Office for National Statistics

Article

Understanding firms in the bottom 10% of the labour productivity distribution in Great Britain: “the laggards”, 2003 to 2015

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Release date:
5 July 2017

Next release:
6 October 2017

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1 . Authors and acknowledgements

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Acknowledgement: The authors would like to thank Ciaren Taylor, Alice Heffernan, Harriet Weston, Sebnem Oguz, Aaron Walton, the ABS and VML teams in ONS, for their contributions and methodological advice.

2 . Main points

- The majority of the firms in the bottom 10% of the labour productivity distribution – “the laggards” – were relatively small businesses – as indicated by the large share of micro-firms (1 to 9 employment) in this group, which accounted for at least 90% of laggard firms.
- Younger firms (1 to 5 years old) made up a large but declining share of firms in the bottom 10%, accounting for around 40% of the “laggard” population in 2015.
- Firms in the bottom 10% of the productivity distribution were predominantly in services industries; businesses in the distribution, hotels and restaurants industries were particularly overrepresented and accounted for a third of all firms in this group in 2015.
- Across the NUTS1 regions in 2014, Wales, the North East and Yorkshire and the Humber accounted for a disproportionately large share of establishments in the bottom 10% compared with their shares of the business population as a whole.
- Firms that record a period of negative gross value added (GVA) per worker tend to exit the marketplace at a faster rate than other firms; around one-third (34%) of those who recorded negative GVA per worker in 2010 exited the market by 2015, compared with 23% of those with higher productivity.

3 . Introduction

The weakness of labour productivity growth is one of the defining features of the UK’s recent economic downturn and recovery. Following a half-century of consistent growth, labour productivity in Quarter 1 (Jan to Mar) 2017 was broadly unchanged from its level immediately before the economic downturn in 2007, and despite considerable academic[1] and policy-maker[2] attention, clear explanations for this phenomenon have proved elusive.

To shed light on these developments, we have been undertaking a programme of development and research in the area of productivity. In this article, we analyse the distribution of real labour productivity for firms in Great Britain between 2003 and 2015 using data from the Annual Business Survey (ABS) [3]. In particular, we focus on the characteristics of firms in the bottom 10% of the labour productivity distribution – the “laggards” [4] – and how this group differs from the overall business population. As part of an emerging series, this paper complements our earlier work, which examined the characteristics of businesses at the top of the productivity distribution.

We found that firms in the bottom 10% of the labour productivity distribution tended to be smaller and younger than firms in the population as a whole. They were more likely to be single-site businesses, working in the services industries, within which the “distribution, hotels and restaurants” and “other services” industries were disproportionately represented. We also found that in 2014, Wales, the North East and Yorkshire and the Humber accounted for a disproportionately large share of establishments[5] in the bottom 10% compared with the business population as a whole[6]. Lastly, we found lower survival rates for firms with negative gross value added (GVA) – and therefore those with negative productivity – compared with firms with higher levels of productivity.

Taken together, the results of this paper suggest that changes in the prevalence of relatively unproductive firms have an impact on the overall level of productivity in the UK's private business economy – although their role is at best a partial one. This analysis suggests that the post-downturn period has been particularly challenging for small, young, services firms in particular and that during this period there was a relative increase in the likelihood that low-productivity firms would exit the market place. This work suggests a number of avenues for future work and indicates that further study of the role of entry and exit dynamics is important in particular. As such, this paper improves our understanding of the lower tail of the productivity distribution.

The rest of this paper is presented as follows:

- section 3 provides details of our data sources and sets out the specifics of our main variables
- section 4 discusses the limitations of our analysis
- section 5 outlines the results of our analysis
- section 6 sets out our conclusions from the analysis

Notes for: Introduction

1. See Riley, R., Rosazza Bondibene, C. and Young, G. (2014)
2. Haldane, A. (2017) "The Productivity Puzzles", Speech at the London School of Economics
3. This work contains statistical data from ONS that is Crown Copyright. The use of the ONS statistical data in this work does not imply the endorsement of the ONS in relation to the interpretation or analysis of the statistical data. This work uses research datasets that may not exactly reproduce National Statistics aggregates.
4. We adopt this terminology from the recent literature on the productivity puzzle – in particular from the Organisation for Economic Co-operation and Development (OECD), who use "laggards" to refer to firms who are outside the "frontier" group of firms in the highest 5% of firms by productivity (OECD 2017). While our terminology is similar, note that our definition differs somewhat: in this paper, "laggards" refers to firms in the bottom 10% of the labour productivity distribution.
5. Also called sites or plants where some form of business activity occurs – see Evans, P. and Welpton, R. (2009).
6. This is consistent with data published alongside this release in the article Introducing industry-by-region labour metrics and productivity.

4 . Data sources

To examine the distribution of firm-level labour productivity through time, three forms of data are required: business specific measures of output; business specific measures of labour input; and a set of price indices to convert current price survey data to a common price base. The Annual Business Survey (ABS) – formerly the Annual Business Inquiry part 2 (ABI 2) – provides the financial data on turnover, intermediate purchases and "approximate gross value added" (aGVA) for calculating labour productivity in our analysis.

The ABS – and its predecessor ABI 2 – is the main structural business survey conducted by the Office for National Statistics (ONS)[1]. It surveys around 65,000 firms on an annual basis to collect financial information from firms in the production, construction, distribution and services industries, representing approximately two-thirds of the UK economy[2]. The analysis presented in this article covers firms in Great Britain – a deviation from our earlier paper, which covered firms in the UK as a whole[3].

The business-specific measure of labour input that we used in this analysis was employment – including both employees and working proprietors – and was obtained from the Inter-Departmental Business Register (IDBR) at the time of sample selection of the ABS. Employment information from the IDBR is derived from a number of different sources (including the Business Register Employment Survey (BRES), HM Revenue and Customs (HMRC) records and some imputation) and some of the employment information – especially for small businesses – may be several years old. Despite this limitation, the IDBR is at present the most comprehensive source of employment information for analysis at the reporting unit level.

To estimate constant price gross value added (GVA) we used the current price data, which is collected on the ABS and an experimental set of industry deflators. These deflators were derived by allocating national accounts product level deflators to specific industries and weighting them using information on industry-level output shares from the supply and use framework. More information on these experimental deflators is available.

To examine two business characteristics in particular – age and region – two additional sources were used. To address questions about the age of businesses, we used information from the IDBR. Specifically, we derived the age of each surveyed business by linking the ABS survey records to the birth date of the enterprise recorded on the IDBR and the date of the ABS survey. We also used the recorded death date from the IDBR to determine firms that were “alive” or “dead” in each period.

For our regional analysis, we make use of a tailored local unit [4] micro-dataset constructed from the 2014 ABS. As the ABS does not collect GVA data at the local unit level, in this dataset each enterprise’s aGVA is apportioned across all local units that belong to it, based on their level of employment, industry and a range of other factors. The local unit employment data used in this apportionment process are taken from BRES or the IDBR for the same period.

Finally, to maintain consistency over the time period that we analyse, we used aGVA at factor cost as our measure of output, rather than aGVA at basic prices, which was used in our earlier work, as this variable was not available for all years[5]. Therefore, our measure of labour productivity (GVA per worker) was calculated as aGVA at factor cost divided by employment. GVA from the ABS is referred to as aGVA to differentiate it from the national accounts measure, of which aGVA is a component. The differences between aGVA and the national accounts measure of GVA is discussed in Ayoubkhani (2014). All data in this article are based on the Standard Industrial Classification 2007 (SIC 2007) of business activities.

Notes for: Data sources

1. The ABS is conducted by ONS for businesses in Great Britain and separately by the Department of Finance Northern Ireland for businesses in Northern Ireland.

2. The ABS covers the non-financial business economy, which excludes financial services and the public sector.

3. We plan to extend our analysis to include data from the Northern Ireland ABS in future work.

4. A firm or enterprise may have more than one plant in different locations. These are referred to as local units. Local units of an enterprise may be engaged in different parts of the business, such as production, accounting or head office, therefore each local unit is assigned a single Standard Industrial Classification (SIC) code, which corresponds to the unit’s principal activity.

5. The different measures of gross value added (GVA) are discussed in the Productivity Handbook.

5 . Limitations

As with any detailed study of this kind, the data sources used place some limitations on our work. The first of these relate to the coverage of the business survey data on which the analysis is based. The Annual Business Survey (ABS) covers the private, non-financial business economy of the UK, with partial coverage of firms in financial industries. We therefore exclude industries in section K – financial and insurance activities – from our analysis. We also exclude industries in section L – real estate activities – due to a break in the time series that requires further investigation. The ABS also has no coverage of the public sector, which limits the relevance of our analysis but still covers a majority of the economy by employment.

Secondly, the industry deflators used in this analysis will vary in their applicability to specific firms and may be subject to improvements in the future. Conceptually, the appropriate deflator for the output of a given industry is a weighted combination of the price indices of the products produced by that industry. In cases where the goods produced by an industry are homogenous, or where an industry produces a very limited range of products, this industry level deflator will also be appropriate for firm level output. However, where firms vary in their mix of production, or where there is considerable product heterogeneity, the deflator we use may be less appropriate for the output of a specific firm. This limitation – and the potential for future revision owing to the ongoing reviews of the national accounts deflators – we have in common with a majority of other studies in this area (for a discussion on the importance of business level prices, see Syverson (2011)).

Finally, combining survey data with administrative records on enterprise birth and death dates can be challenging. This is particularly the case for businesses that adapt their reporting arrangements through time, or which experience a period of dormancy – when their turnover or employment changes their reporting requirements for HM Revenue and Customs' Value Added Tax (VAT) or Pay-As-You-Earn (PAYE) regimes for instance. To derive birth and death dates, we use information from the Inter-Departmental Business Register (IDBR) relating to the enterprise group[1] as first preference, but have supplemented this information with data on the death dates of firm reporting units. This helps us to navigate the problems posed by businesses that change their reporting structures or which may reactivate after a period of dormancy.

Despite these limitations, the analysis presented in this article shows patterns that are consistent with the literature and with trends observed at the whole economy level using macro-datasets.

Notes for: Limitations

1. See Evans, P., and Welpton, R. (2009), for a discussion of business structures on the Inter-Departmental Business Register (IDBR).

6 . Results

The analysis presented in this paper is focused on the characteristics of firms in the bottom 10% of the labour productivity distribution – referred to in the rest of the paper as the "bottom 10%" or "the laggards" – and complements our earlier paper from 2016, which focused on the top 10% of this distribution.

Important deviations from the previous analysis include: a narrowing of the geographic coverage from UK to Great Britain (GB); an extension of the review period to cover 2003 to 2015; and a change in the measure of output from approximate gross value added (aGVA) at basic prices to aGVA at factor cost. We begin our analysis with a review of the distribution of productivity for our Annual Business Survey (ABS) population and by employment size bands, before going into the detailed analysis of firms in the bottom 10%.

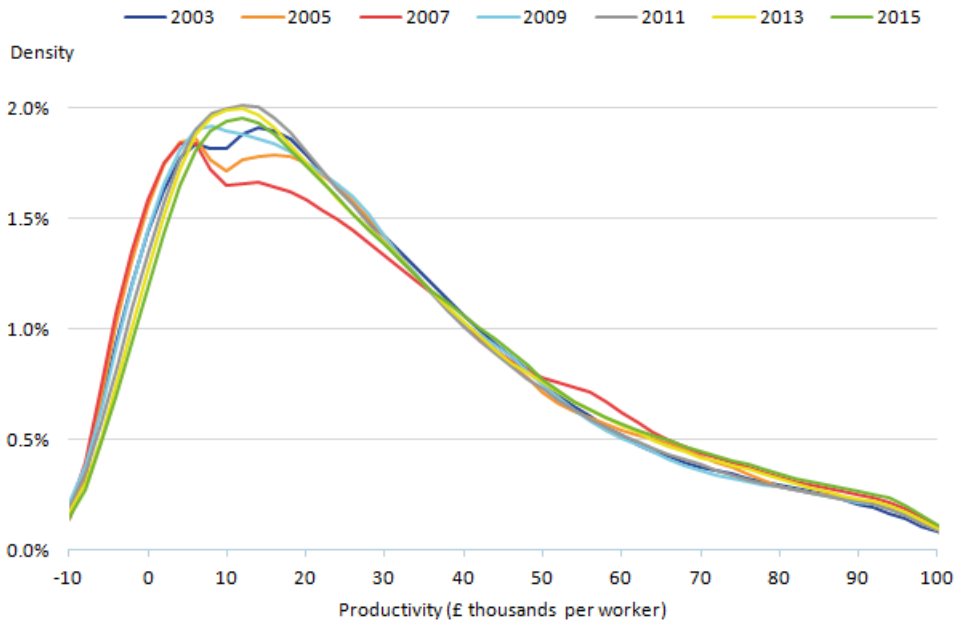
5.1 Distribution of firms by productivity

As presented in our earlier paper and consistent with a large body of academic literature, our analysis suggests that there is a wide dispersion of labour productivity across firms. Figure 1 presents the distribution of labour productivity – gross value added (GVA) per worker, in 2015 constant prices, between 2003 and 2015. The shape of the distribution shows less productive firms in the left-hand tail; a concentration of firms within the £5,000 to £20,000 output per worker range across most years; and a gradually diminishing right-hand tail, representing the smaller number of businesses at ever higher levels of labour productivity.

The movements of this distribution give some sense of the prevalence of different levels of labour productivity among firms in Great Britain over this period and highlight several important shifts. The mass of the distribution shifts noticeably leftwards between 2003 and 2007, with the distribution reaching its most leftward position in 2007, consistent with the emergence of relatively more firms at lower levels of labour productivity over this period. This was offset by a slight increase in the right tail, reflecting an increase in the share of more productive firms, and is indicative of a widening of the labour productivity dispersion leading up to 2007. Over the following years, we observe a general rightward shift in the productivity distribution, with a noticeable decline in the share of firms with negative levels of productivity to its lowest point in 2015. This may reflect the least productive firms exiting the market, known as the “cleansing effect”[1]; firms becoming more productive during the recovery, or a combination of these effects.

Figure 1: Distribution of real firm-level productivity

Great Britain, 2003 to 2015

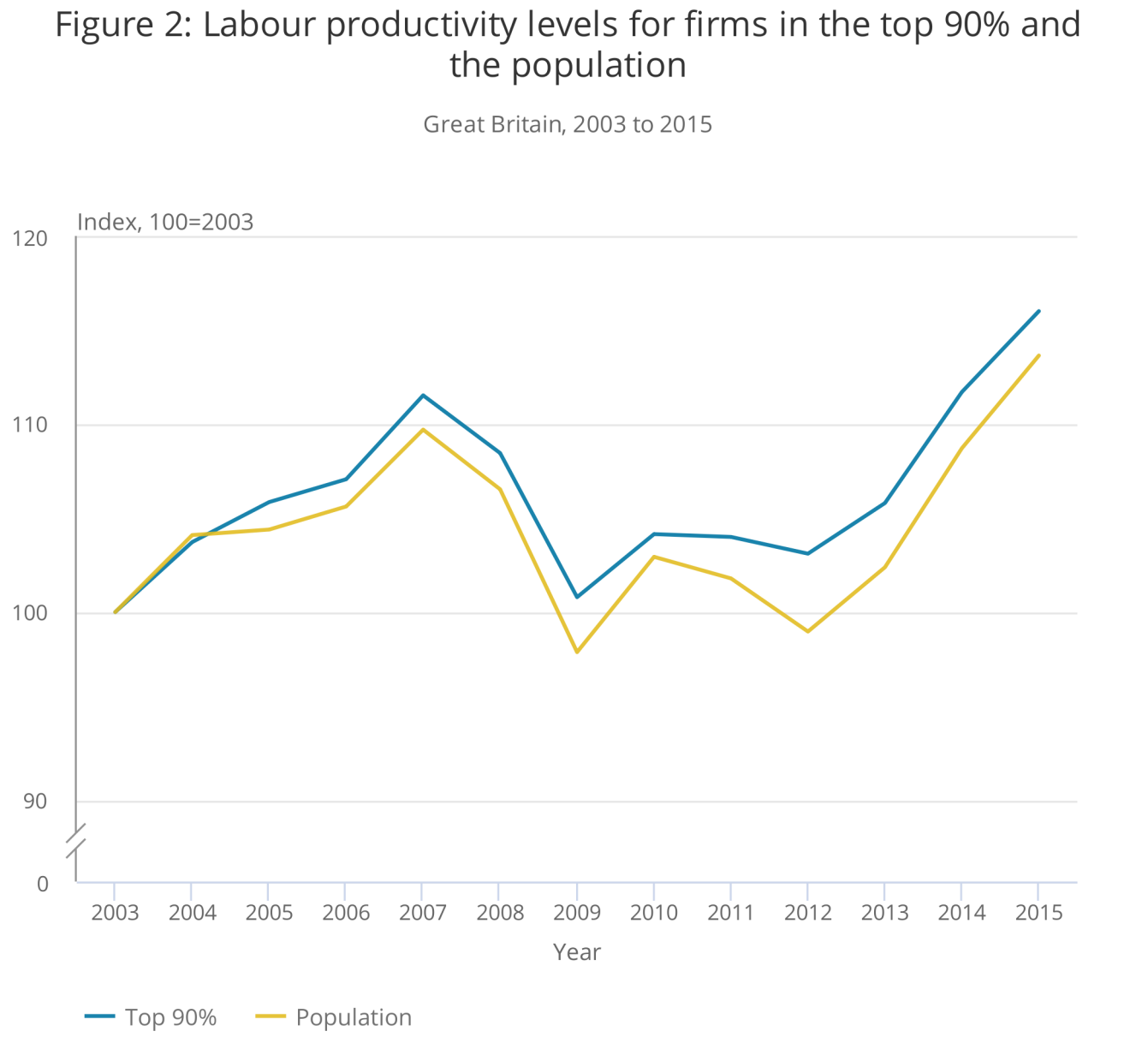


To have a sense of the impact of the drag in labour productivity by the bottom 10%, Figure 2 shows levels of productivity for the population – including the bottom 10% and for the top 90% of the productivity distribution, that is, excluding the bottom 10%. As expected, we find that productivity level for the top 90% of the distribution is higher than for the population including the “laggards”. We observe more pronounced effects of the bottom 10% in the population in 2009 and 2012, compared with the top 90%.

