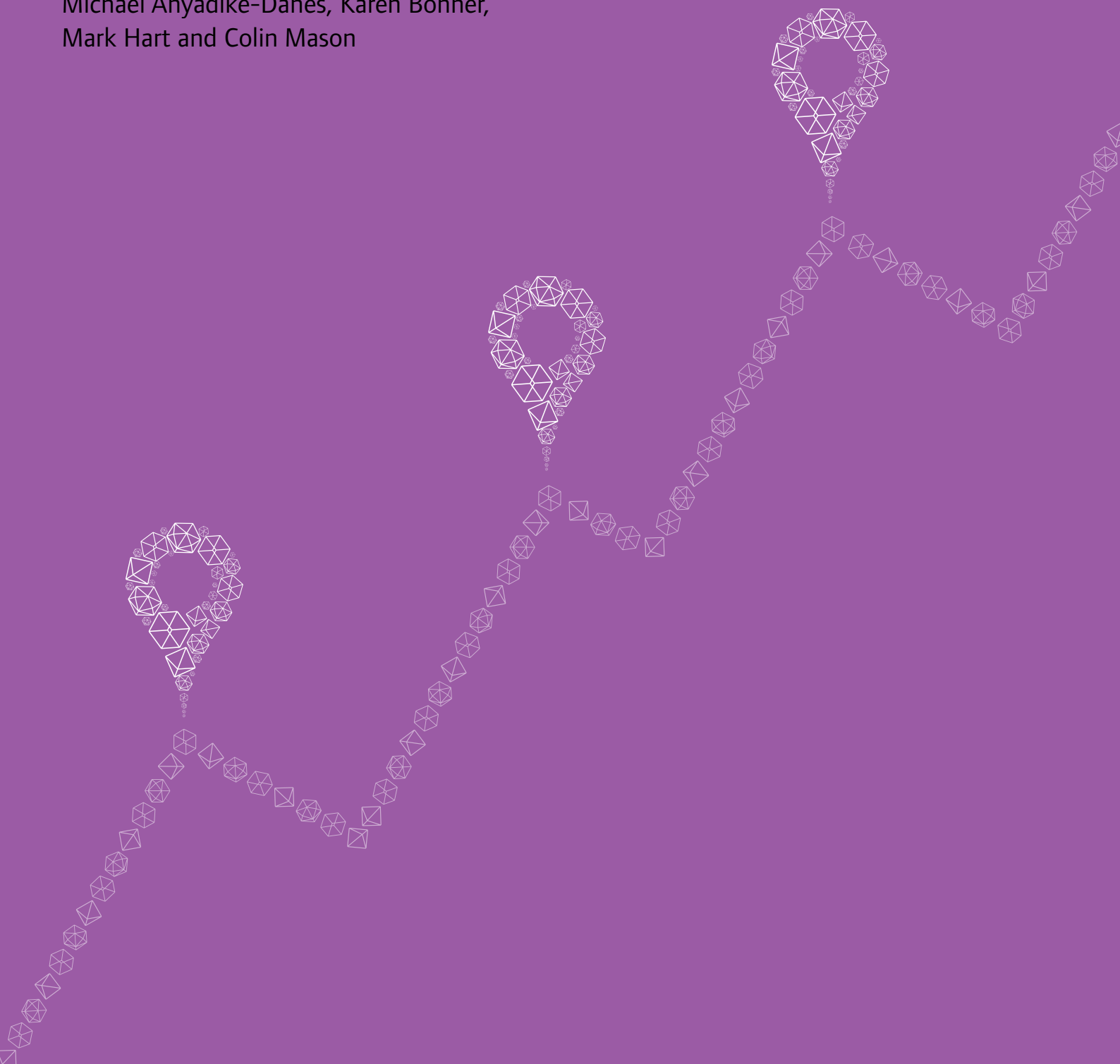


Measuring Business Growth

High-growth firms and their contribution
to employment in the UK

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Mark Hart and Colin Mason



Errata

Amendments have been made to Figures 17 and 19 as well as the text on pages 27 and 28.
As of October 2010.

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Foreword

Thriving businesses are vital to the UK's economic recovery. Businesspeople, investors and policymakers agree that they create jobs, wealth and wider prosperity.

If government is to create the right conditions for businesses to grow, it must understand how this growth happens and what lies behind it.

This report provides a comprehensive look at UK business growth over the past decade. It makes a powerful case that a small number of high-growth businesses are responsible for the lion's share of job creation and prosperity. It is the counterpart to *Business Growth and Innovation*, which considers the wider benefits of growth businesses, their socio-economic impact, and the relationship between growth and innovation.

This has significant implications for the direction of economic policy. It suggests that focusing attention on growing businesses and promoting excellence, far from being an elitist policy, gives rise to widespread job creation and prosperity.

We believe that this report will be a powerful contribution to the debate on how to foster economic growth. As ever, I welcome your views.

Stian Westlake

Executive Director of Policy and Research, NESTA

October, 2009

NESTA is the National Endowment for Science, Technology and the Arts.

Our aim is to transform the UK's capacity for innovation. We invest in early-stage companies, inform innovation policy and encourage a culture that helps innovation to flourish.

Executive summary

High-growth firms are of central importance to economic policy. These 'exceptional firms' have the potential to drive UK economic performance through their extreme rates of growth. They are argued to be the engine of creative destruction, replacing unproductive firms and thus enhancing long-term productivity growth. And they are expected to play a major role in increasing employment as the economy emerges from the current downturn.

But despite the importance of business growth for job creation and productivity growth, we do not really know much about how businesses grow in the UK. The recent availability of a newly developed business demography database by the Office of National Statistics opens up the opportunity to address this gap.

This report provides the first comprehensive study of business growth rates in the UK. We focus particularly on identifying the number of high-growth firms, describing their distribution across sectors and regions. And we give special consideration to their direct contribution to the growth of employment. We also use the data to examine the survival and growth profile of a cohort of start-ups over ten years.

High-growth firms also have an indirect impact on local economic performance. So to complete the picture a separate NESTA report, *Business Growth and Innovation*,¹ examines the wider impact of growing companies in 45 UK city-regions, studying also the links between businesses' growth and their innovation activities.

Our methodology and data

We analyse detailed business registry information for all UK businesses between the years 1998 and 2008, extracted from

the Office for National Statistics' Business Structure Database. Specifically, we look at the distribution of growth rates in employment and sales for these businesses over two three-year periods, 2002-2005 and 2005-2008, breaking it down by sector, location and company age. Last but not least, we also examine the evolution over a decade of all the start-ups founded in the UK in 1998.

We follow the OECD methodology and define a high-growth firm as any firm with a minimum of ten employees at the beginning of a three-year period that achieves an average annualised employment growth greater than 20 per cent over that period.

High-growth companies are rare, but generate a majority of jobs

High-growth companies represent only 6 per cent of all UK firms employing ten or more people, but accounted for more than half the growth in jobs. More specifically, 11,530 high-growth firms were responsible for 1.3 million out of the increase in 2.4 million new jobs in established businesses employing ten or more people between 2005 and 2008 (54 per cent).² Most companies only experience modest growth, and the number of businesses that decrease in size is similar to the number that increase their size. The analysis for the 2002-2005 period leads to similar conclusions.

UK high-growth firms, on average, tripled their employment over a three-year period. In 2005-08 the average high-growth firm started with around 60 employees in 2005 but had over 170 employees in 2008.

