects as a result of the decrease in funding. This would further increase the lack of skills in the labour force, made worse by the limited labour supply as a result of Brexit.

[18] Brexit and Heritage – A report on an ESRC IAA funded workshop.

[19] Ibid.