The gap in productivity levels between the population and the top 90% over the period suggests a sustained drag in general productivity level from the “laggards”.

Figure 2: Labour productivity levels for firms in the top 90% and the population

Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Notes:

1. Includes all firms covered by the Annual Business Survey (ABS) excluding sections K (Financial and Insurance Activities) and L (Real Estate Activities), weighted to reflect the population of firms.

2. Labour productivity in this chart was calculated for the aggregate groups and therefore slightly different from others in the rest of the paper which were calculated at the firm level and aggregated up.

5.2 Distribution of firms by size and productivity

The variation in the level of labour productivity across firms is replicated among firms of similar sizes. Figure 3 shows the distribution of labour productivity for four distinct size bands, comprising micro-firms (1 to 9 employment – top left hand panel), small firms (10 to 49 employment – top right hand panel), medium firms (50 to 249 employment – lower left hand panel) and large firms (250 or more employment – bottom right hand panel). It shows that the wide variety in labour productivity levels shown in Figure 1 is replicated for firms of all sizes, although there is relatively more dispersion among firms in the larger size bands.

Figure 3 also shows that smaller firms tend to have relatively low levels of labour productivity [2] – as indicated by the mass of the distributions for these groups being located to the left of that of larger firms. This is consistent with the literature, which suggests that larger firms – which are more likely to benefit from economies of scale – are more productive than smaller firms.

Figure 3: Distribution of real firm-level productivity by size bands

Great Britain, 2003, 2007, 2015

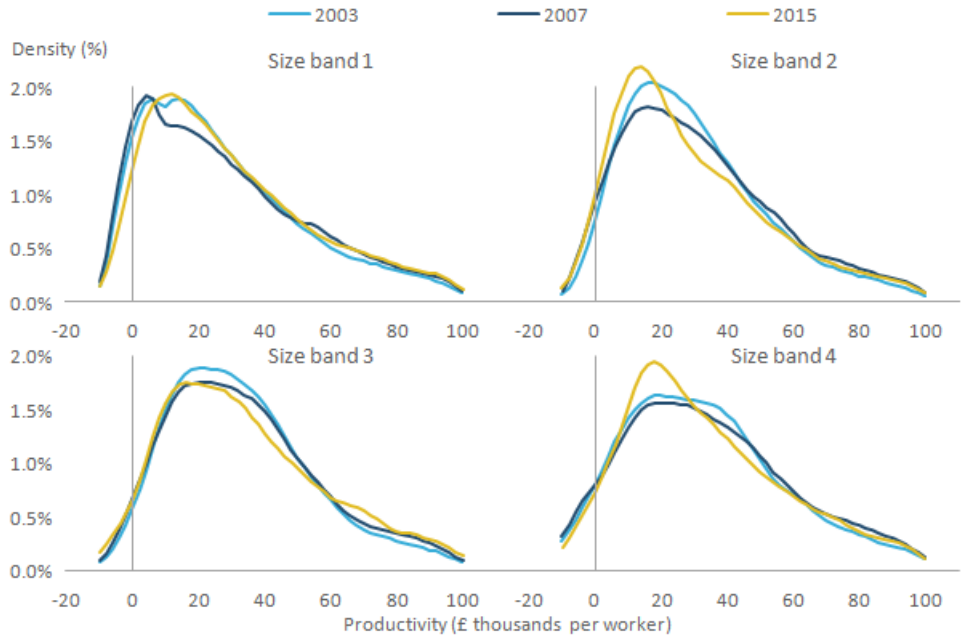


Figure 3 also indicates that movements in the aggregate distribution of labour productivity reflect varying movements for firms of different sizes, and that a more granular approach is needed to understand these aggregate trends. For instance, comparing these distributions through time, Figure 3 suggests a tightening within each size band and a convergence in the distributions across the size bands, reflecting a narrowing of the productivity gap between the size groups as observed in Ardanaz-Badia, Awano and Wales (2016).

However, there are also some contrasting movements. For instance, between 2007 and 2015, the aggregate distribution of labour productivity shown in Figure 1 shifts to the right, with a notable reduction in the number of firms with low and negative levels of output per worker. Figure 3 suggests that much of this fall in the prevalence of negative productivity firms is a consequence of changes in the distribution of labour productivity among the smallest firms.

However, this improvement in productivity is set against a marked leftwards shift in the mass of the equivalent distributions for firms in size bands 2 (Figure 3b) and 4 (Figure 3d); and by an increase in the share of firms in size band 2 (Figure 3b) with negative levels of value added. These dynamics suggest that examining changes in the composition of different parts of the labour productivity distribution may be revealing in improving our understanding of the aggregate picture.

5.3 Characteristics of firms in the bottom 10% – “the laggards”

In our earlier paper, we examined some characteristics of firms in the top 10% of the labour productivity distribution. In this paper, we focus on the bottom 10% of this distribution, that is, those in the left tail of Figure 1. This study helps our understanding of the types of firms that are present in the bottom 10% of the productivity distribution and whether these have changed over time. To achieve this we examine the characteristics of these businesses relative to the characteristics of the population as a whole.

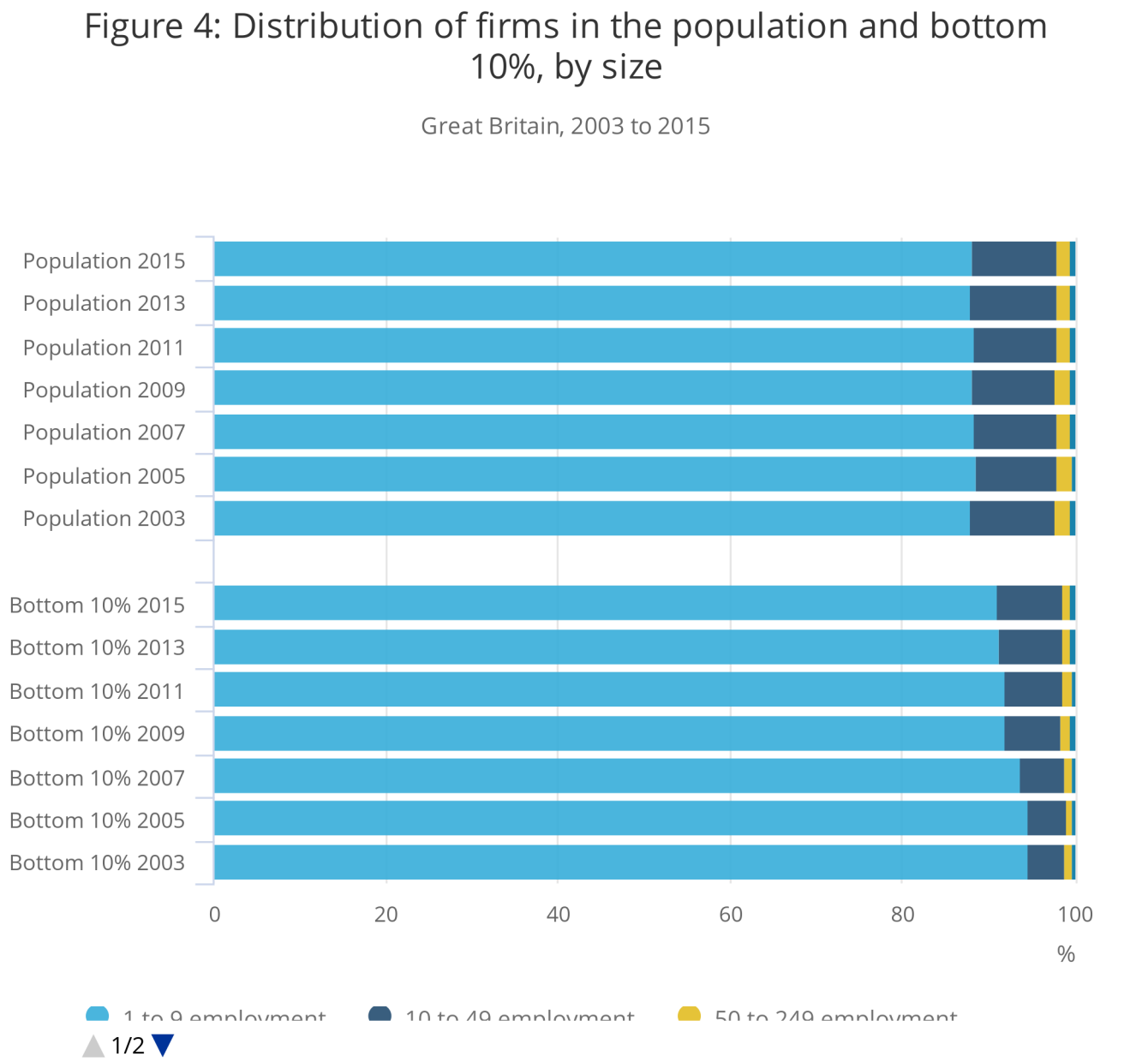
Firm size

We begin our analysis by comparing the size of businesses in the bottom 10% of the labour productivity distribution with the population of businesses. The upper panel of Figure 4 shows the proportion of firms in the business population as a whole that fall into four different size bands. Micro-firms (1 to 9 employment) made up a vast majority of businesses – accounting for just under 9 in 10 firms between 2003 and 2015 – while firms of 10 to 49 employment accounted for between 9% and 10% of firms on average over this period.

The largest firms (those with 50 to 249 employment and with 250 or more employment) accounted for the remainder – a picture that was broadly stable through time. Among firms in the bottom 10% of the labour productivity distribution (lower panel of Figure 4) the position is similar: just over 90% of businesses in this group had fewer than 10 employees in 2015. However, there were some modest changes through time: in particular, the smallest firms appeared to account for a slightly larger share of these businesses at the start of the period, falling gently between 2003 and 2015.

Figure 4: Distribution of firms in the population and bottom 10%, by size

Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Notes:

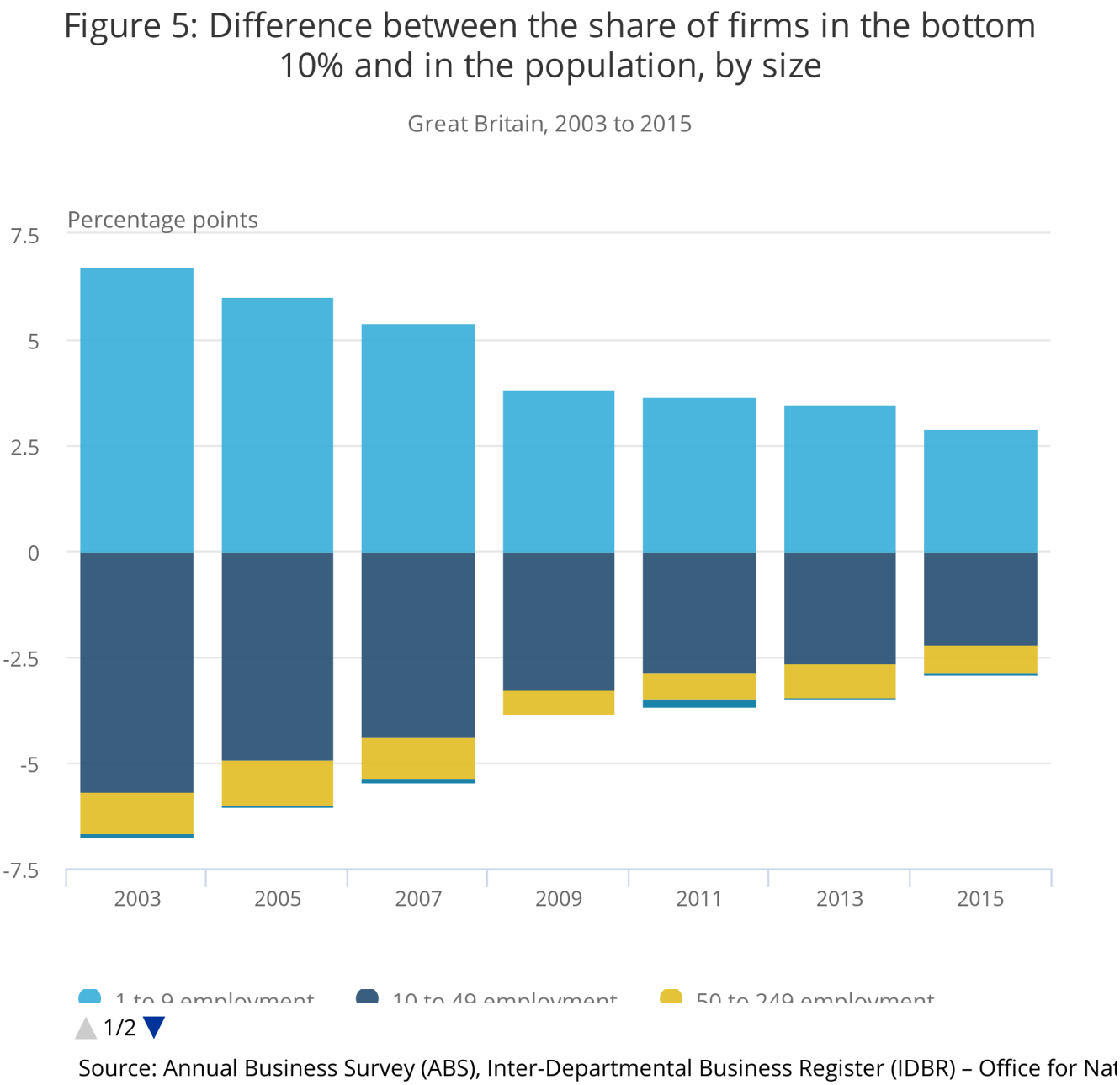
1. Includes all firms covered by the Annual Business Survey (ABS) excluding sections K (Financial and Insurance Activities) and L (Real Estate Activities).

These changes are clearer when we compare the relative prevalence of firms of different sizes in these two groups. Figure 5 shows the share of businesses in each size band in the bottom 10% less the share of firms in the same size band in the population as a whole. Groups that have a positive (negative) value in this representation are consequently over-represented (under-represented) among firms with low levels of labour productivity.

Figure 5 confirms that there were proportionately more micro-businesses among the bottom 10% compared with the population: in 2003, the share of businesses in the laggard group accounted for by micro-firms was around 6 percentage points larger than in the business population as a whole. However, Figure 5 also suggests that there has been some convergence over time, as the mix of businesses in the laggard group has shifted to look more like the businesses population as a whole.

Figure 5: Difference between the share of firms in the bottom 10% and in the population, by size

Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Notes:

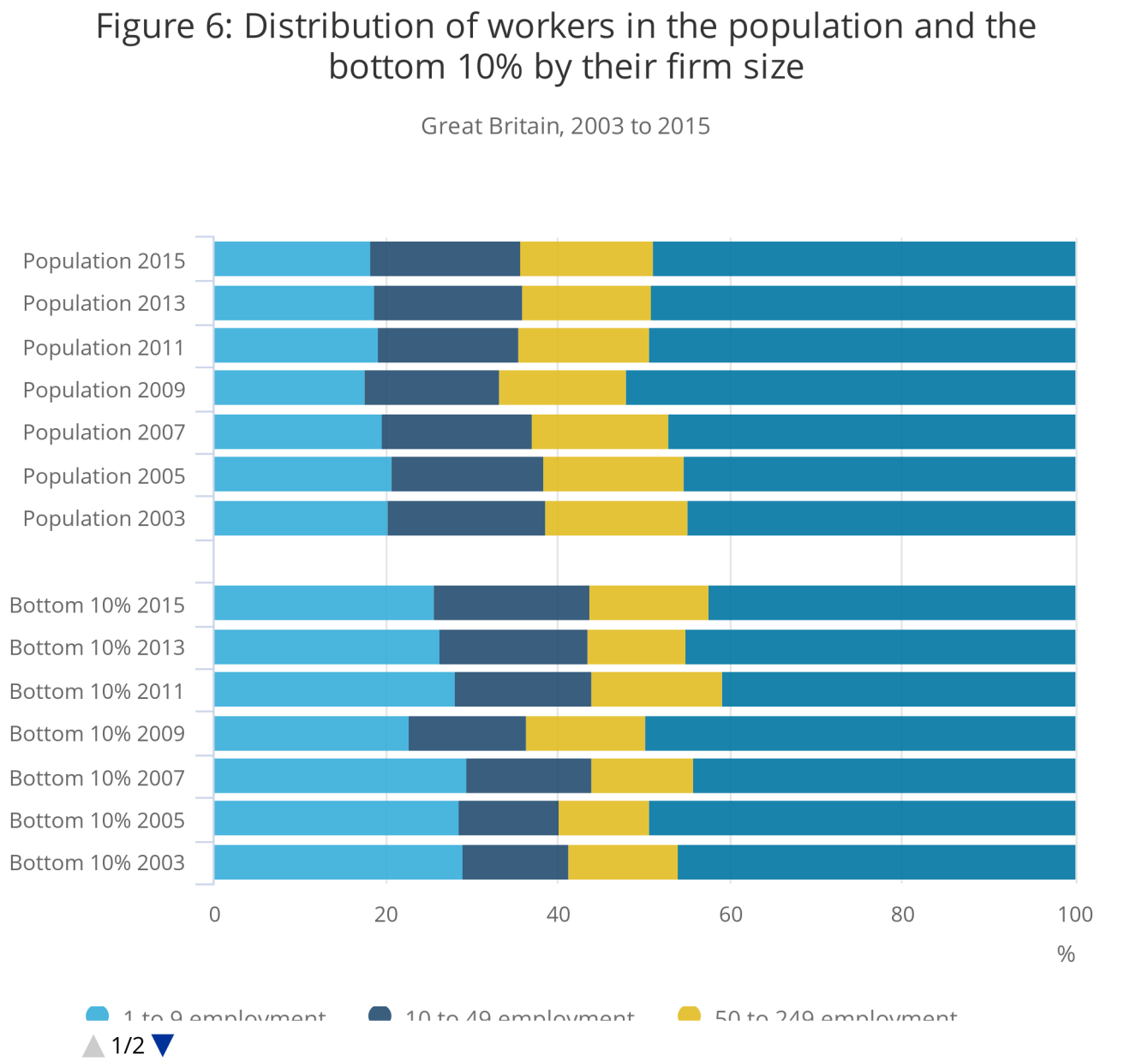
1. Includes all firms covered by the Annual Business Survey (ABS) excluding sections K (Financial and Insurance Activities) and L (Real Estate Activities).