Consequently, it is the minority of firms experiencing high-growth who are responsible for half of the increase in employment in existing businesses. Therefore, interventions

1. Mason, G., Bishop, K. and Robinson, C. (2009) 'Business Growth and Innovation: The wider impact of rapidly-growing firms in UK city-regions.' London: NESTA.
2. Moreover, this 6 per cent of high-growth firms accounts for 49.5 per cent of all the new jobs created by existing businesses in the UK (including those jobs created by microenterprises – businesses with fewer than ten employees) over the six years considered in this study, or 43 per cent in the past three years.

that target firms with higher growth potential are likely to be more efficient than general business support policy for all SMEs, many of whom lack the ambition to grow.

It's not just about start-ups

Young firms are more likely to be high-growth, but the majority of high-growth firms (70 per cent) are at least five years old. Still, young high-growth firms are responsible for a fifth of the increase in employment in all high-growth firms.

A detailed examination of the evolution over a decade of the almost quarter of a million start-ups founded in 1998 sheds more light. Most new businesses start small and stay small. While roughly a third survived to 2008, only 10 per cent of the survivors had ten or more employees ten years later. And fewer than 5 per cent had more than 20 employees in 2008.

What is more, very few start-ups (7,239 firms out of the full 1998 cohort) experience an instance of high-growth in their first ten years of life.³ And even fewer of them (2,776 firms) manage to achieve multiple instances of high-growth. For instance, fewer than a 100 firms record more than five instances of such high-growth over a ten-year period.

The implication of this is that merely encouraging start-ups is unlikely to lead to dramatic growth if they fail to expand. Policymakers should focus on quality and not just quantity.

All sectors have high-growth firms

High-growth firms are not concentrated in 'high-tech' or 'growth sectors': all major UK sectors contained between 4 and 10 per cent of high-growth firms. Almost half the high-growth firms in the UK are in business services or the wholesale and retail sector.

However, the balance between different sectors does appear to reflect trends in the economy in the period: the sectors with the highest proportion of high-growth firms were financial services (over 9 per cent) and real estate and business services (around 8 per cent), while the lowest share was found in manufacturing (around 4 per cent).

High-growth firms are found across the UK

High-growth firms can be found in every part of the UK. Like the general business population they are particularly abundant in the South East and London. However, the regional pattern varies between our two periods: Wales had the highest share of high-growth firms in 2002-05 but Scotland was at the top of the table in 2005-08. For the manufacturing sector the evidence is more clear-cut. The regions with the highest shares of high-growth manufacturing firms in both periods were the North East, Scotland, Northern Ireland and Wales.

The UK had a large number of high-growth firms compared to other countries

The UK had one of the largest shares of high-growth firms among OECD countries in the period 2002 to 2005, the latest year for which internationally comparable data is available.

A more detailed examination by sector shows the UK ahead of the United States in terms of the proportion of growth firms in a variety of sectors, in particular financial intermediation, but not in manufacturing. High-growth firms in the US were also older. Only 9 per cent of US high-growth firms were younger than five years old, which compares to at least a third in the UK. Therefore, more established businesses in the UK are significantly less likely to be growing in terms of employment than their counterparts in the US.

3. Note the difference between the definition of a high-growth firm (over a three-year period) and a high-growth instance (over a single year). A firm is defined to be a high-growth firm if it has a minimum of ten employees at the beginning of the period and achieves an average annualised employment growth greater than 20 per cent over a three-year period. Instead, it is considered to have a high-growth instance in a particular year if it has ten or more employees and it experiences a growth rate in employment above 20 per cent for that year.

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Part 1: Overview

1.1 Purpose

High-growth firms have attracted considerable attention from the policy community. They are considered to be 'exceptional firms' which are responsible for driving economic growth through extreme rates of growth (employment, sales, profits) and engagement in innovative behaviour.

But the evidence for the UK on high-growth firms is very limited.⁴ This report aims to help fill this gap. We construct the first comprehensive study on high-growth firms in the UK using a new longitudinal business demography database covering the population of businesses.

We quantify the number of high-growth firms in the UK, present their characteristics and compute the number of jobs that they create. And a new NESTA report published in parallel complements this analysis by examining the contribution of high-growth firms to innovation activities and wider economic and social outcomes.⁵

This report is one of the first to exploit a new source of data constructed by the Office for National Statistics (ONS), the Business Structure Database (BSD). This database provides business demography information for the full population of businesses in the UK for the period 1997 to 2008.

The core research questions driving our analysis can be summarised as follows:

1. What does the distribution of firm growth rates look like for the population of businesses in the UK disaggregated by size, age, sector and region?

2. How many high-growth firms are there in the UK economy?
3. What are the characteristics of high-growth firms? What is their initial size, in what sectors are they to be found, are they young or longer established firms – and how many jobs do they create compared to other groups of firms growing more slowly?
4. What does the growth pattern of a cohort of business start-ups look like over time? Do faster growing firms display continuous year-on-year growth or do we observe single episodes of high-growth?
5. What is the relationship between high-growth and business survival? Do businesses with single or consecutive periods of high-growth survive better than businesses which grow more slowly or do not grow at all?

1.2 Defining high-growth firms

A variety of terms have been used by policymakers and academics to refer to these 'exceptional firms'. We talk, sometimes interchangeably, about 'high-growth firms', 'high impact firms' or gazelles and 'super-gazelles' before discussing the relative merits of 'high-tech start-ups' and 'born global start-ups'. The fact that many of their characteristics overlap adds to a general lack of clarity about policy options.

A recent review of 19 studies noted that there is no general agreement on the definition of high-growth firms and gazelles.⁶ Definitions vary in terms of the following: choice of growth

4. See for instance BERR (2008) 'High-growth firms in the UK: Lessons from an analysis of comparative UK performance.' London: Department for Business, Enterprise and Regulatory Reform.
5. Mason, G., Bishop, K. and Robinson, C. (2009) 'Business Growth and Innovation: The wider impact of rapidly-growing firms in UK city-regions.' London: NESTA.
6. See Henrekson and Johansson (2008; 2009)

indicator (e.g. employment, sales or profits); measurement of growth; length of time-period over which growth is measured; and whether growth through acquisition is included or is it just organic growth?⁷

However, a consensus has emerged around the definition of 'high-growth' adopted by the OECD, which we follow in this report:

A high-growth firm is defined as a firm with an average employment growth rate exceeding 20 per cent per annum over a three-year period and with ten or more employees at the start of the period.⁸

1.3 What do we know about high-growth firms?

Over 20 years ago, research noted that a small number of fast-growing firms created most new jobs. For example, in the United States in the period 1981–85 just 18 per cent of firms were responsible for 86 per cent of the new jobs.⁹ Looking in more detail at these companies they were found to be volatile: "dynamic firms pulsate sharply as they grow" (p.51), growing sharply in one period, falling back in another period, and then growing again. And later the OECD suggested that these 'exceptional firms' include both large and small firms and young and old firms.¹⁰ A number of key findings emerge from the literature from a variety of countries:

1. A few rapidly growing firms generate a large share of all net new jobs, irrespective of the population studied. This is particularly marked in recessionary periods when these firms continue to grow.
2. High-growth firms, and especially those aged less than five years (i.e. gazelles), can be of all sizes and although small firms are over-represented some larger gazelles are observed to sustain high-growth levels.
3. Newness is a more important factor than small size in terms of rapid growth. Young firms are more likely to be high-growth than old firms, even if a majority of high-growth are old.
4. High-growth firms are found in all industries. They are not over-represented in high-technology industries. If anything, they are over-represented in services.

1.4 The UK Business Demography Database

What is conspicuous in both the job creation and gazelles literature is the very limited contribution of UK studies. Data availability and quality have been the main obstacle to comprehensive research in this area. However, with the construction of the new Inter Departmental Business Register (IDBR)-based Business Demography dataset (i.e. the Business Structure Database – BSD) for the 1997–2008 period, it is finally possible to examine firm growth in the UK with the degree of rigour that has been present in other international studies.

The analysis of firm-level growth rates and high-growth over time presented in this report is based solely on the BSD which has been accessed through the UK ONS Virtual Micro-Data Lab (VML). The detailed discussion of the nature and scope of the BSD can be obtained from the ONS and it is not the intention to go into the detailed method of its construction.¹¹

In order to utilise the OECD definition of high-growth firms and facilitate international comparisons we focus on the three-year periods 2002–2005 and 2005–08 for the distribution of growth rates and the characteristics of high-growth firms. In addition, we use the 1998 cohort of start-ups for the analysis of growth trajectories, survival and a close look at job growth across the size bands for survivors.

Throughout the report we use the term 'employer enterprise'¹² both to define a start-up for the cohort analysis and for the analysis of growth rates for the population of businesses in the 2002–05 and 2005–08 periods. Our key variables are: number of employees; turnover; business age; sector and region. Overall, the merged BSD dataset for the years 1997–2008 contains approximately 4.5 million records. Within this there is a subset of 1.08 million businesses which we use to undertake the growth rate analysis for 2002–05 and 1.7 million businesses in the analysis for 2005–08. The number of private sector businesses included in the analysis of the 1998 cohort start-ups is 221,731.

7. See Delmar *et al.* (2003) for a useful review.

8. EUROSTAT-OECD (2007). Importantly, this definition does not distinguish between the employment created through the internal 'organic' growth of a firm and as a result of an acquisition of another firm. This is a methodological problem that has confronted almost all research on high-growth firms and this study is no exception. For example, the BSD data do not reliably permit a distinction between organic growth and the growth of a business through acquisition. This is important and requires further work by the ONS IDBR team before the current marker for mergers and acquisitions on the BSD can be used with confidence. Indeed, only three of the 19 studies referred to above were able to make this distinction in their research. On this last point Deschryvere (2008) has made a valuable contribution with a study of high-growth firms in Finland which distinguishes between organic growth and growth through acquisition. He notes the following: 65 per cent of the jobs created by high-growth firms were through organic growth; bigger firms have a smaller share of organic growth than smaller firms, which when combined with Swedish evidence, suggests that there is a strong empirical relationship between size of growing firm and the proportion of growth than is achieved through acquisition.

9. Birch, D. (1987).

10. OECD (1998).

11. See Davies, R. (2006). We accessed the annual firm-level datasets from 1997 to 2008 and created a merged longitudinal dataset specifically for this project.

12. Adopting the one-employee employer enterprise as set out in the EUROSTAT-OECD Business Demography manual (2007).

1.5 Structure of the report

The structure of the report is as follows:

- Part 2 presents the analysis of growth rates across the population of UK businesses for the two three-year periods 2002-05 and 2005-08. From this analysis we quantify the number of high-growth firms in the UK. We present information on their initial size, age and sector and regional distribution. We look at their contribution to job creation and examine the available international comparative evidence.
- Part 3 examines the 1998 cohort and analyses the pattern of employment growth over the ten years to 2008. As well as identifying the pattern of growth for all firms, we seek to categorise for high-growth firms whether their growth is episodic or continuous. Allied to this we present a detailed transition matrix which shows the employment growth of different size start-ups in the 1998 cohort. We also compare the survival rates for high-growth firms with those for slower-growth firms.
- Part 4 discusses the implications for policymakers that arise from this report and identifies potential questions for future research.

Part 2: Firm growth rates in the UK

2.1 Introduction

The task in this chapter is relatively straightforward – to establish how many high-growth firms there are in the UK economy. However, as a first step we want to put this question in context – that is, within an analysis of the distribution of growth rates in the population of businesses over specific time periods. In other words we take the definition of a high-growth firm (i.e. at least 20 per cent average annual growth in employment or turnover over three years) and present it as one of a number of growth intervals across the population of businesses in the UK.

We focus on two three-year periods: 2002–05 and 2005–08. While the UK business demography dataset can be used for any time period between 1997 and 2008 we chose these periods for two main reasons. First, to be consistent with the OECD definition of high-growth firms we use growth rates over three years. Second, to aid international comparisons, we derive a UK figure for the proportion of high-growth firms for 2005 which is the latest year that data is published on selected OECD countries. Of course, we also present data on the 2005–08 period to ensure we have the most up to-date information for the UK.

2.2 Profile of UK survivors

In the two periods 2002–05 and 2005–08 we have identified 1.1 million and 1.7 million surviving firms respectively that satisfied the following condition and for which we present the growth rate analysis:

A business which had non-zero employment for each of the years in the analysis and which were not 'born' (i.e. employed their first employee using the definition of a '1' employer enterprise) in the first year of each period.¹³

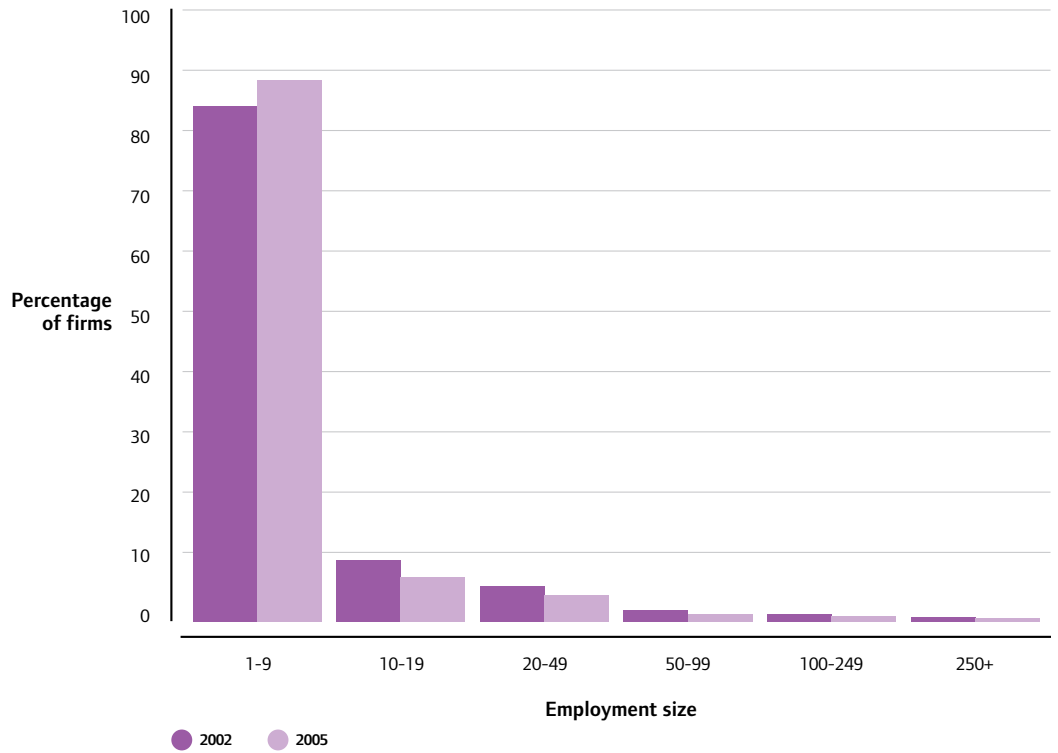
Overall, such survivor firms employed 16.2 million and 19.2 million people in 2002 and 2005 respectively.