The finding that micro-firms were over-represented among the least productive British businesses also held when we examined the distribution of workers across firms of different sizes. While Figures 4 and 5 examine the share of businesses of different sizes in the laggard group, Figures 6 and 7 examine the relative share of employment by firm size for the bottom 10% group. As might be expected, larger firms accounted for a much larger proportion of employment than of businesses in both panels of Figure 6.

While the largest businesses (250 or more employees) accounted for just 0.4% of the business population in 2015, they accounted for almost half of total employment over this period. For the laggard group, the largest firms accounted for 0.3% of businesses in 2015, but close to 40.0% of employment. Conversely, the smallest firms accounted for a much smaller – if still substantial – proportion of employment than their proportion of businesses.

Figure 6: Distribution of workers in the population and the bottom 10% by their firm size

Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Notes:

1. Includes all firms covered by the Annual Business Survey (ABS) excluding sections K (Financial and Insurance Activities) and L (Real Estate Activities).

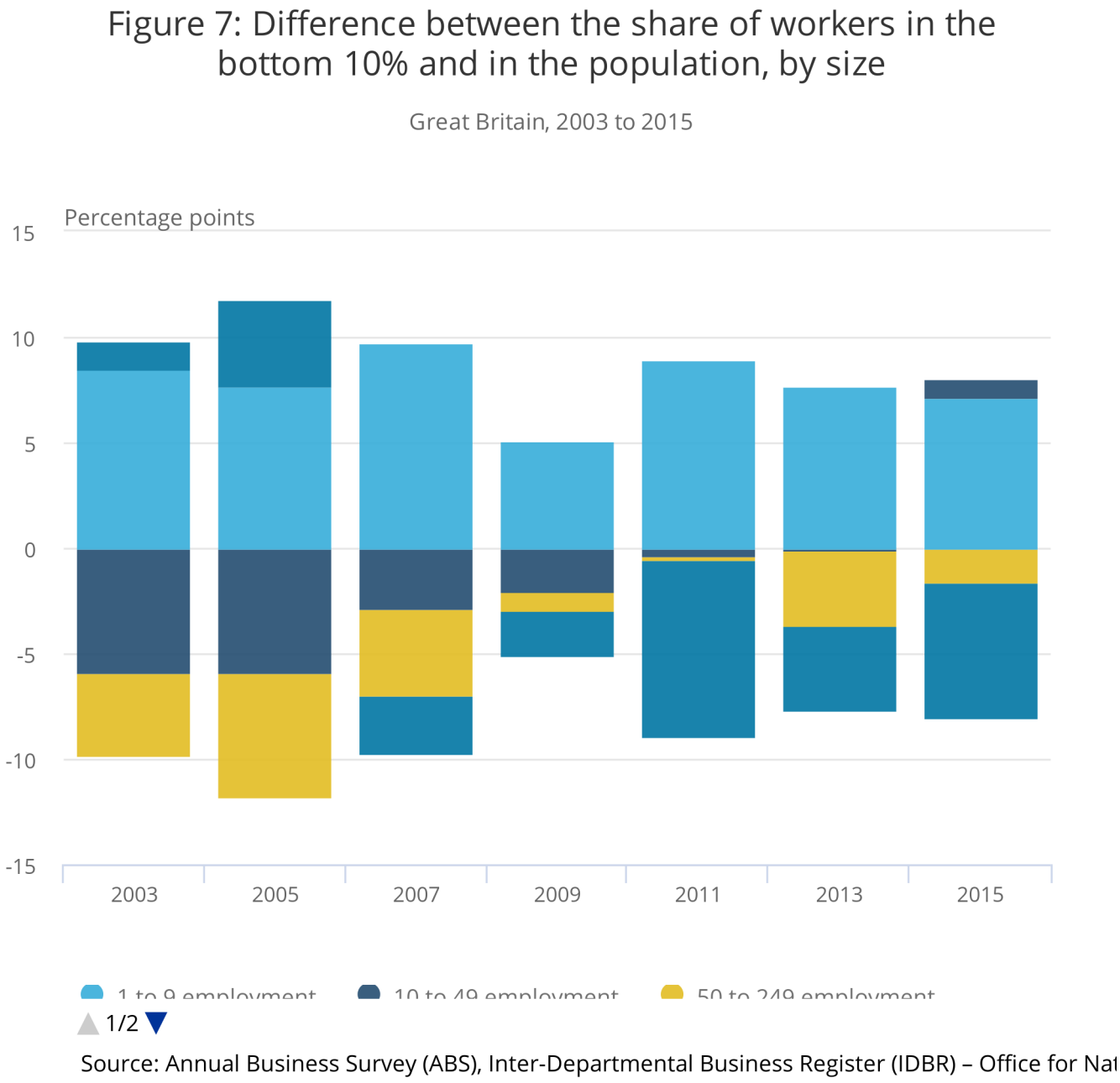
What can this analysis of the distribution of workers by firm size tell us about the laggard group? Firstly, Figures 6 and 7 confirm the earlier finding that smaller firms were more prevalent among low-productivity firms than among the population of businesses as a whole.

Figure 7 indicates that in 2015, the micro-firm share of employment among laggard firms was around 7 percentage points higher than for the population as a whole. Excepting the post-downturn years of 2009 and 2010, this fraction has been broadly stable over this period.

By contrast, the share of employment accounted for by the largest laggard employers is around 6 percentage points lower than in the population as a whole in 2015. More succinctly, whether measured by a share of businesses or a share of employment, the lowest productivity businesses in the UK were more likely to be smaller.

Figure 7: Difference between the share of workers in the bottom 10% and in the population, by size

Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Notes:

1. Includes all firms covered by the Annual Business Survey (ABS) excluding sections K (Financial and Insurance Activities) and L (Real Estate Activities).

However, the relative dynamics of Figures 5 and 7 are also revealing about the nature of this group of low productivity firms, suggesting three interesting trends. Firstly, Figures 6 and 7 together suggest that it is the smallest laggard micro-firms that have been dropping out of this group – either by exiting the market, or by finding a means to become more productive. To see this, note that the share of employment accounted for by micro-businesses in the population has been stable compared with the share of micro-businesses in the laggard group, which has been declining. This implies that the remaining micro-firms in the low productivity group must be slightly larger on average.

Secondly, changes to the employment share of business with between 10 and 49 employees suggest that these firms have become relatively more concentrated at the bottom of the labour productivity distribution. This trend is evident in Figure 6 – where the share of businesses in this size band in the laggard group is converging on that of the population as a whole – and in Figure 7 – where the employment share of the low productivity group in this size band has now risen above that for the population.

Thirdly, larger businesses appear to have improved their relative position over the past decade. While the effects are complex and should be seen in a context where other factors such as their industry can be weighed, this evidence suggests that larger businesses accounted for a smaller than proportionate share of firms and employment in the laggard group.

Age

The finding that a relatively large proportion of businesses in the “laggard” group were quite small raises several questions about their nature. Are these low-productivity firms in the early phase of their lives, during which start-up and experimentation costs exceed the value generated by sales? New firms often face steep competition from incumbents, who gain advantage through greater market experience, learning by doing, their relative capital intensity and economies of scale, making high productivity outcomes for young firms difficult. Equally, these small laggard firms might be relatively old firms, which have been shedding employment to remain in business. While both narratives might generate a group of low-productivity small firms, the policies which may address their situations might look quite different.

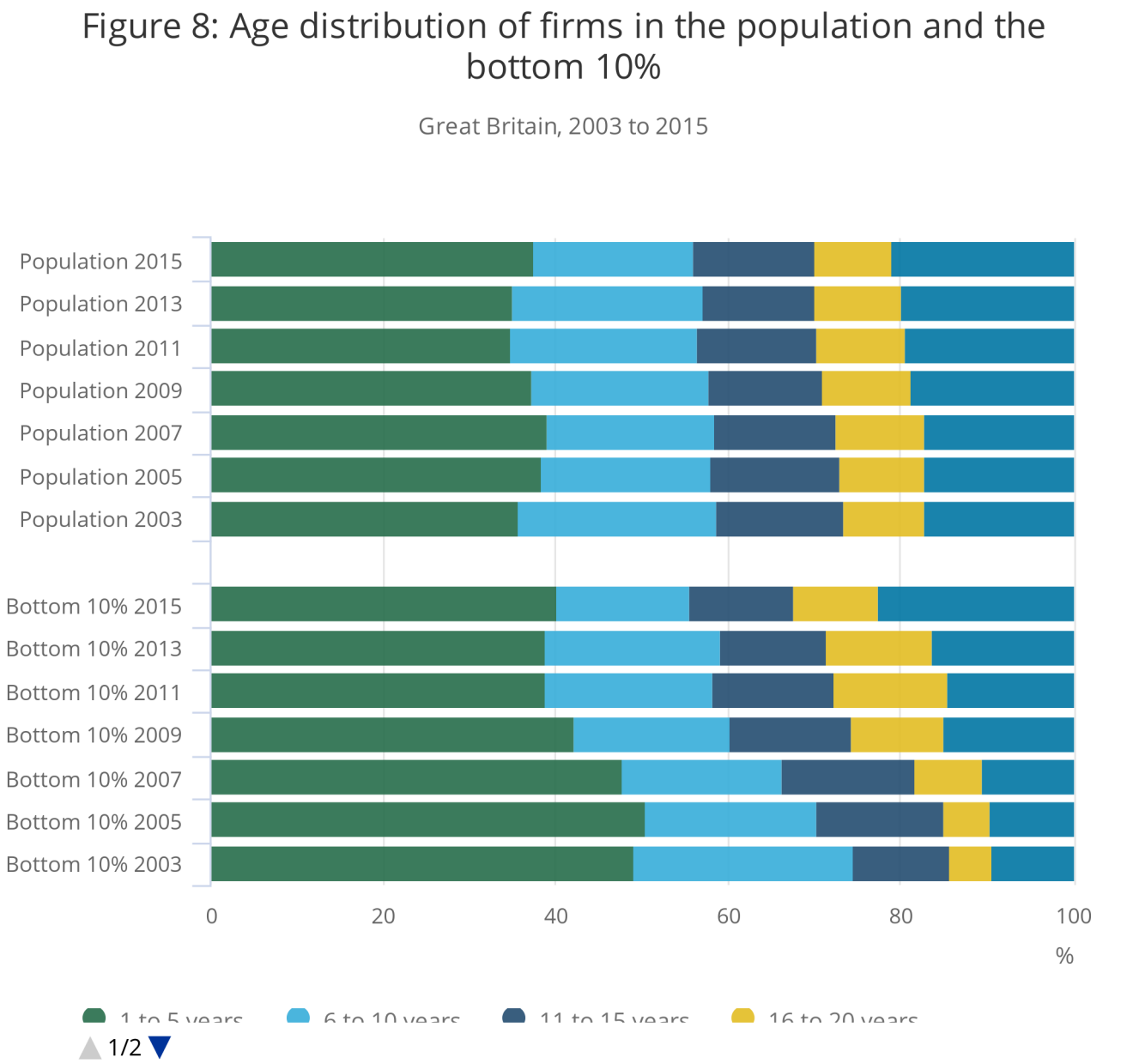
Figure 8 shows the age distribution of firms in the whole population (upper panel) and in the laggard group (lower panel). It suggests that young firms (aged 1 to 5 years) accounted for around 38% of the business population as a whole in 2015, and a further 19% were no more than 10 years old. This distribution remained fairly consistent between 2003 and 2015, although the combined share of these younger businesses has fallen very slightly over this period.

The age mix among businesses in the bottom 10% of the labour productivity distribution showed quite a similar picture for 2015, although there were more pronounced changes for this group relative to the whole population. Prior to the economic downturn, around half of the least productive businesses were no more than 5 years old and between two-thirds and three-quarters of these businesses were no older than 10 years.

However, over the last decade these shares have fallen consistently and in 2015 around 55% of these firms were in the two youngest age categories. This may partly reflect the fact that a majority of these firms are also micro-firms (1 to 9 employment)[3] – and whose share in this group has been falling (Figure 5). It is also consistent with older firms – which are mostly larger – having reserves to draw on even when they become relatively unproductive.

Figure 8: Age distribution of firms in the population and the bottom 10%

Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

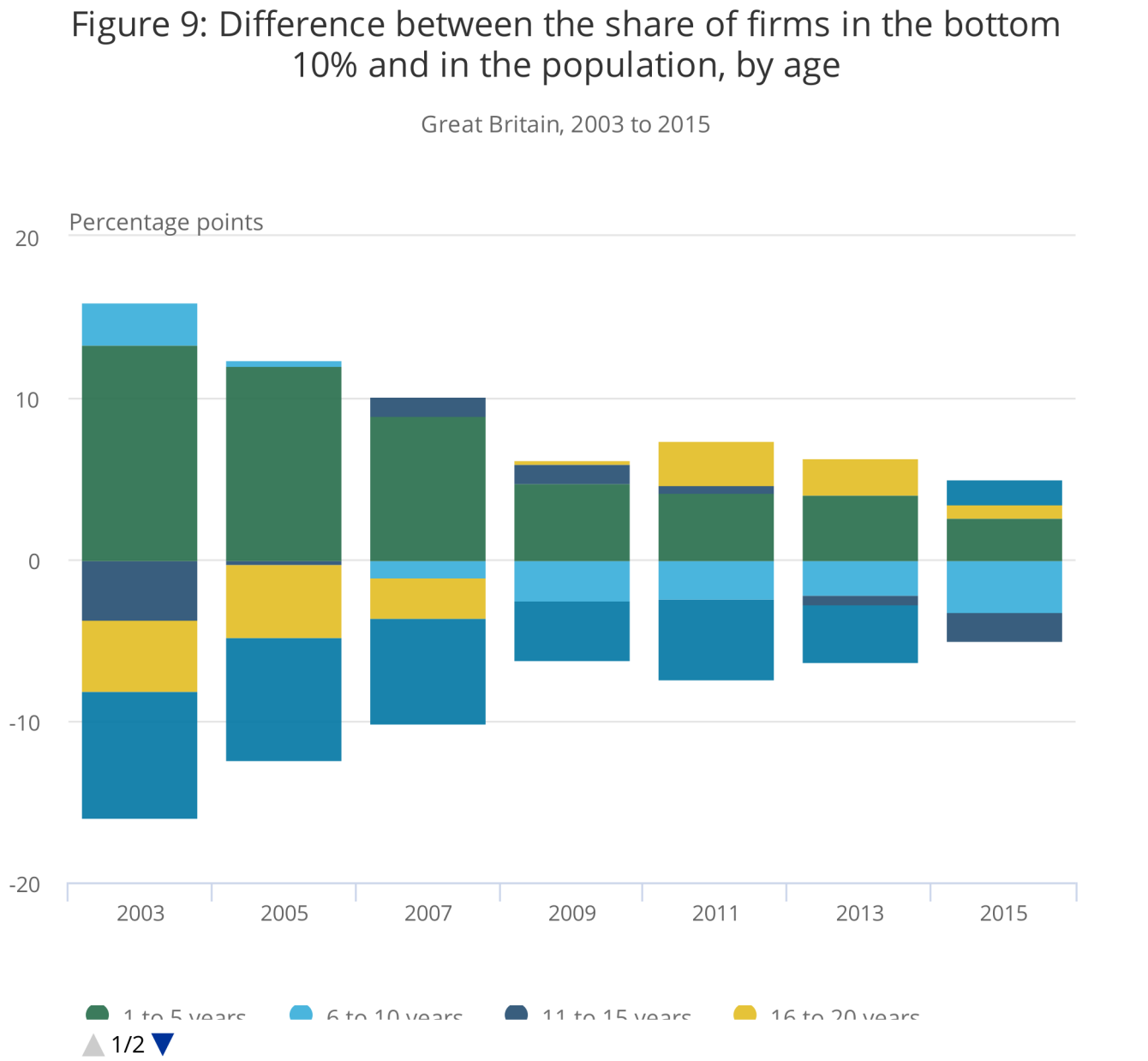
Notes:

1. Includes all firms covered by the Annual Business Survey (ABS) excluding sections K (Financial and Insurance Activities) and L (Real Estate Activities).