Before presenting the growth rate analysis it is useful to review some of the characteristics of the population of businesses in both these sub-periods. We can do this in terms of initial employment size, business age and sector. Figure 1 shows that, as expected, the vast majority of firms that survived the two periods were micro-enterprises (they had fewer than ten employees): 83.5 and 88.3 per cent respectively. However, as Figure 2 shows, half of UK employment in the UK is found within firms employing at least 250 people. By contrast, micro-enterprises provide less than one out of every five jobs, a significantly lower proportion than in other OECD countries (for example, 1.5 million surviving micro-enterprises employed 3.6 million people in 2005).

Comparing the two periods, we can observe an increase in the share of micro-enterprises within the total stock of survivors in the latter 2005–08 period. This actually masks the true scale of the difference and it is only when we examine the actual numbers that we begin to understand the dynamic. For example, in absolute terms there were an additional 600,000 micro-enterprises in 2005 than there were in 2002 that went on to survive for three years. Overall, micro-enterprises employed 3.6 million people in 2005 compared to 2.5 million three years earlier. However, the average size of

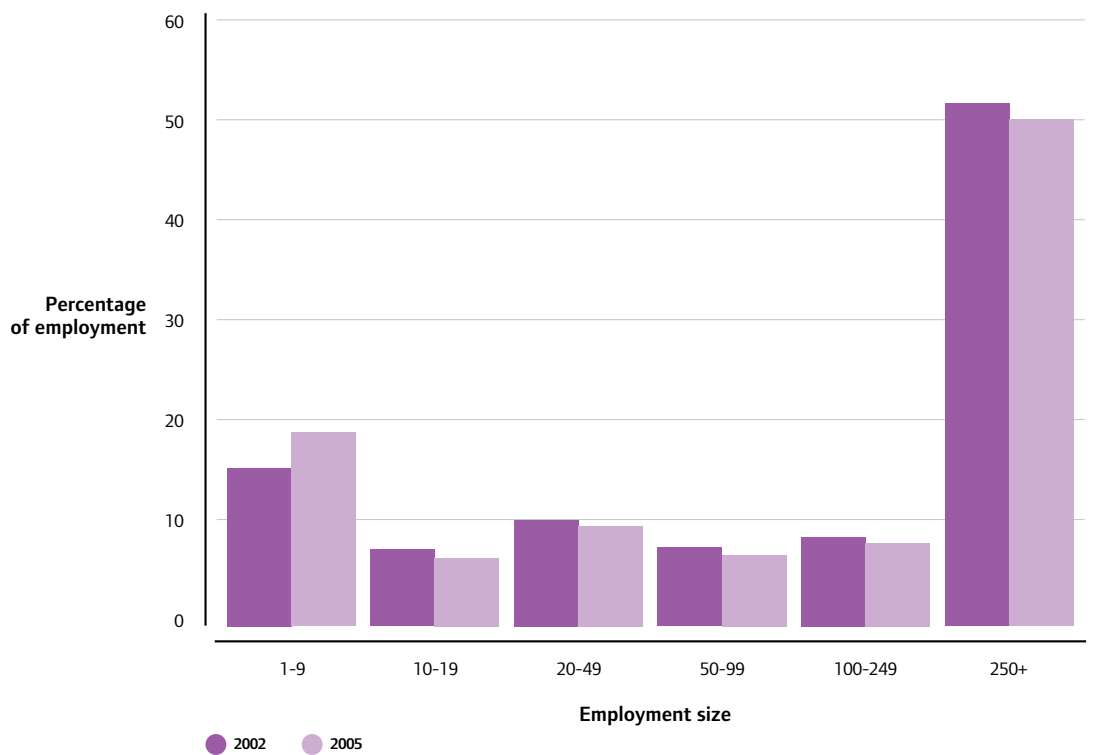
13. There has been some discussion about the use of a more relaxed definition that simply includes firms with non-zero employment in the first and last years of the period while still imposing the start-up condition. We have run the analysis using this definition and the number of firms for the 2002–05 period, and as a result the number of firms increases from 1.078 million to 1.089 million – an additional 11,609 firms (1 per cent).

Figure 1: Number of firms by employment size



Source: ONS Business Structure Database.

Figure 2: Total employment by employment size



Source: ONS Business Structure Database.

these micro-enterprises had fallen from 2.8 to 2.4 employees between the two periods.

What conclusions can we draw from these headlines? They suggest that the increase in the stock of firms in the UK economy is being driven by firms employing two or three people. This may be an indication of the success of policies designed to see more new ventures created but which do not necessarily focus on growth. We return to this issue in more detail in the next section of this report when we look at the growth trajectory, or size transitions, of a cohort of start-ups in the UK.

Turning to business age, Figure 3 shows that in both periods well over half the firms in the UK were at least five years old at the start of the period.¹⁴ The remaining two-fifths of firms were spread evenly across the other four single age categories (i.e. years 1 to 4).

Figure 4 clearly shows that in the UK it is businesses at least five years old that provide the most jobs. In both 2002 and 2005 around eight in ten jobs were in such older businesses. So, we can conclude that older firms are not only numerically more important, they also provide the vast majority of jobs in the UK economy – 16 million in total.

The sectoral activity of UK firms for both 2002 and 2005 is presented in Figure 5. Financial and Business Services represent around one-third of businesses while one-fifth of firms are involved in Wholesale and Retail activities. Manufacturing, Construction and Hotels and Restaurants each represent around 10 per cent.

Figure 6 presents the employment distribution across three broad private industrial sectors. In both 2002 and 2005, around one in four jobs was involved in the production sector¹⁵ (a fifth of firms) while the service sector (excluding business and financial services) provided two-fifths of all jobs.