The result of these dynamics is a convergence in the age profile of businesses in the population and in the laggard group. Figure 9 shows the share of firms in the bottom 10% less the share for the population for each age group over time. This shows that the differences between these two groups have broadly been falling over time.

Figure 9: Difference between the share of firms in the bottom 10% and in the population, by age

Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Notes:

1. Includes all firms covered by the Annual Business Survey (ABS) excluding sections K (Financial and Insurance Activities) and L (Real Estate Activities).

The implications of this finding are unclear and suggest the need for further study. Does the fall in the prevalence of young firms in the laggard group reflect a positive selection effect: that recent start-ups have been able to achieve higher levels of labour productivity and so escape the lowest productivity group? Does it reflect changes in the relative advantages conferred on firms by incumbency over the last 10 years? Or does it reflect changes in the capacity of potential new entrants to join the marketplace? This raises some questions about the extent of business dynamism – a factor which has been raised as an explanation for the recent productivity weakness in the US (see Foster, Haltiwanger and Syverson (2008)), and one to which we intend to return in a future release.

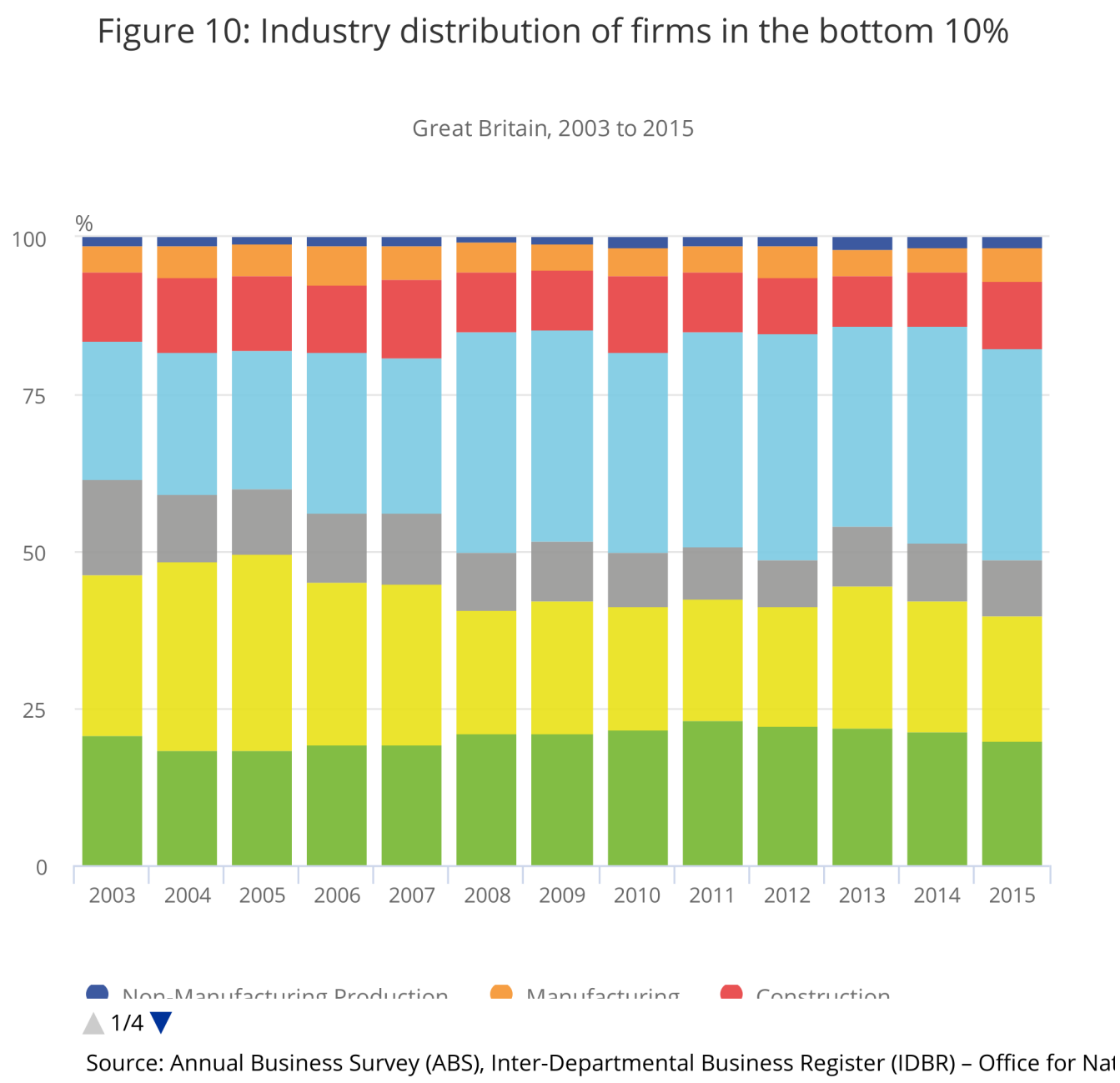
Industry

In our earlier paper, we found that firms in the top 10% of the labour productivity distribution cut across a broad range of industries. This result also applies to firms in the bottom 10% of the distribution. Figures 10 and 11 show the distribution of firms by industry in the “laggard” group and the population as a whole respectively, between 2003 and 2015. It shows that firms in the more labour intensive services industries accounted for the vast majority of firms in the bottom 10% – at least 8 in 10 of these firms across the years – while those in the more capital intensive production (manufacturing and non-manufacturing production) and construction industries accounted for the remainder.

These distributions also show some changes through time. Between 2003 and 2015, the most substantial change in the bottom 10% was the “distribution, hotels and restaurants” industry increasing its share from just over one-fifth (22%) to around one-third of these firms (34%) in 2015. Conversely, the “business services” and “transport, storage and communication” industries saw their shares in the laggard group fall over this period.

Figure 10: Industry distribution of firms in the bottom 10%

Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

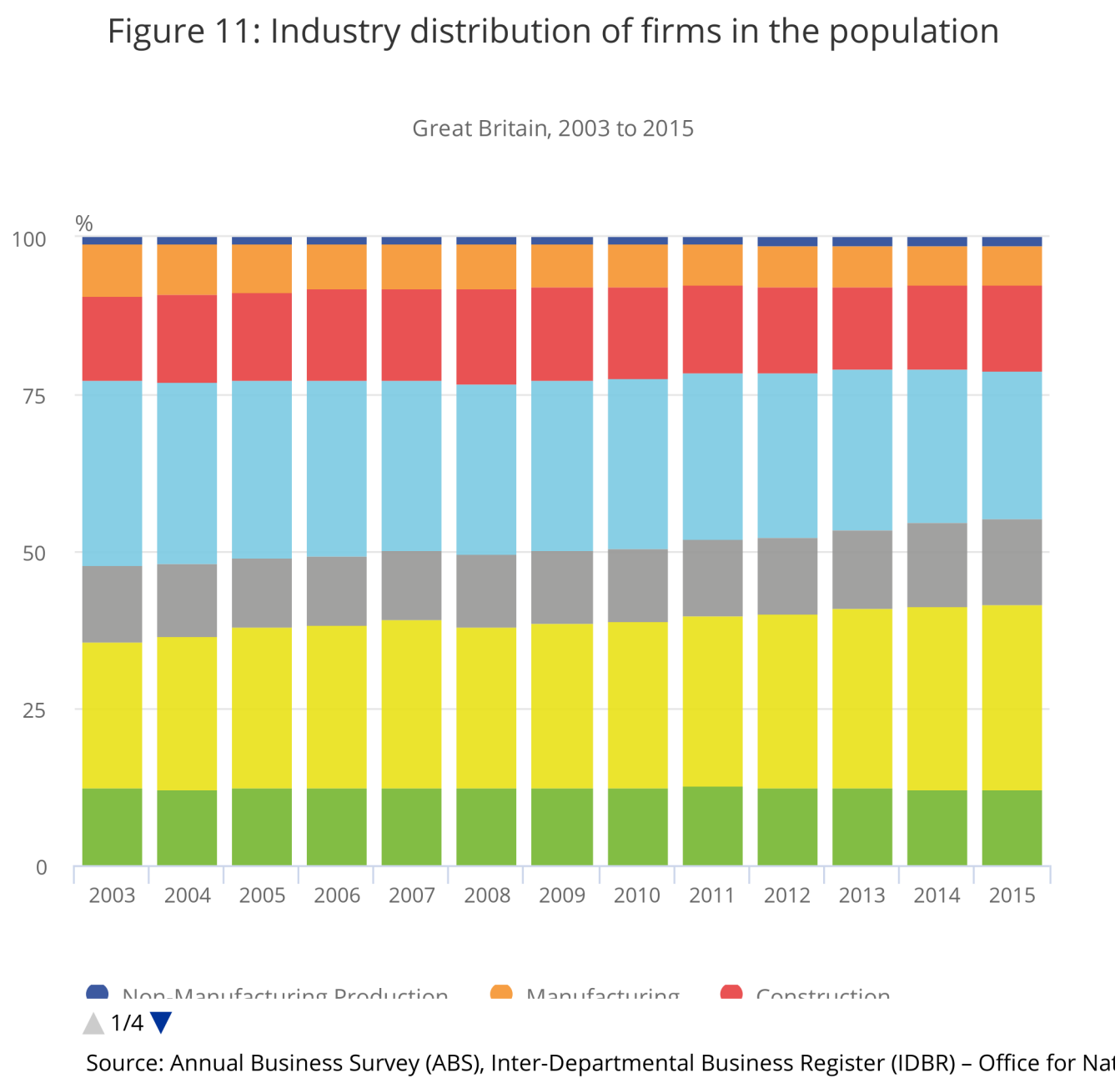
Notes:

1. Includes all firms covered by the Annual Business Survey (ABS) excluding sections K (Financial and Insurance Activities) and L (Real Estate Activities).

2. Key:
   Production equals Sections A (Agriculture, Forestry and Fishing), B (Mining and Quarrying), C (Manufacturing), D (Electricity, Gas, Steam and Air Conditioning Supply) and E (Water Supply; Sewerage, Waste Management and Remediation Activities).
   Construction equals Section F (Construction).
   Services: Administration equals Section N (Administrative and Support Service Activities).
   Services: Professional equals Section M (Professional, Scientific and Technical Activities). Services: Distribution, hotels and restaurants equals Sections G (Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles) and I (Accommodation and Food Service Activities).
   Services: Transport, storage, and communication equals Sections H (Transportation and Storage) and J (Information and Communication).
   Services: Other equals Sections P (Education), Q (Human Health and Social Work Activities), R (Arts, Entertainment and Recreation) and S (Other Service Activities).

Figure 11: Industry distribution of firms in the population

Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Notes:

1. Includes all firms covered by the Annual Business Survey (ABS) excluding sections K (Financial and Insurance Activities) and L (Real Estate Activities).

2. Key:
   Production equals Sections A (Agriculture, Forestry and Fishing), B (Mining and Quarrying), C (Manufacturing), D (Electricity, Gas, Steam and Air Conditioning Supply) and E (Water Supply; Sewerage, Waste Management and Remediation Activities).
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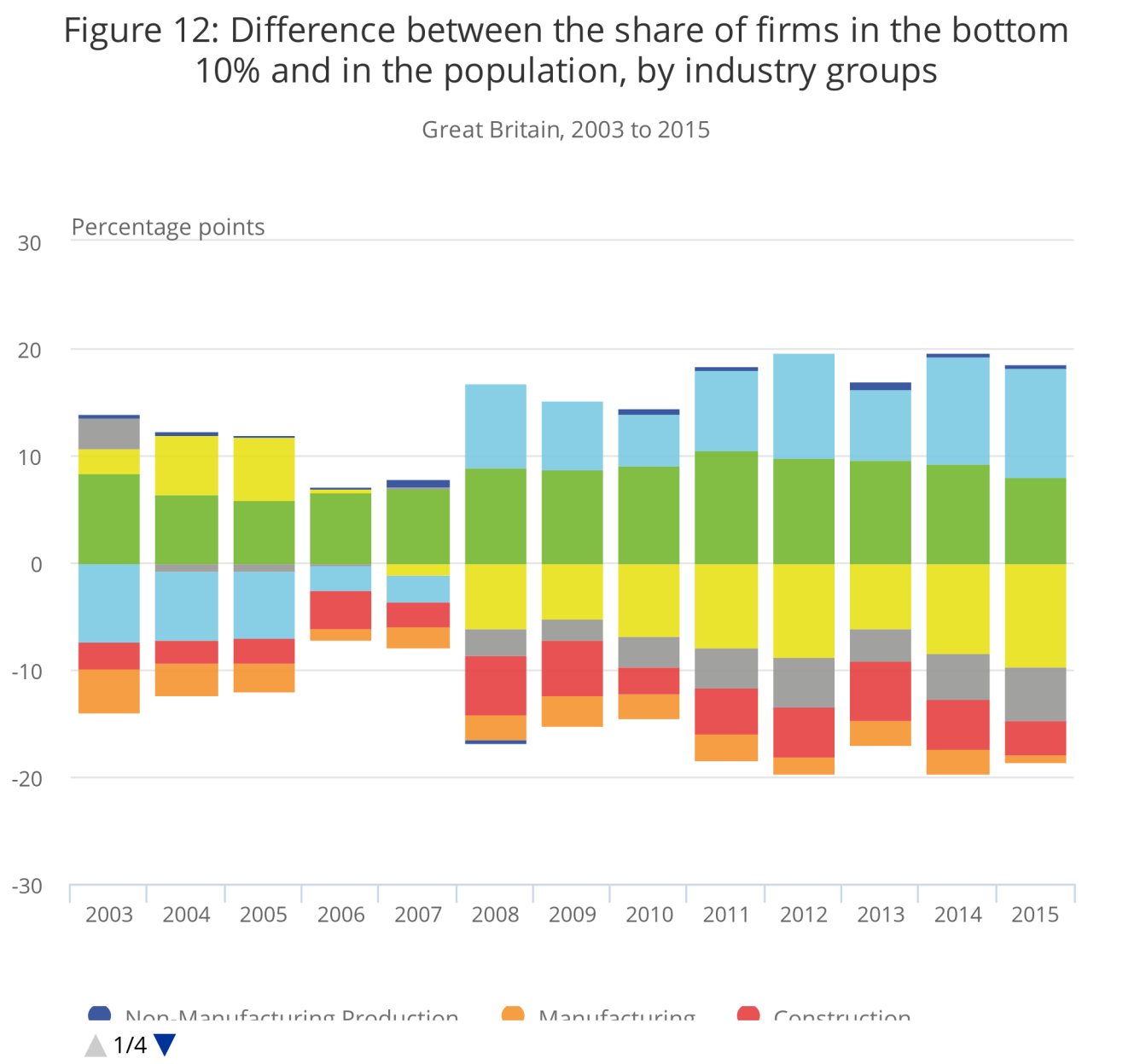
   Services: Administration equals Section N (Administrative and Support Service Activities).
   Services: Professional equals Section M (Professional, Scientific and Technical Activities). Services: Distribution, hotels and restaurants equals Sections G (Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles) and I (Accommodation and Food Service Activities).
   Services: Transport, storage, and communication equals Sections H (Transportation and Storage) and J (Information and Communication).
   Services: Other equals Sections P (Education), Q (Human Health and Social Work Activities), R (Arts, Entertainment and Recreation) and S (Other Service Activities).

These trends are made clearer in Figure 12, which shows the difference between the industrial mix of laggard firms and those of the population as a whole. As with Figures 5, 7 and 9, points which are positive (negative) in this presentation indicate over-representation (under-representation) in the bottom 10% relative to the population as a whole. It shows that a number of industries were consistently over- or under-represented among laggard businesses during this period: in particular, the “other services” industries had a consistently higher share in the bottom 10% than in the population. Exploring this effect in more detail, we found that the share of firms in the bottom 10% in “other services” was largely constituted by firms in “human health and social work activities” – including private healthcare providers, but also residential care and social work activities – and “other service activities”[4] – such as, membership of organisations and trade union activities. By contrast, manufacturing and construction were under-represented in the bottom 10% across this period. This was consistent with the low share of firms in manufacturing and construction industries among the laggard group, shown in Figure 10.

Figure 12 also highlights a number of marked changes in the industry mix of these groups. “Distribution, hotels and restaurants”, for instance, was under-represented in the laggard group, between 2003 and 2007, but this position reversed in 2008. In 2015, the share of firms in the laggard group was around 10% larger than in the population as a whole. Conversely, “business services” progressed in the opposite direction, with a larger share in the bottom 10% than in the population prior to 2007 but not afterwards [5].