2.3 Distribution of firm growth rates

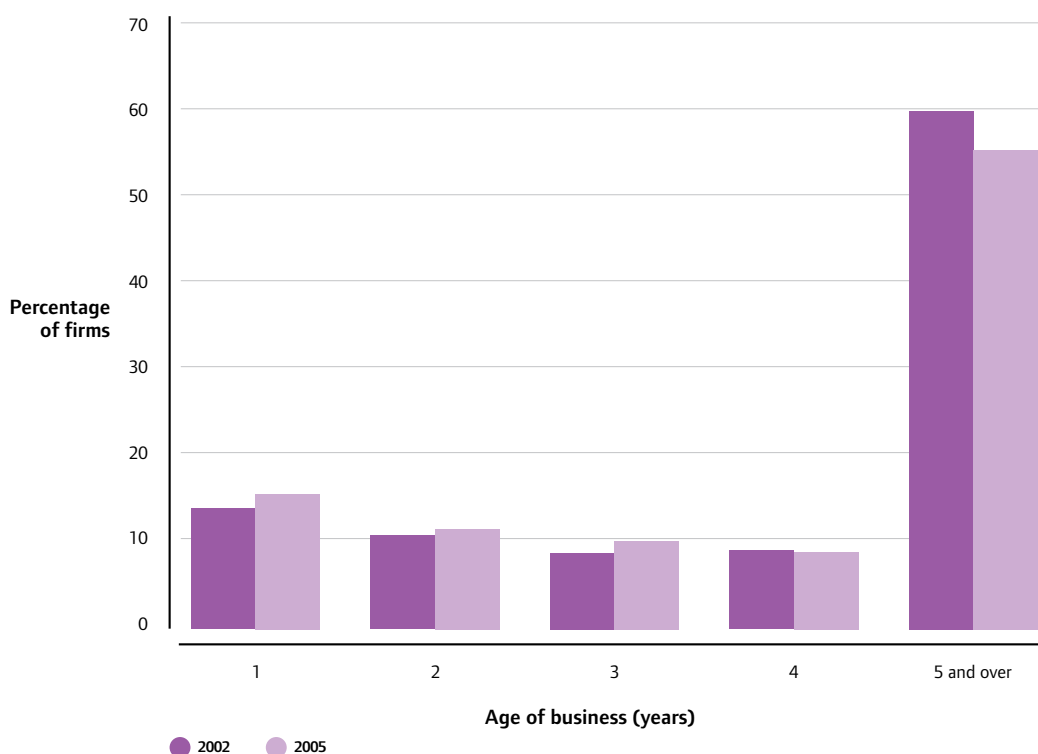
2.3.1 All employer enterprises

The performance of UK firms can be analysed simply by examining their growth rates over time. We examine two three-year periods 2002–05 and 2005–08 and allocate firms into one of 11 growth intervals.¹⁶ Figure 7 presents the distribution of the three-year firm growth rates in terms of employees and turnover for both periods.¹⁷ Appendix 1 contains tables which present the actual number of firms and

14. As noted above, all firms born in 2002 and 2005 (the start year for both periods) were removed from the analysis. We use the category 5 years and above for the simple reason that as the BSD data commences in 1997 we are unable to be more specific for the 2002–05 period. We use the presence/absence of employment in the period 1997–2002 to derive the age of the business.

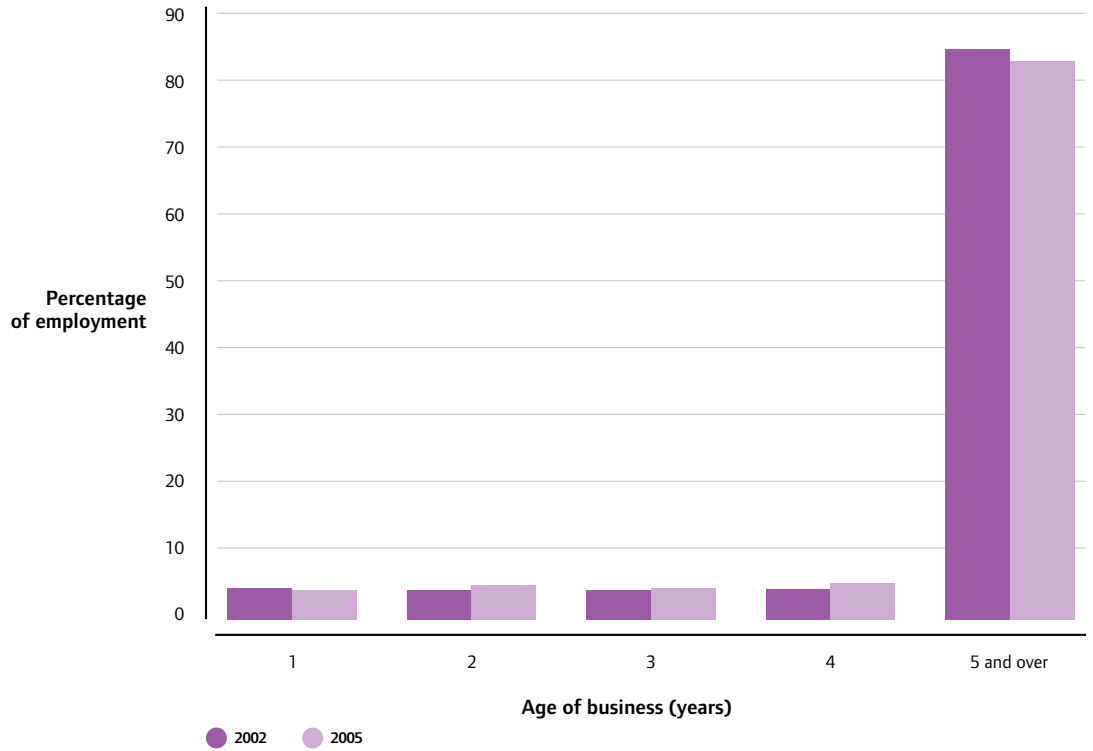
15. The production sector is defined as Mining & Quarrying; Manufacturing; Electricity, Gas and Water Supply; and Construction.

Figure 3: Number of firms by age of business



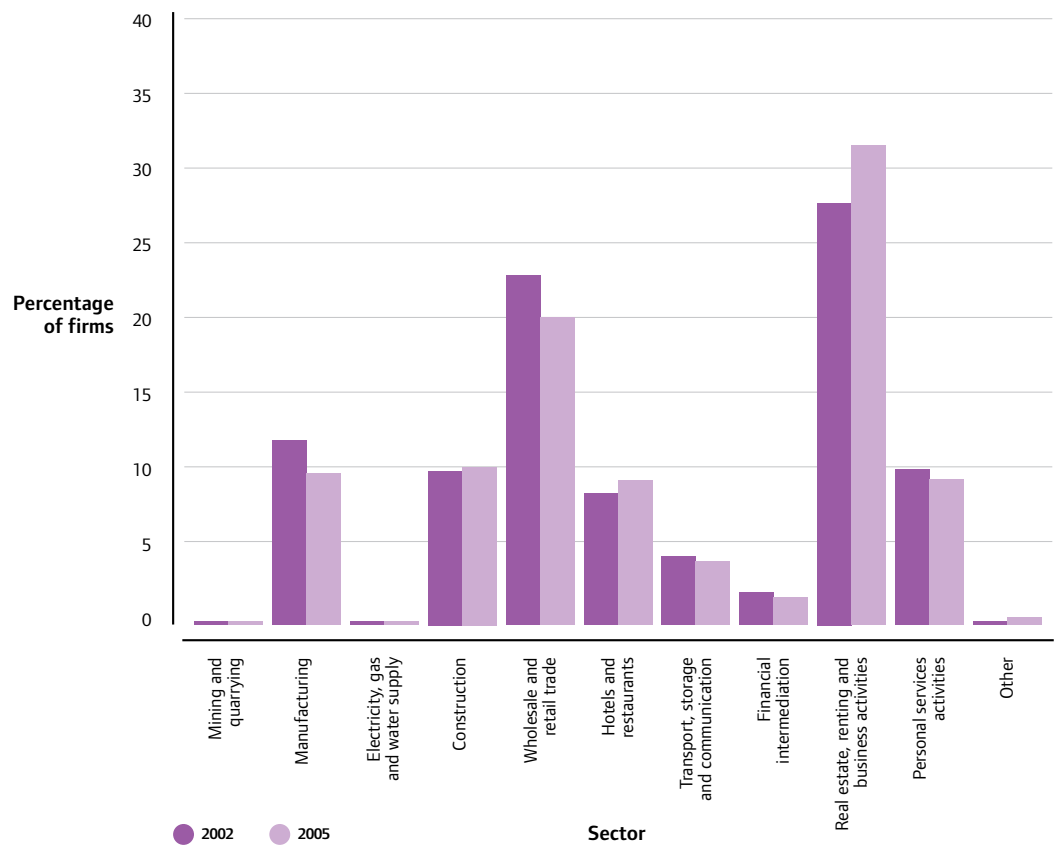
Source: ONS Business Structure Database.

Figure 4: Total employment by age of business



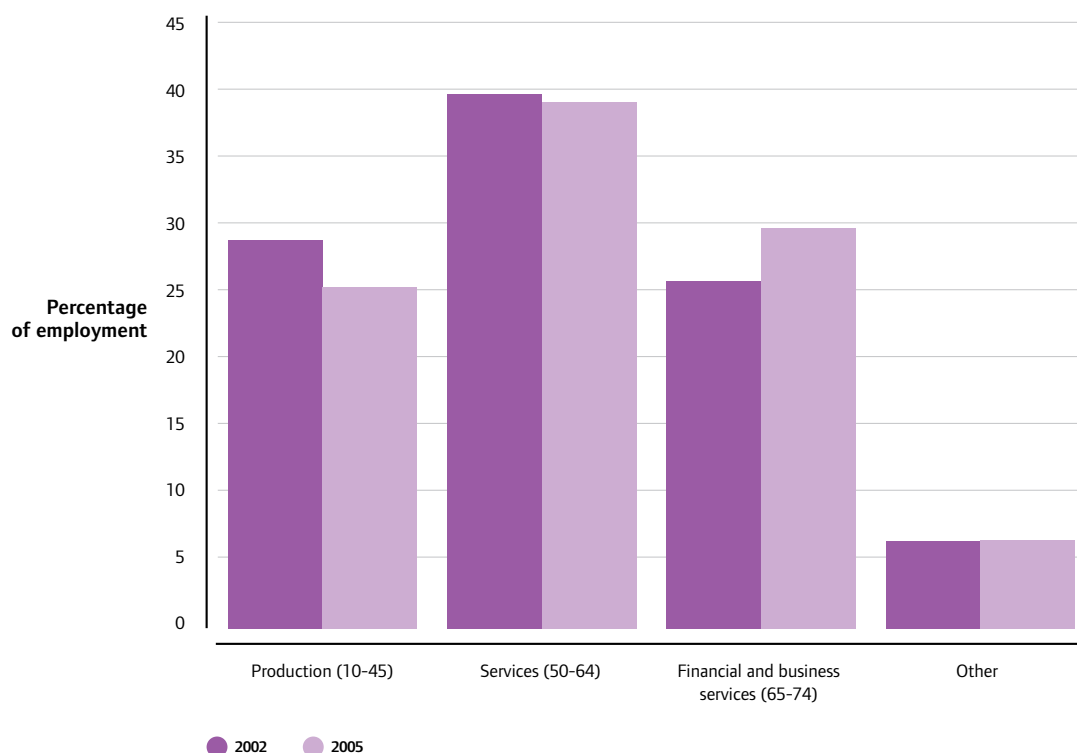
Source: ONS Business Structure Database.

Figure 5: Number of firms by industrial sector



Source: ONS Business Structure Database.

Figure 6: Total employment by broad industrial sector



Source: ONS Business Structure Database.

employment in each of these growth interval categories disaggregated by size, age, sector and region.

We can see that employment did not increase in the vast majority of businesses in the UK in either period. The bulk of the distribution – 60-65 per cent – is concentrated in the middle ‘no growth’ category (i.e. growth between -1 per cent and +1 per cent). Outside this middle category the distribution is almost evenly balanced: 21 per cent below and 17 per cent above. It is also relatively symmetric. Finally, half the ‘non-middle’ weight is shared by the extremes in the distribution: minimum (≥ -20 per cent) around 10 per cent; maximum ($\geq +20$ per cent) – again around 10 per cent.

Figure 7 also presents the distribution of growth rates across the 11 growth intervals in terms of turnover for the two periods. The contrast with the employee-based distribution is stark.¹⁸ The shape of the distribution appears more normal – apart from the two extremes. Yet, as with employees, the extremes of the distribution contain significant numbers of firms (~250,000 in 2002-05 and ~330,000 in 2005-08).¹⁹

Furthermore, the distribution is different between the two time-periods. In the earlier 2002-05 period just over 14 per cent of firms exhibited ‘no growth’ in turnover whereas almost two-thirds added no employees. However, in the more recent 2005-08 period the proportion of firms registering a small decline in turnover (i.e. -1 per cent to -5 per cent) rises to just over two-fifths (40.8 per cent). In the 2002-05 period a broadly similar proportion of firms (14 per cent) are in the extreme fast growth category in terms of turnover as we observed with employees (10 per cent). However, in the most recent period this has fallen to 9.8 per cent (9.5 per cent for employees).

Overall, therefore, in 2005-08 we observe a significant rise in the number of firms experiencing ‘no growth’ in employees as well as an even greater rise in the number of firms recording a small decline in terms of turnover (i.e. -1 per cent to -5 per cent). There was also a fall in the number of firms experiencing any growth on both measures – this is particularly noticeable for turnover.

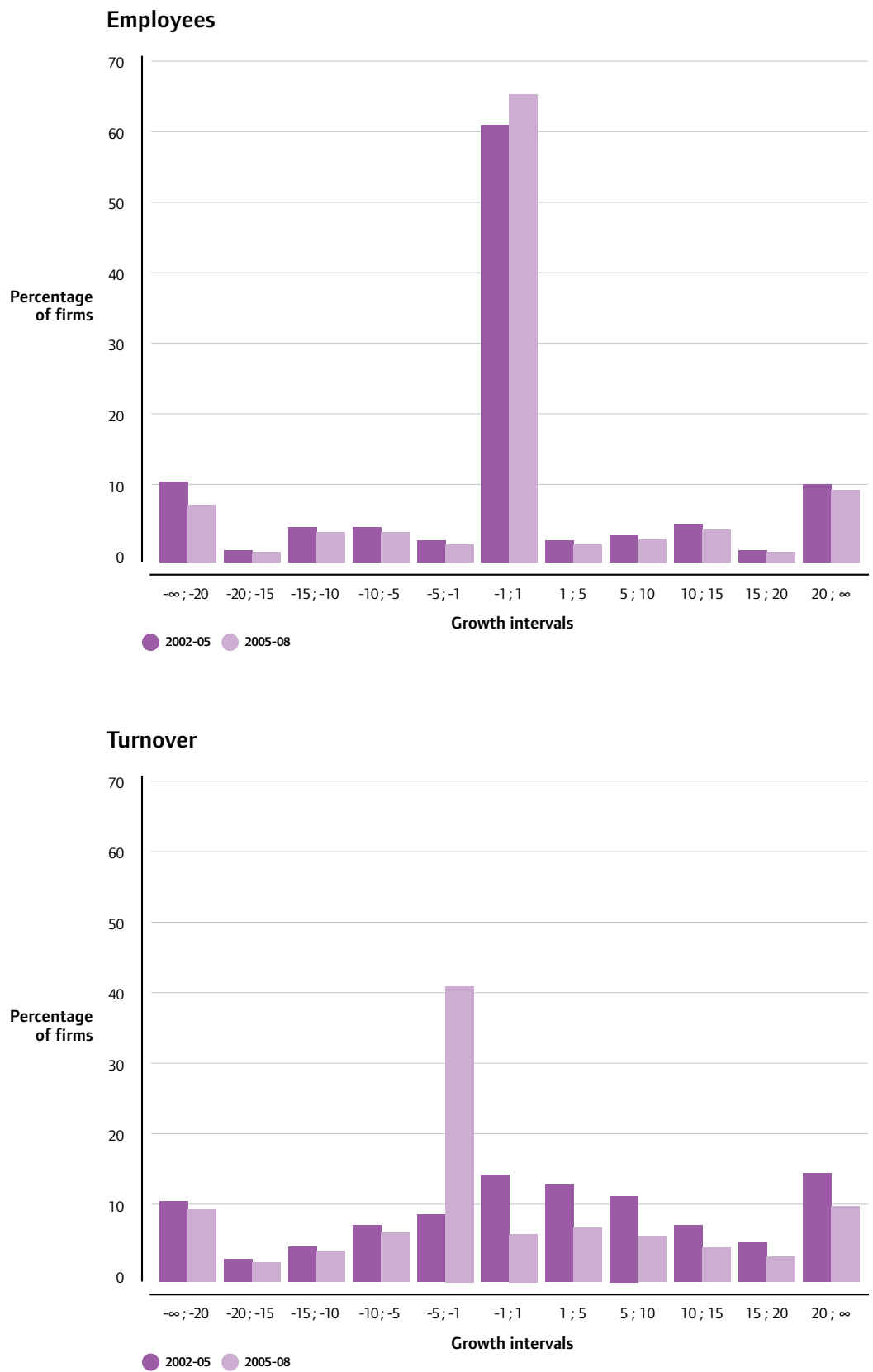
16. This data follows the manual developed by FORA and NESTA for a wider international study on firm growth distributions across several countries.