Figure 12: Difference between the share of firms in the bottom 10% and in the population, by industry groups

Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Notes:

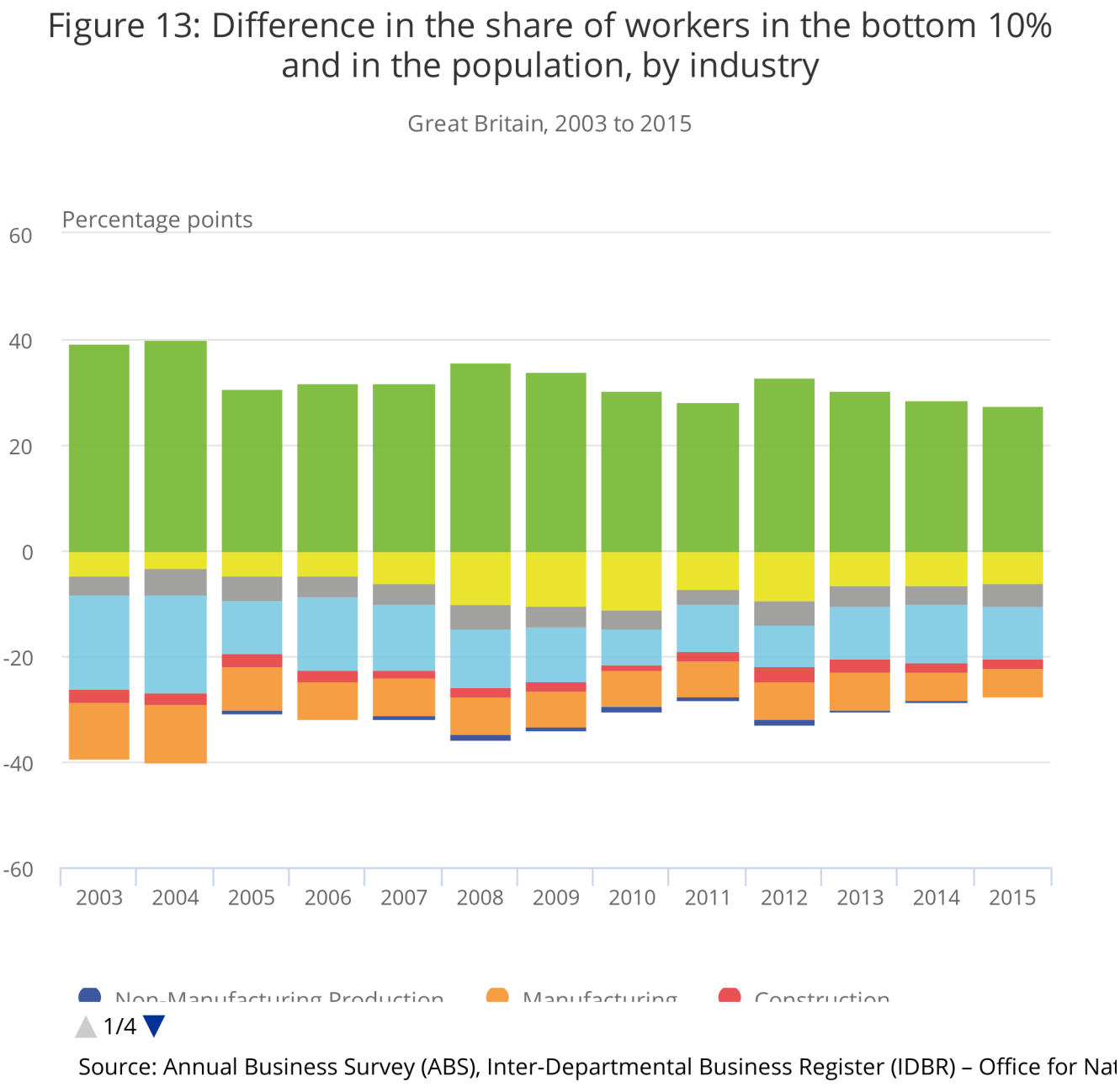
1. Includes all firms covered by the Annual Business Survey (ABS) excluding sections K (Financial and Insurance Activities) and L (Real Estate Activities).

2. Key:
   Production equals Sections A (Agriculture, Forestry and Fishing), B (Mining and Quarrying), C (Manufacturing), D (Electricity, Gas, Steam and Air Conditioning Supply) and E (Water Supply; Sewerage, Waste Management and Remediation Activities).
   Construction equals Section F (Construction).
   Services: Administration equals Section N (Administrative and Support Service Activities).
   Services: Professional equals Section M (Professional, Scientific and Technical Activities). Services: Distribution, hotels and restaurants equals Sections G (Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles) and I (Accommodation and Food Service Activities).
   Services: Transport, storage, and communication equals Sections H (Transportation and Storage) and J (Information and Communication).
   Services: Other equals Sections P (Education), Q (Human Health and Social Work Activities), R (Arts, Entertainment and Recreation) and S (Other Service Activities).

Finally, to examine the interaction between firm-size and industry, we consider the relative employment shares of different industries in the population as a whole and in the laggard group. Figure 13 depicts the share of employment by industry in laggard firms, less the equivalent shares for the population of firms. This analysis – which differs considerably from the firm-share analysis in Figure 12 – suggests that the share of workers in “other services” industries made up the majority of those over-represented in the bottom 10%. This reflects the labour intensity of the industry compared with others, relatively larger firms in this industry in the bottom 10% in terms of employment, or a combination of both. We intend to return to this question in future analysis.

Figure 13: Difference in the share of workers in the bottom 10% and in the population, by industry

Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Notes:

1. Includes all firms covered by the Annual Business Survey (ABS) excluding sections K (Financial and Insurance Activities) and L (Real Estate Activities).

2. Key:
   Production equals Sections A (Agriculture, Forestry and Fishing), B (Mining and Quarrying), C (Manufacturing), D (Electricity, Gas, Steam and Air Conditioning Supply) and E (Water Supply; Sewerage, Waste Management and Remediation Activities).
   Construction equals Section F (Construction).
   Services: Administration equals Section N (Administrative and Support Service Activities).
   Services: Professional equals Section M (Professional, Scientific and Technical Activities). Services: Distribution, hotels and restaurants equals Sections G (Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles) and I (Accommodation and Food Service Activities).
   Services: Transport, storage, and communication equals Sections H (Transportation and Storage) and J (Information and Communication).
   Services: Other equals Sections P (Education), Q (Human Health and Social Work Activities), R (Arts, Entertainment and Recreation) and S (Other Service Activities).

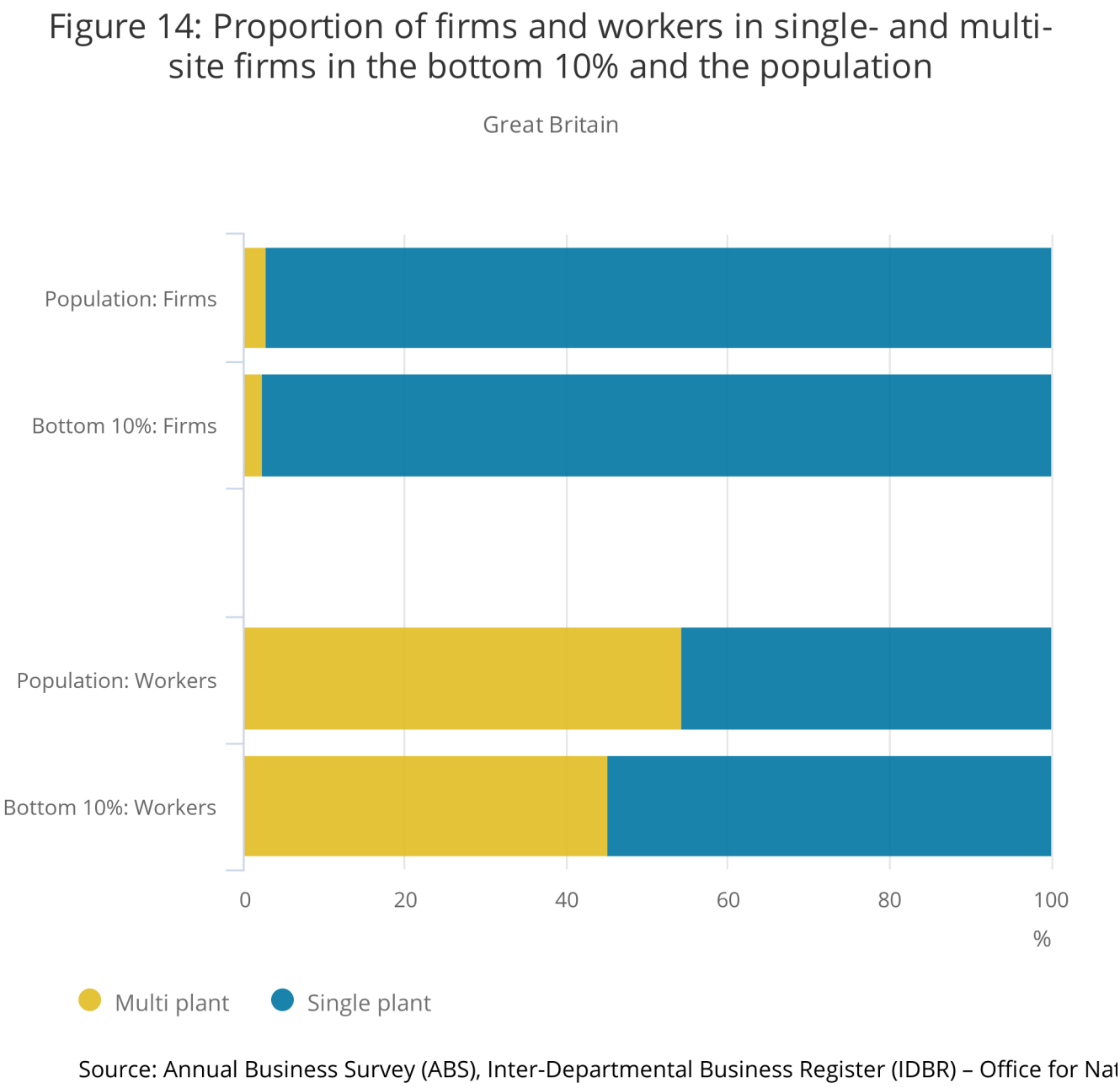
Single or multi-site businesses

Using data from the Annual Business Survey (ABS) and the Inter-Departmental Business Register (IDBR) we can classify businesses based on the number of sites[6] from which they conduct business activities within Great Britain. There are a range of reasons for thinking that multi-plant status might have a bearing on the productivity of a business. All else equal, firms with more sites may be larger in size – creating economies of scale; multi-sites firms may also have greater specialisation of functions and can organise to place their production and other functions where it is most geographically advantageous. However, there may be disadvantages in having multiple sites such as increased monitoring costs and management burden.

The shares of single- and multi-site firms in the “laggard” group and the population as a whole are broadly similar (Figure 14), however, the shares of workers they employ is quite strikingly different. This analysis suggests that multi-site firms accounted for a larger share of workers in the population, compared with their share in the bottom 10%. This has two implications: firstly, single-site firms are relatively as prevalent among firms with low levels of labour productivity as in the population, and secondly, that the multi-site firms in the bottom 10% are likely to be relatively smaller in employment terms than the typical multi-site firm in the population as a whole.

Figure 14: Proportion of firms and workers in single- and multi-site firms in the bottom 10% and the population

Great Britain



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

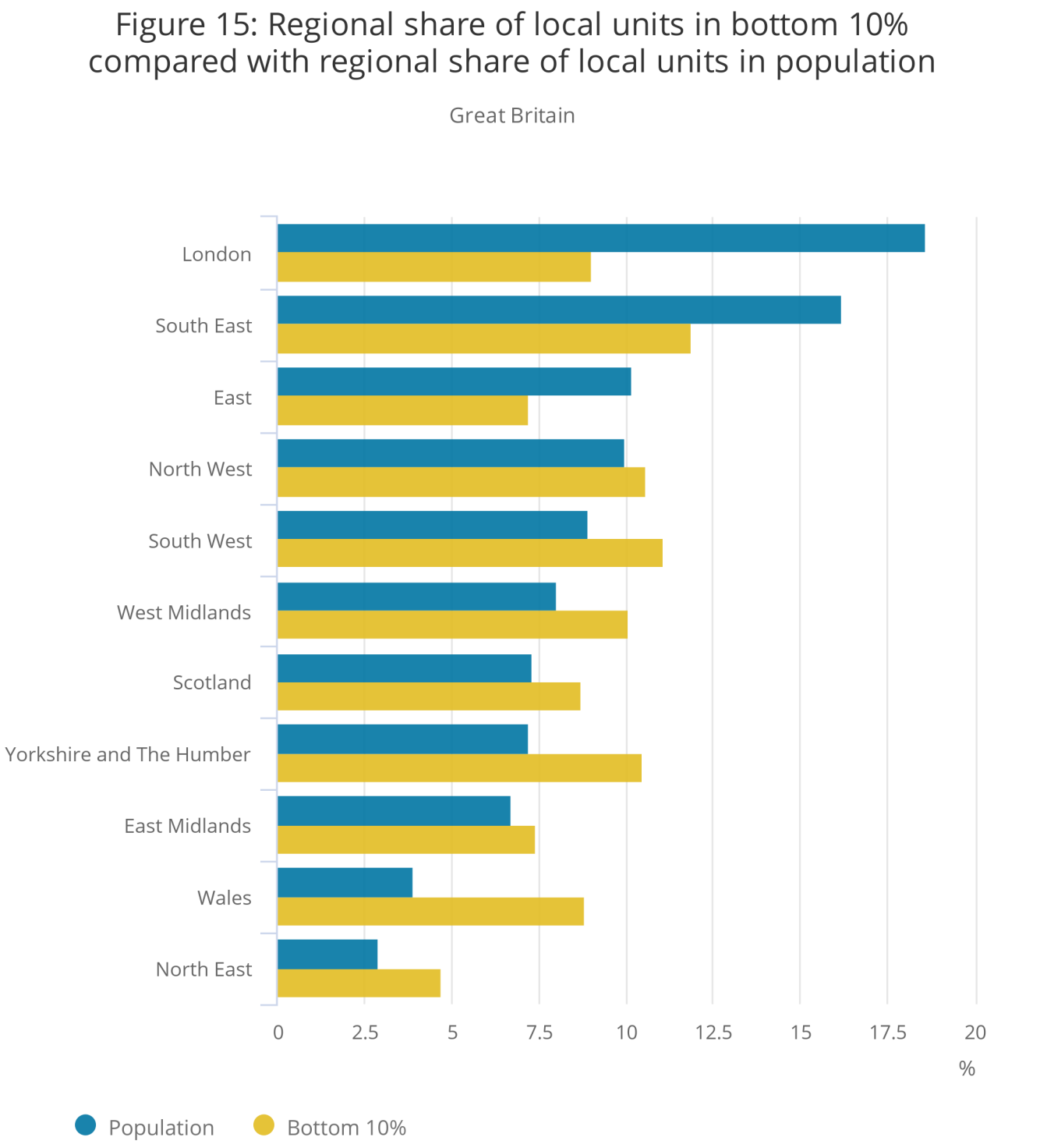
Developing estimates of the regional presence of firms in different parts of the productivity distribution is challenging because of the cross-boundary nature of many firms. In particular, when a given low-productivity enterprise is head-quartered in London, for example, but conducts most of its business from a number of plants across the UK, it is not clear how helpful it is to count this as an unproductive, London-based business.

To avoid problems arising from the headquartering of businesses, we use a slightly different version of the Annual Business Survey (ABS) to explore the distribution of labour productivity across the NUTS1 (Nomenclature of Territorial Units for Statistics) regions[7]. This version of the ABS apportions firms' output to their various sites (also known as plants or local units) across geographic locations where the economic activities take place [8]. Using these data, we are able to analyse which regions have a higher concentration of plants in the bottom 10% of the plant-level labour productivity distribution. The most recent ABS data available at the plant level is for the year 2014[9].

Figure 15 shows the proportion of local units in each NUTS1 region of Great Britain [10], alongside the share of those plants which fall into the bottom 10% of establishments by labour productivity. Comparing these two shares therefore provides a sense of regional performance: a region whose share of "laggard" plants exceeds (falls below) its share of all plants hosts a set of relatively weak (strong) plants. Figure 15 suggests that only London, the South East and the East were under-represented among low productivity plants. These regions accounted for 18.6%, 16.2% and 10.2% of all plants respectively, but just 9.0%, 11.9% and 7.2% of low-productivity plants respectively. By contrast, the North East accounted for just 2.9% of all plants, but 4.7% of all low-productivity plants in 2014, while Yorkshire and the Humber accounted for 10.5% of low productivity plants, but just 7.2% of all establishments. In Wales, the regional share of low-productivity plants (8.8%) was more than twice the regional share of local units (3.9%) over the same period.

Figure 15: Regional share of local units in bottom 10% compared with regional share of local units in population

Great Britain



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

In an earlier section, we established that there was a higher concentration of firms in the bottom 10% in the services industries, compared with those in production. In Table 1, we explore how wide-spread this was across the regions and devolved nations, for plants in the population and in the bottom 10%. We found that there was on average one local unit in production to four in services industries in the population, except for London where there was one in production to seven local units in services industries – almost twice the ratio in other regions.

However, for the bottom 10%, the ratios of plants in production to plants in the services industries were higher than for the population across board and showed notable variation across the regions. The dominance of services plants in the bottom 10% was most prominent in the South West, West Midlands and North East, which indicated a relatively lower share of laggards in production industries in these regions.

Table 1: Ratio of production to services plants in the population and bottom 10%, by regions, Great Britain, 2014

	Population			Bottom 10%		
	Production (%)	Services (%)	Ratio of Production to Services	Production (%)	Services (%)	Ratio of Production to Services
Great Britain	19	81	4	4	96	27
North East	20	80	4	2	98	46
North West	19	81	4	3	97	29
Yorkshire and the Humber	21	79	4	3	97	31
East Midlands	22	78	4	15	85	6
West Midlands	21	79	4	2	98	49
East	22	78	4	2	98	41
London	13	87	7	3	97	29
South East	19	81	4	3	97	32
South West	21	79	4	2	98	56
Wales	21	79	4	3	97	35
Scotland	20	80	4	3	97	34

Source: Annual Business Survey (ABS), Business Register Employment Survey (BRES) – Office for National Statistics (ONS)

Notes:

1. These figures are not directly comparable to those on industry alone, as these depend on the industrial classification of the plant, rather than the industrial classification of the enterprise.

2. A detailed industry breakdown by region is available in Table 5 in the Annex to this paper.

3. Key:

Production covers:

Non-Manufacturing Production equals Sections A (Agriculture, Forestry and Fishing), B (Mining and Quarrying), D (Electricity, Gas, Steam and Air Conditioning Supply) and E (Water Supply; Sewerage, Waste Management and Remediation Activities).

Manufacturing equals Section C (Manufacturing).

Construction equals Section F (Construction).

Services covers:

Services: Distribution, hotels and restaurants equals Sections G (Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles) and I (Accommodation and Food Service Activities).

Services: Transport, storage, and communication equals Sections H (Transportation and Storage) and J (Information and Communication).

Services: Business equals Sections M (Professional, Scientific and Technical Activities) and N (Administrative and Support Service Activities)

Services: Other equals Sections P (Education), Q (Human Health and Social Work Activities), R (Arts, Entertainment and Recreation) and S (Other Service Activities).

5.4 Survival rates

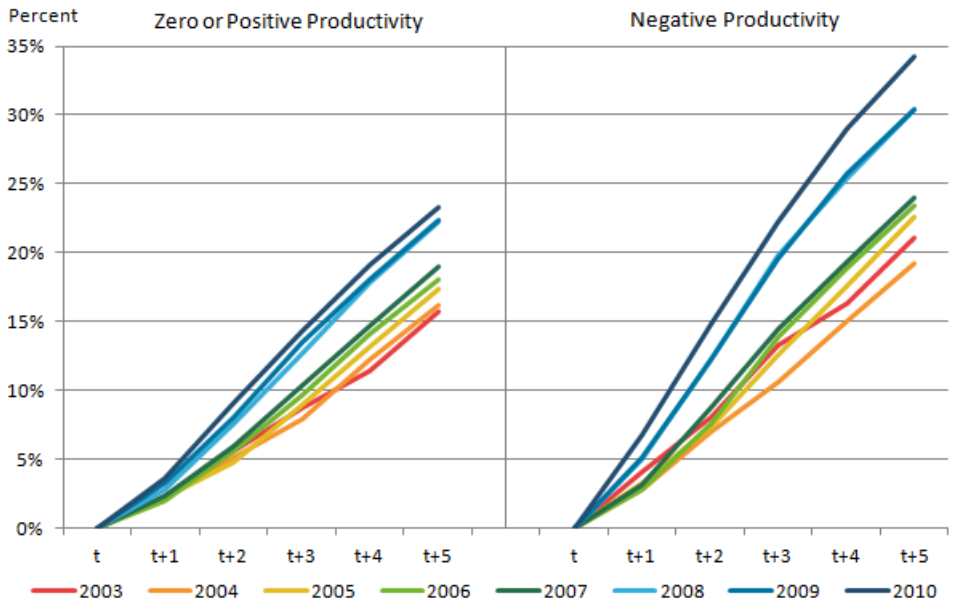
The final aspect of our analysis concerns the longer-term prospects of firms at different points in the labour productivity distribution. In an economy with well-functioning capital and labour markets, economists would expect that resources would be reallocated away from relatively low-productivity firms towards higher productivity activities. As a consequence, firms with relatively low levels of productivity are more likely to exit, as they face increasing competition for their factor inputs, while firms with relatively high levels of productivity are expected to expand. These effects have been under particular scrutiny since the onset of the economic downturn: evidence suggests that this “reallocation” effect has performed in an unusual fashion over recent years – acting to reallocate resources towards lower labour productivity activities – and is at the centre of a debate over the effect of the economic downturn on mechanisms for capital allocation.

To examine the likelihood of survival among firms with different levels of labour productivity, we augmented data from the Annual Business Survey (ABS) with information from the Inter-Departmental Business Register (IDBR), on whether or not a firm is “dead” or “alive” in each of the 5 years following its selection for the ABS. The data presented in this section therefore relates to the unweighted ABS sample.

Figure 16 shows the results of this analysis, plotting the cumulative proportion of businesses who died following a record of zero or positive labour productivity in time t (left-hand panel) and among firms with negative productivity in time t (right-hand panel) at annual intervals. In this representation, each curve shows information for businesses selected for the ABS in a given year and each point shows the share of those firms who have died after a given number of periods. Higher points – such as those in the right-hand panel for 2010 – indicate a larger proportion of firm deaths[11].

Figure 16: Death rates for firms on the Annual Business Survey with negative and “zero or positive” productivity

Great Britain, 2003 to 2015



This analysis suggests that death rates among firms that experienced negative productivity shocks were higher than those for other firms and that the magnitude of this effect varied through time. The right-hand panel of Figure 16 makes this latter point particularly clear: the 5-year death rate for businesses that are observed with a negative level of productivity in period t rises from just below 20% in 2004 to almost 35% in 2010. This annual variation is also evident in the left-hand panel, but it indicates that businesses that struggled during the economic downturn were more likely to exit the market than at any point during the previous 8 years.

Comparing the death rates shown in the two panels of Figure 16, we observe that the slope of the curves is steeper for negative value added firms than for other businesses, indicating that a larger proportion of these businesses died faster than firms in the remainder of the population. This trend is even more accelerated after the downturn, where a notably higher share of firms with negative productivity died compared with the share of firms with zero or positive productivity. This is consistent with the literature and shows that among firms with negative productivity in 2010, over 65% were alive 5 years on, compared with over 75% of those with zero or positive productivity.

This analysis suggests that one aspect of the reallocation mechanism – that of firm death – appears to have operated broadly as expected over the post-downturn period. Firms that suffered a negative shock – in terms of negative gross value added (GVA) – to labour productivity were more likely to exit than other firms over the post-downturn period. However, it is unclear from this analysis whether this effect was stronger or weaker during the recent downturn than following earlier economic contractions. This is a question that we intend to return to in a future release.

Notes for: Results

1. See Riley, R., Rosazza Bondibene, C. and Young, G. 2014.
2. This is also evident in the relatively higher productivity levels of the median firm in larger size bands in Table 4 of the Annex of this paper.
3. See Table 3 in Annex for a distribution of firms by size and age.
4. See Figure 20 in the Annex to this paper for more detail.
5. See the Annex for details of their industry composition.
6. Also called local units, establishments or plants, where some form of business activity occurs – see Evans, P. and Welpton, R. (2009).
7. The Nomenclature of Territorial Units for Statistics (NUTS1) includes: Wales, Scotland, Northern Ireland and the nine English regions. However, our analysis covers Great Britain and therefore excludes Northern Ireland.
8. Published regional ABS estimates are available.
9. See ABS Technical Report (2014) for a detailed discussion of ABS regional apportionment.
10. Figure 25 in Annex 2 shows the share of plants in the Bottom 10% as a percentage of the total number of plants in each region and devolved nation.
11. Note that the data represented here are simple survey averages and are not weighted to reflect the population of firms. This means that variation in the sample selected for the Annual Business Survey may also affect survival rates. This is something that we intend to return to in a future release.

7 . Conclusions and next steps

The analysis presented in this paper has focused on the characteristics of firms in the bottom 10% of the labour productivity distribution – the “laggard” group of businesses. It has shown how the characteristics of these firms – their size, age, industry and region – vary relative to the population as a whole and has presented some preliminary evidence on how firm survival has varied over the past decade – in particular, among businesses that suffered a shock relating to negative labour productivity during the economic downturn. As such, it improves our understanding of the lower tail of the productivity distribution and has highlighted a number of trends among this group, which have changed through time.

We found that firms in the bottom 10% of the labour productivity distribution tended to be smaller and younger than firms in population as a whole. They were more likely to be single-site businesses, working in the services industries, within which the “distribution, hotels and restaurants” and “other services” industries were disproportionately represented. We also found that in 2014, Wales, the North East and Yorkshire and the Humber accounted for a disproportionately large share of establishments[1] in the bottom 10% compared with the business population as a whole. Lastly, we found lower survival rates for firms with negative gross value added (GVA) – and therefore those with negative productivity – compared with firms with higher levels of productivity.

Taken together, the results of this paper suggest that changes in the prevalence of relatively unproductive firms have an impact on the overall level of productivity in the UK’s private business economy – although their role is at best a partial one. This analysis suggests that the post-downturn period has been particularly challenging for small, young, services firms in particular and that during this period there was a relative increase in the likelihood that low-productivity firms would exit the market place. As such, this paper improves our understanding of the lower tail of the productivity distribution.

This work suggests a number of avenues for future work. Firstly, the productivity teams are working to enable a more holistic analysis of firms at different points in the labour productivity distribution by linking and matching data from a range of different sources. Work to examine the role of foreign direct investment (FDI) and trade flows on firm level productivity is ongoing and would enable a deeper understanding of the behaviour of firms at different points in the productivity distribution.

Secondly, we are working to develop a set of micro-level capital stocks and services data, which would enable analysis of firms’ multi-factor productivity, as well as their labour productivity. This work may change some of the conclusions reached in this article, as a more complete account can be taken of firm-level inputs.

Thirdly, the exploratory analysis of firm survival and age, which is presented in this article, suggests that entry and exit dynamics may be important in the UK context – something that the recent behaviour of the reallocation effect on aggregate labour productivity would tend to support.

Notes for: Conclusions and next steps

1. Also called sites or plants where some form of business activity occurs – see Evans, P. and Welpton, R. (2009).

8 . References

Ardanaz-Badia, A., Awano, G. and Wales, P. (2017) “Labour productivity measures from the Annual Business Survey: 2006 to 2015”

Ayoubkhani, D. (2014) “A comparison between Annual Business Survey and National Accounts of Value Added”, Office for National Statistics

Evans, P., and Welpton, R. (2009) “Business Structure Database – The Inter-Departmental Business Register (IDBR) for Research”. Economic & Labour Market Review, Volume 3, No 6, June 2009.

Foster, L., Haltiwanger, J. and Syverson, C. (2008) "Reallocation, Firm Turnover, and Efficiency: Selection on Productivity or Profitability?" American Economic Review, 98(1): 394-425.

Haldane, A. (2017) “The Productivity Puzzles”, Speech at the London School of Economics

Riley, R., Rosazza Bondibene, C. and Young, G. (2014) "Productivity dynamics in the Great Stagnation: evidence from British businesses". CFM discussion paper series, CFM-DP2014-7. Centre For Macroeconomics, London, UK

Syverson, C. (2011) ‘What determines productivity?’ Journal of Economic literature, 49:2, 326-365

9 . Links to related statistics

5 July 2017: UK productivity introduction: Jan to Mar 2017 draws together the headlines of the productivity releases into a single release, providing additional analysis of our productivity statistics.

5 July 2017: Labour productivity: Jan to Mar 2017 contains the latest estimates of labour productivity for the whole economy and a range of industries, together with estimates of unit labour costs.

5 July 2017: Introducing industry-by-region labour metrics and productivity presents new, experimental industry-by-region productivity metrics. This includes measures of hours worked, jobs, and accompanying productivity measures for the SIC letter industries in the NUTS1 regions.

5 July 2017: Introducing division level labour productivity estimates provides an overview of new and experimental estimates of labour productivity at the 2-digit SIC industry level for the UK and provides some initial analysis demonstrating trends in the data.

5 July 2017: Who are the “laggards”? Understanding firms in the bottom 10% of the labour productivity distribution in Great Britain examines the characteristics of businesses in the bottom 10% of the labour productivity distribution in terms of their size, age, industry and location, between 2003 and 2015.

5 July 2017: Developing improved estimates of Quality Adjusted Labour Inputs using the Annual Survey of Hours and Earnings: A progress report describes work to improve the precision of income weights used in quality adjustment and to develop finer industry granularity of quality adjusted labour input for multi-factor productivity.

5 July 2017: Developing new measures of infrastructure investment: July 2017 is the first in a series of papers on infrastructure statistics, focusing on definitional and data challenges in measuring infrastructure investment.

5 July 2017: Quarterly public service productivity (experimental statistics): Jan to Mar 2017 presents experimental estimates for quarterly UK total public service productivity, inputs and output to provide a short-term, timely indicator of the future path of annual public service productivity estimates.

5 April 2017: International comparisons of UK productivity (ICP), final estimates: 2015 presents an international comparison of labour productivity across the G7 nations, in terms of growth in GDP per hour and GDP per worker.

5 April 2017: Multi-factor productivity estimates: Experimental estimates to 2015 decomposes output growth into the contributions that can be accounted for by labour and capital inputs. The contribution of labour is further decomposed into quantity (hours worked) and quality dimensions.

5 April 2017: Labour productivity measures from the Annual Business Survey, 2006 to 2015 presents an analysis of detailed productivity trends and distributions among businesses in the UK from 2006 to 2015, using firm-level data from the Annual Business Survey (ABS).

5 April 2017: Introducing quarterly regional labour input metrics provides a first look at the new experimental quarterly regional labour input metrics. Hours and jobs for the NUTS1 regions.

5 April 2017: Exploring labour productivity in rural and urban areas in Great Britain investigates differences in rural and urban labour productivity in Great Britain using firm-level microdata analysis of the business economy.

6 January 2017: Regional and sub-regional productivity in the UK: Jan 2017 provides statistics for several measures of labour productivity. Statistics are provided for the NUTS1, NUTS2 and NUTS3 subregions of the UK, and for selected UK city regions.

6 January 2017: Regional firm-level productivity analysis for the non-financial business economy: Jan 2017 provides experimental analysis on the sources of regional differences in labour productivity in the non-financial business economy in Great Britain.

6 January 2017: Volume index of UK capital services (experimental): estimates to 2015 provide estimates of the contribution of the capital stock to production in the economy, split by asset and industry.

6 January 2017: Public service productivity estimates: total public service, UK: 2014 presents updated measures of output, inputs and productivity for public services in the UK between 1997 and 2013, in addition to new estimates for 2014. Includes service area breakdown, as well as impact of quality adjustment and latest revisions.

6 January 2017: Public service productivity estimates: healthcare, 2014 presents updated estimates of output, inputs and productivity for public service healthcare in the UK between 1995 and 2013, and new estimates for 2014.

6 October 2016: Quality adjusted labour input: UK estimates to 2015 includes estimates of changes in the number of hours supplied in the UK economy adjusted for changes in the quality of the labour supply.

10 . Annex 1 - Descriptive tables

Table 2: Descriptive statistics of the distribution of real firm-level productivity, Great Britain, 2003 to 2015

£, 000

				Percentiles				
Year	Mean	Median	Standard Deviation	10th	25th	50th	75th	90th
2003	39.5	24.7	1,254.8	0.0	10.0	24.7	48.0	84.0
2004	41.3	26.2	1,997.7	0.0	10.8	26.2	49.9	86.9
2005	43.6	25.3	4,299.9	0.0	9.4	25.3	50.5	91.0
2006	43.3	26.2	4,716.5	0.0	9.4	26.2	52.4	92.8
2007	42.5	26.4	3,509.8	0.0	8.8	26.4	54.3	95.2
2008	43.7	26.4	3,948.1	0.0	9.9	26.4	51.4	92.3
2009	41.8	24.3	3,859.3	0.0	9.0	24.3	47.9	86.1
2010	43.0	24.0	3,701.0	0.1	9.1	24.0	48.6	89.3
2011	41.6	24.3	2,765.7	0.6	9.7	24.3	48.7	87.2
2012	43.0	24.5	2,931.7	1.0	10.1	24.5	49.8	89.3
2013	45.9	25.7	3,315.0	1.2	10.3	25.7	51.6	91.4
2014	47.3	26.4	3,212.3	1.9	10.7	26.4	53.5	95.4
2015	47.8	27.0	3,601.4	2.0	11.0	27.0	53.8	94.7

Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Notes:

1. Includes all firms covered by the Annual Business Survey (ABS) excluding sections K (Financial and Insurance Activities) and L (Real Estate Activities), weighted to reflect the population of firms.

Table 3: Distribution of firms in the ABS population by age and size band, Great Britain, 2015

Percent

	Size 1 to 9	Size 10 to 49	Size 50 to 249	Size 250 and over	Total
Age 1 to 5	40.5	17.2	8.5	4.9	37.3
Age 6 to 10	19.4	16.4	8.5	5.3	18.8
Age 11 to 15	14.1	14.7	11.9	6.8	14.1
Age 16 to 20	8.7	11.8	12.5	8.2	9.0
Age 21 and over	17.4	39.9	58.6	74.7	20.7
Total	100.00	100.00	100.00	100.00	100.00

Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Notes:

1. Includes all firms covered by the Annual Business Survey (ABS) excluding sections K (Financial and Insurance Activities) and L (Real Estate Activities), weighted to reflect the population of firms.