17. There is an ongoing debate on the preference for employment and not turnover-based growth measures (due to turnover’s susceptibility to industry differences and price levels), so we present the figures for both turnover and employment.

18. The firms included in this analysis of turnover growth rates are a subset of those included in the growth rate employee analysis and for which turnover data was available.

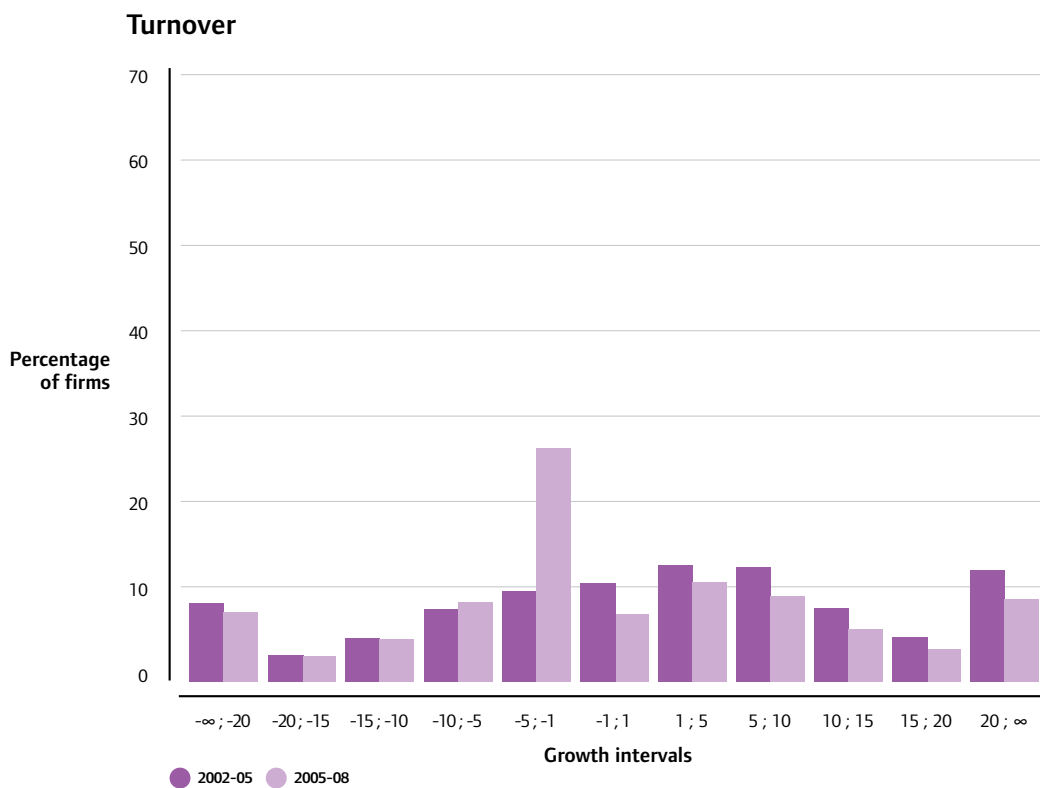
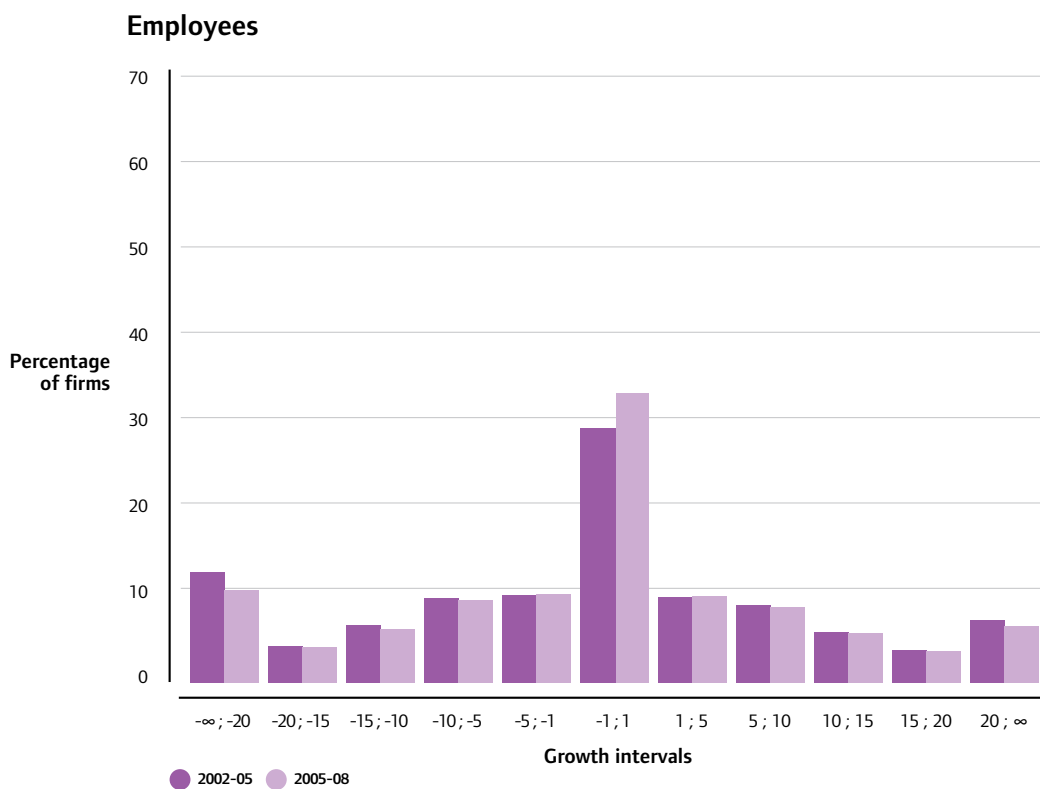
19. See Appendix 1 for the data tables that underlie these charts.

Figure 7: Distribution of firm growth rates: employees and turnover. All firms.



Source: ONS Business Structure Database.

Figure 8: Distribution of firm growth rates: employees and turnover. (10+ employees.)



Source: ONS Business Structure Database.