Table 4: Labour productivity of the median firm in the population, Great Britain, 2003 to 2015

£,000

	Population	Size 1 to 9	Size 10 to 49	Size 50 to 249	Size 250 and over
2003	25	24	27	31	33
2004	26	26	29	33	34
2005	25	25	28	32	33
2006	26	26	29	33	33
2007	26	26	29	33	35
2008	26	26	28	31	32
2009	24	24	26	30	29
2010	24	24	26	31	33
2011	24	24	27	30	32
2012	25	24	25	30	30
2013	26	26	25	31	31
2014	26	26	25	32	32
2015	27	27	25	33	33

Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Notes:

1. Includes all firms covered by the Annual Business Survey (ABS) excluding sections K (Financial and Insurance Activities) and L (Real Estate Activities), weighted to reflect the population of firms.

Table 5: Distribution of local units in the bottom 10% by industry and region, Great Britain, 2014

	Population	North East	North West	Yorkshire and the Humber	East Midlands	West Midlands	East	London	South East	South West	Wales	S
Non-Manufacturing Production	0.7	0.3	1.1	1.3	1.1	0.2	0.5	0.5	0.3	0.3	1.0	
Manufacturing	1.1	1.1	1.3	1.0	1.1	0.8	0.8	1.0	1.6	0.7	1.3	
Construction	1.9	0.7	1.0	0.7	12.8	1.0	1.1	1.9	1.1	0.8	0.5	
Services: Distribution, hotels and restaurants	46.4	38.2	47.5	50.2	52.3	47.2	62.4	21.0	39.8	49.5	65.8	
Services: Transport, storage and communication	3.8	3.9	8.2	4.1	0.9	2.1	1.5	1.7	6.0	7.5	1.4	
Services: Business	10.9	6.6	12.6	8.0	10.4	11.6	13.5	14.0	14.7	11.7	5.6	
Services: Other	35.3	49.2	28.4	34.5	21.3	37.1	20.2	60.0	36.4	29.6	24.4	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	

Source: Annual Business Survey (ABS), Business Register Employment Survey (BRES) – Office for National Statistics (ON

Notes:

1. These figures are not directly comparable to those on industry alone, as these depend on the industrial classification of t plant, rather than the industrial classification of the enterprise.

2. The Nomenclature of Territorial Units for Statistics (NUTS1) regions includes: Wales, Scotland, Northern Ireland and the English regions. However, our analysis covers Great Britain and therefore excludes Northern Ireland.

3. Key:

Production covers:

Non-Manufacturing Production equals Sections A (Agriculture, Forestry and Fishing), B (Mining and Quarrying), D (Electric Gas, Steam and Air Conditioning Supply) and E (Water Supply; Sewerage, Waste Management and Remediation Activities

Manufacturing equals Section C (Manufacturing).

Construction equals Section F (Construction).

Services covers:

Services: Distribution, hotels and restaurants equals Sections G (Wholesale and Retail Trade; Repair of Motor Vehicles an Motorcycles) and I (Accommodation and Food Service Activities).

Services: Transport, storage, and communication equals Sections H (Transportation and Storage) and J (Information and Communication).

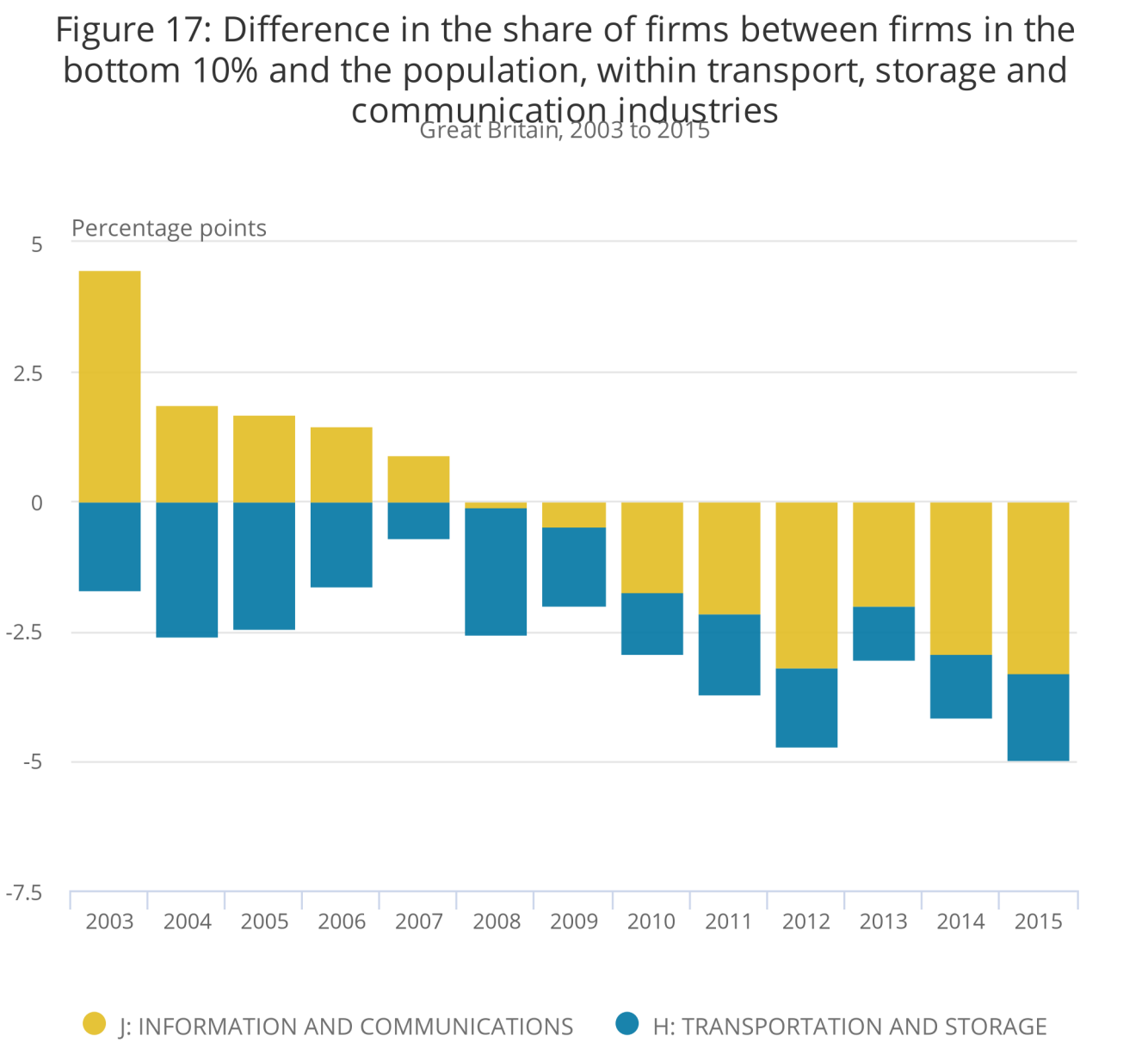
Services: Business equals Sections M (Professional, Scientific and Technical Activities) and N (Administrative and Support Service Activities)

Services: Other equals Sections P (Education), Q (Human Health and Social Work Activities), R (Arts, Entertainment and Recreation) and S (Other Service Activities).

11 . Annex 2 - Detailed industry contributions of firm and worker shares

Figure 17: Difference in the share of firms between firms in the bottom 10% and the population, within transport, storage and communication industries

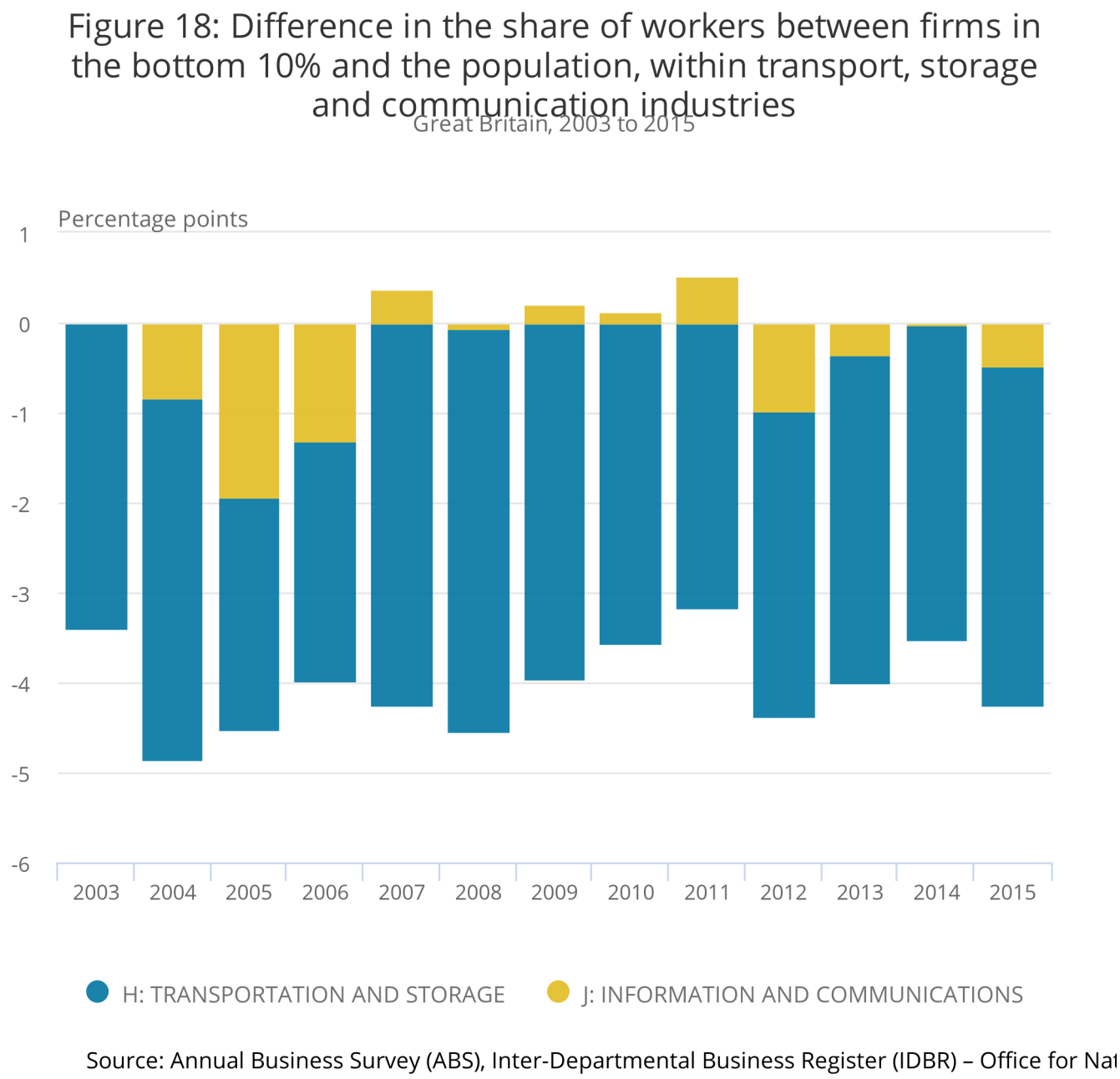
Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Figure 18: Difference in the share of workers between firms in the bottom 10% and the population, within transport, storage and communication industries

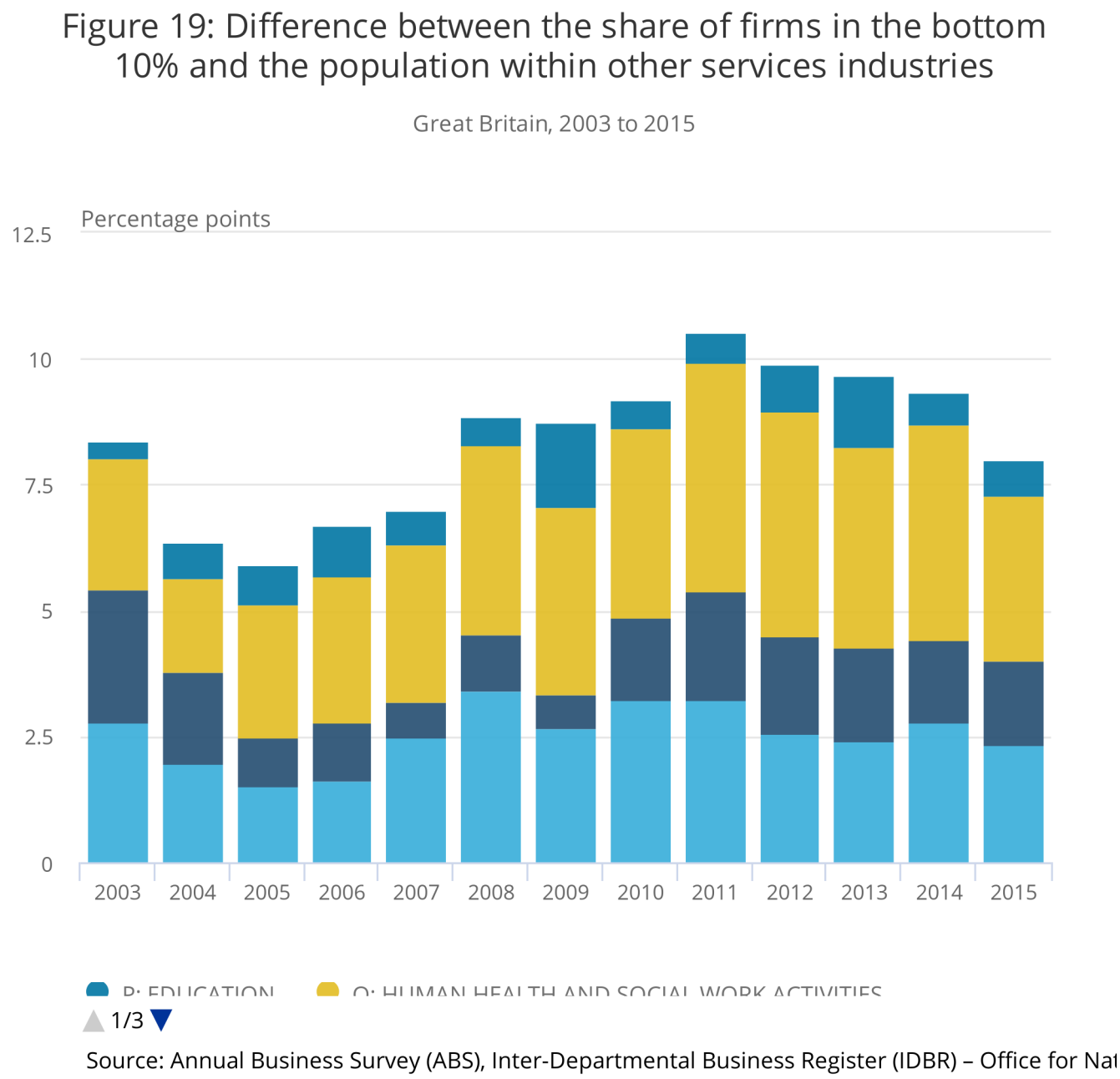
Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Figure 19: Difference between the share of firms in the bottom 10% and the population within other services industries

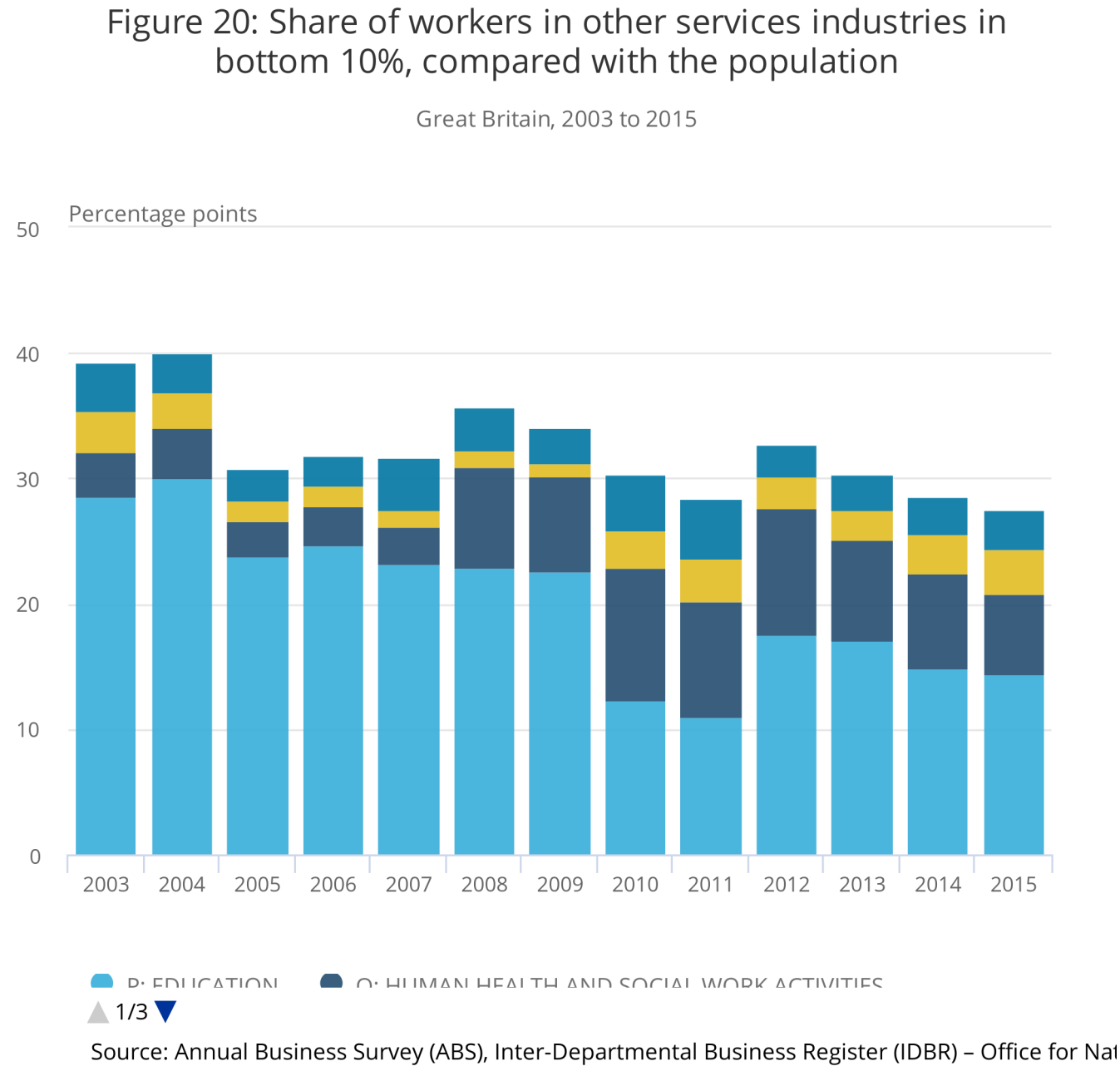
Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Figure 20: Share of workers in other services industries in bottom 10%, compared with the population

Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

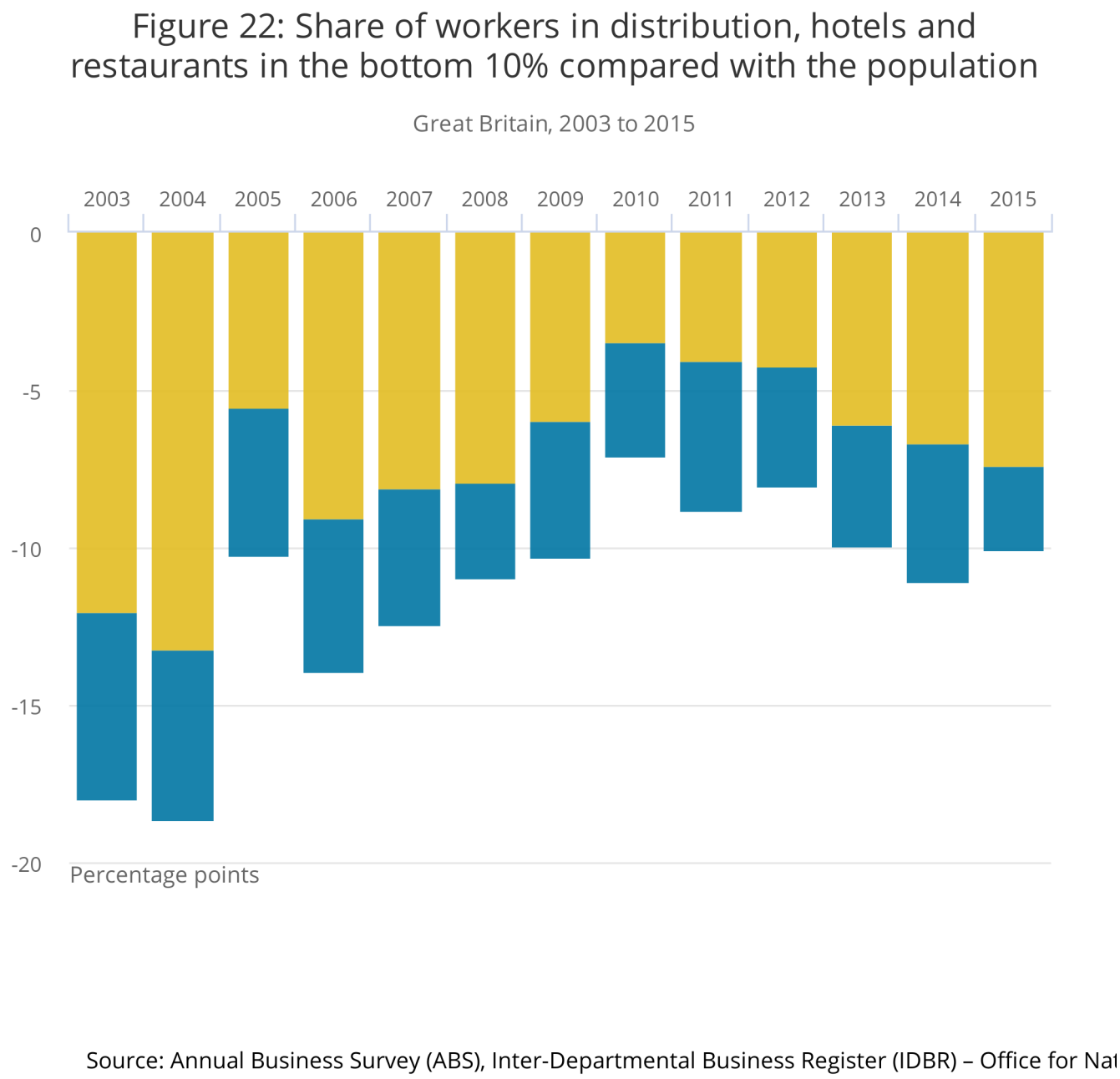
Figure 21: Difference between the share of firms in the bottom 10% and the population for distribution, hotels and restaurants industries

Great Britain, 2003 to 2015

Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Figure 22: Share of workers in distribution, hotels and restaurants in the bottom 10% compared with the population

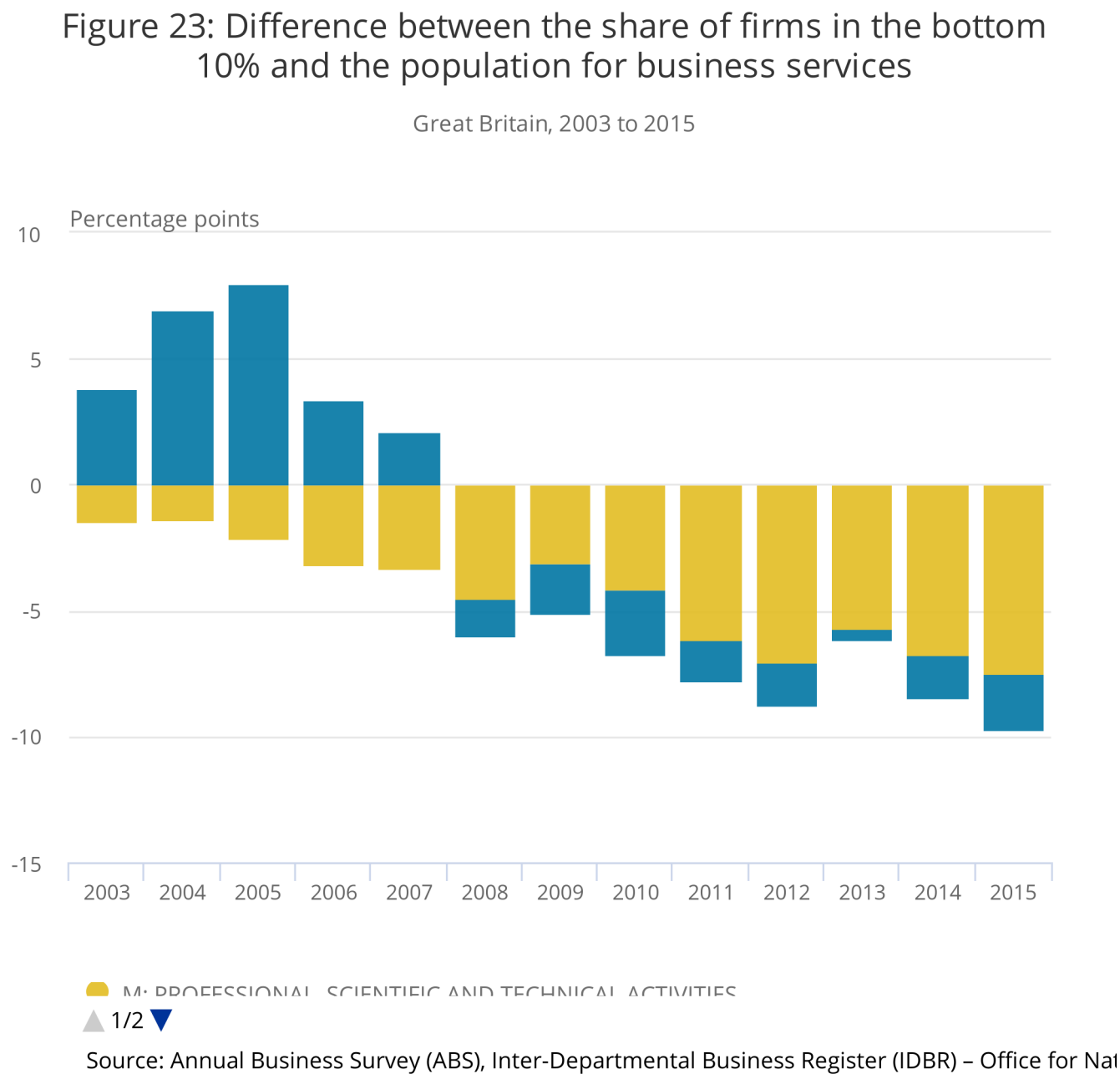
Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Figure 23: Difference between the share of firms in the bottom 10% and the population for business services

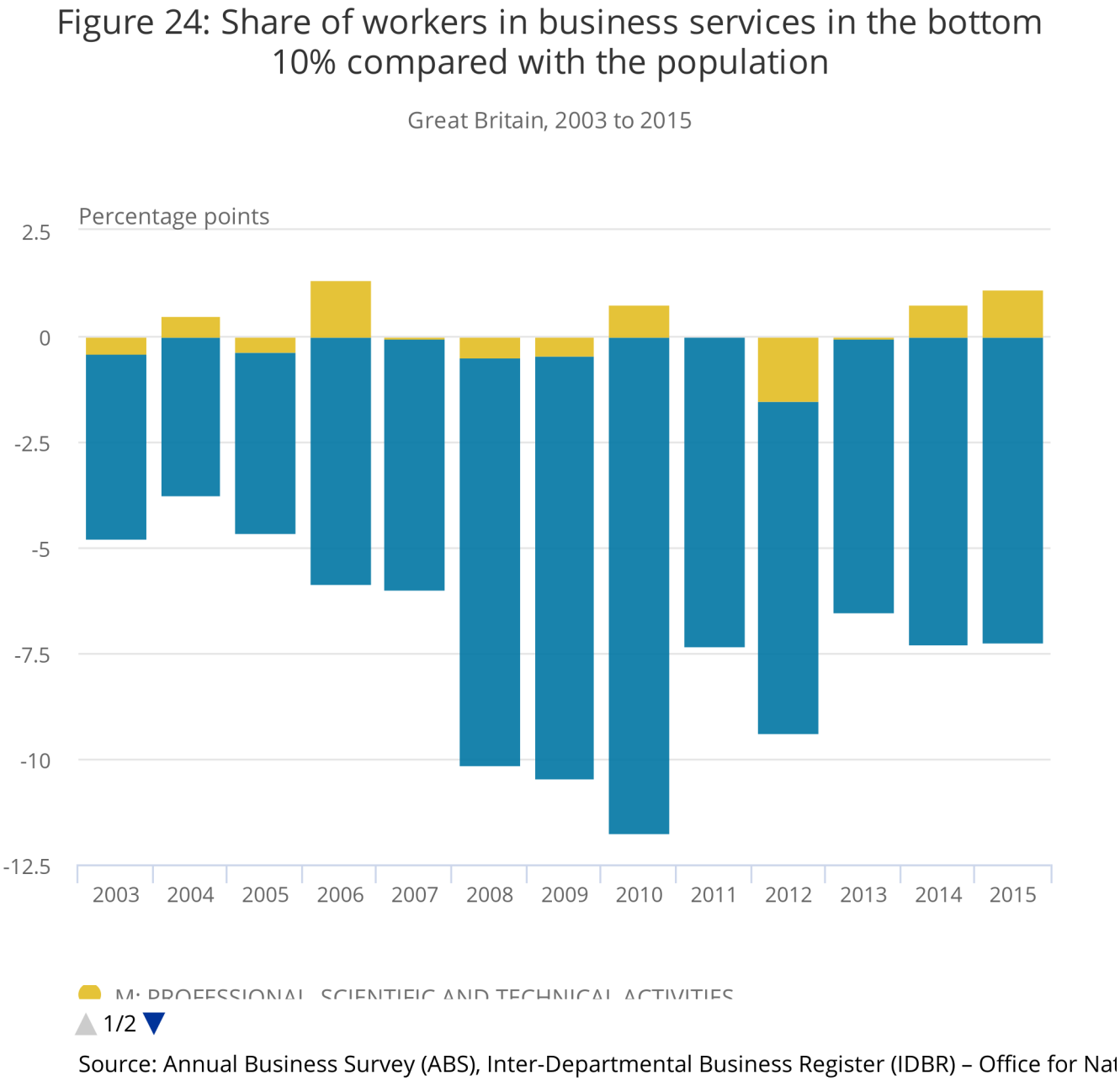
Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Figure 24: Share of workers in business services in the bottom 10% compared with the population

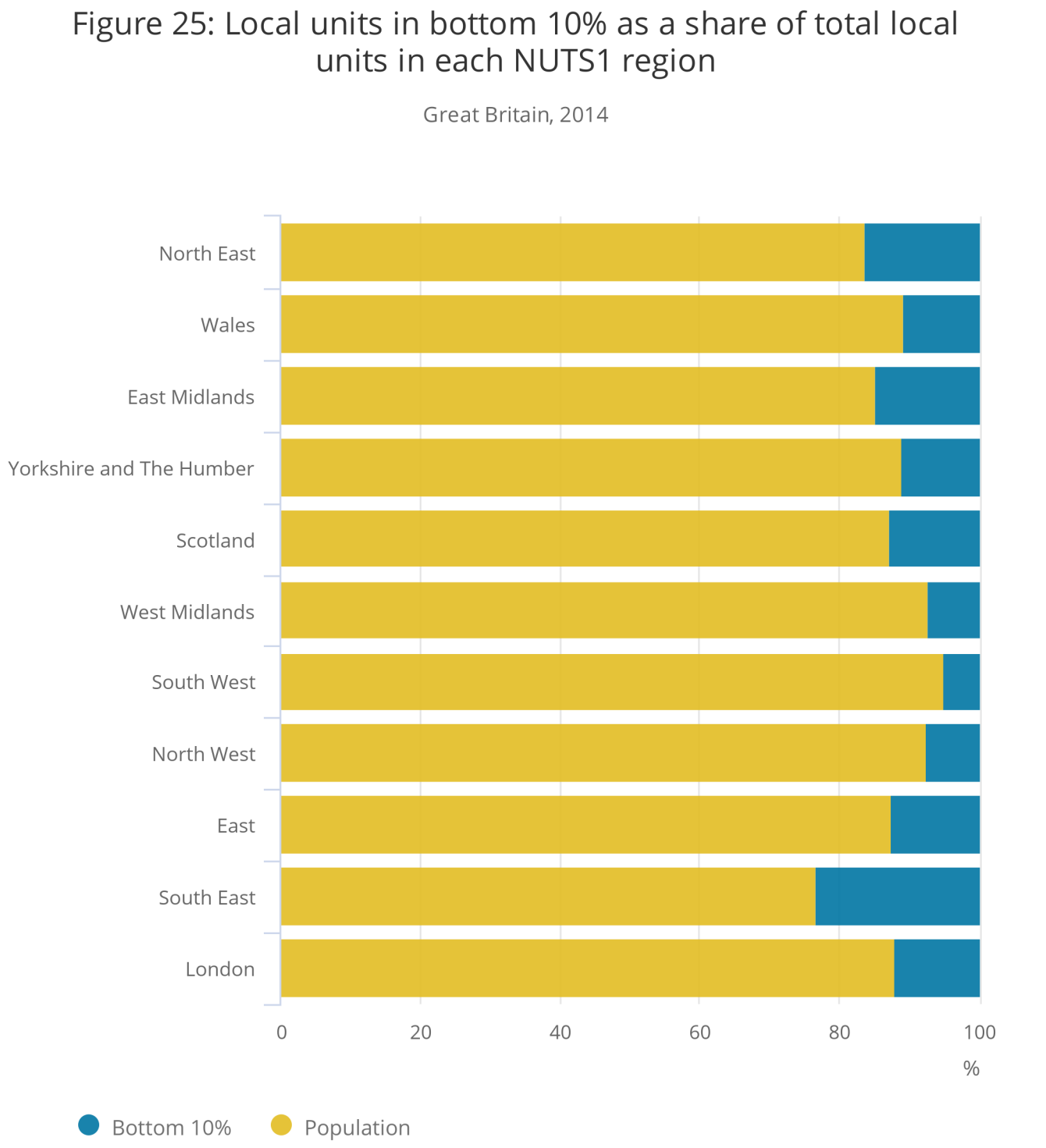
Great Britain, 2003 to 2015



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)

Figure 25: Local units in bottom 10% as a share of total local units in each NUTS1 region

Great Britain, 2014



Source: Annual Business Survey (ABS), Inter-Departmental Business Register (IDBR) – Office for National Statistics (ONS)