2.3.2 Enterprises with ten or more employees

The interpretation of growth rates for very small firms needs to be done carefully, since it can be misleading. In short, if a firm with a single employee hires an additional employee, it is doubling its size, resulting in a 100 per cent growth rate. Moreover, given that micro-firms (1-9 employees) constitute the majority of firms in the UK their influence in overall firm growth distribution may be overstated. Because of this, we also examine the firm growth distribution with firms with ten or more employees, as seen in Figure 8.²⁰

The distribution of growth rates for firms with ten employees or more differs from that of all firms in the following ways (compare Figures 7 and 8). First, with respect to employment growth, there are fewer firms with ten employees or more which are in the high-growth category and also significantly fewer in the 'no growth' category. This confirms the notion that the majority of micro-enterprises (1-9 employees) do not grow and the minority that do experience high rates of increase upon a small base. Second, when we compare the distribution of growth rates in terms of turnover between all firms and those with ten or more employees the profile is almost the same. The only real difference is that there are significantly more micro-enterprises recording 'no growth' in the 2005-08 period than larger firms.

We also note that the number of firms employing ten or more people that registered a 1 per cent to 5 per cent decline on the turnover measure increased dramatically in the 2005-08

period – in line with that observed for all firms and is a clear indication of the early effects of the economic downturn in the UK and global economies (see Figure 7).

2.4 High-growth firms

2.4.1 There were 11,500 high-growth firms in the UK

Table 1 presents the headline statistics for the number of high-growth firms in the UK. Overall, we can report that, using the employee definition, there were 11,369 high-growth firms in the 2002-05 period and 11,530 in the 2005-08 period. This represents a very small proportion of all firms (0.94 and 0.61 per cent respectively) but a larger proportion – 6.4 and 5.8 per cent respectively – of firms employing ten or more employees in the base year.

Using the turnover definition doubles the number of high-growth firms in the UK: 22,439 and 18,641 respectively in the two three-year sub-periods. This represents 13 and 9 per cent respectively of the population of all firms with ten or more employees at the start of the period.

We can see that by defining growth in terms of turnover the proportion of fast-growth firms increased slightly in 2002-05 but was similar for the later 2005-08 period. The number of high-growth firms increased markedly in both periods although the number was lower in 2005-08 when the proportion had fallen from 12.8 to 9.4 per cent of the total number of businesses with ten or more employees.

20. Again Appendix 1 contains tables which present the actual number of firms and employment in each of these growth interval categories disaggregated by size, age, sector and region.

Table 1: Fast-growth and high-growth firms: definitions by employment and turnover

	Employment		Turnover	
	2002-05	2005-08	2002-05	2005-08
Percentage Fast-growth*	10.0 n=107,465	9.5 n=162,332	13.9 n=145,431	9.8 n=165,396
Percentage High-growth**	6.4 n=11,369	5.8 n=11,530	12.8 n=22,439	9.4 n=18,641
Total No. of Businesses***	1,078,382	1,702,784	1,045,497	1,681,810

Source: ONS Business Structure Database.

Notes: * Fast-growth is defined as having at least 20 per cent annual average growth in employment/turnover over three years, regardless of the initial size of the firm. ** High-growth is defined as for Fast-growth but with at least ten employees in the initial year. *** Defined as an employer enterprise with non-zero employment in each year.

2.4.2 High-growth firms make a large contribution to employment

How important are high-growth firms to the national economy? We compare their job creation record with other firms with more modest growth (i.e. less than 20 per cent annual average growth in employment). We focus on the number of high-growth firms derived from the employment-based measure.

The 11,369 high-growth firms identified in the 2002-05 period employed 2.67 million people in 2005 – an increase of 1.9 million jobs on their total employment in 2002 of 773,551 employees. Overall, therefore, their share of employment more than tripled from 3.5 per cent of total private sector employment in 2002 to 11.6 per cent in 2005, just three years later.²¹ How does this compare with the number of jobs created by firms experiencing more modest growth in the period? These 45,204 ‘average’ firms (also employing ten or more employees in the base year)²² increased their employment from 4.7 million in 2002 to 5.8 million in 2005 – an increase of 1.1 million jobs. Therefore, the 11,369 high-growth firms had experienced an increase of almost three and half times more jobs by 2005 (Figure 9).

By contrast, the 11,530 high-growth firms in 2005-08 employed significantly fewer people: they went from 714,731 employees in 2005 to 1.98 million in 2008, which was still an increase of 1.3 million jobs in a three-year period. Their share of total private sector employment was 3.12 per cent in 2005, almost tripling to 8.4 per cent three years later. But the number of net jobs created in high-growth firms had declined by about 600,000 in comparison to the 2002-05 period.

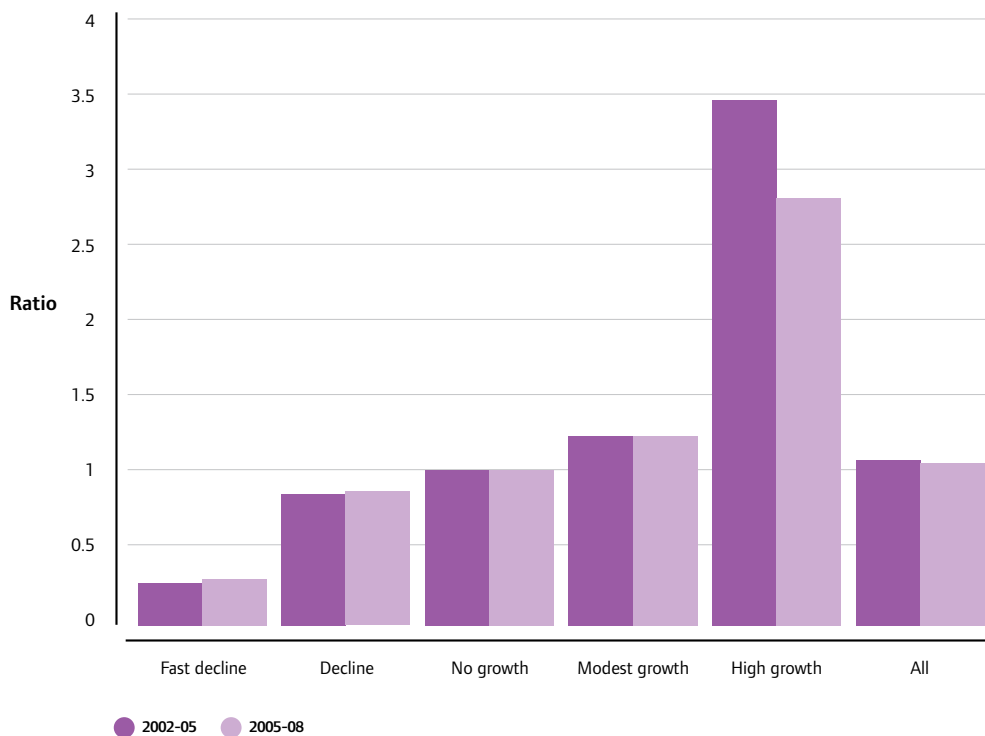
The job creation comparison between the 11,530 high-growth firms and the 49,505 ‘average’ growth firms in 2005-08 is therefore less marked in absolute terms – 1.3 compared to 1.1 million jobs respectively. However, in relative terms Figure 9 clearly shows that high-growth firms in this period had still managed to record an increase of around three times as many jobs as they employed in 2005.

Put another way, we know that between 2002 and 2005 existing UK businesses with ten or more employees who recorded growth created 2.98 million net jobs. Of these, high-growth firms created 1.9 million jobs or almost two-thirds of the total. This share fell to just over half of net job creations in the 2005-08 period:

21. We use a March 2002 figure of 22,402,000 employees in the private sector, 22,871,000 employees for March 2005 and 23,771,000 for March 2008 from the ONS. March data is used as that was when the annual snapshots from the IDBR were extracted by the ONS to create the Business Structure Database. (Source: http://www.statistics.gov.uk/elmr/07_09/downloads/Table2_04.xls)

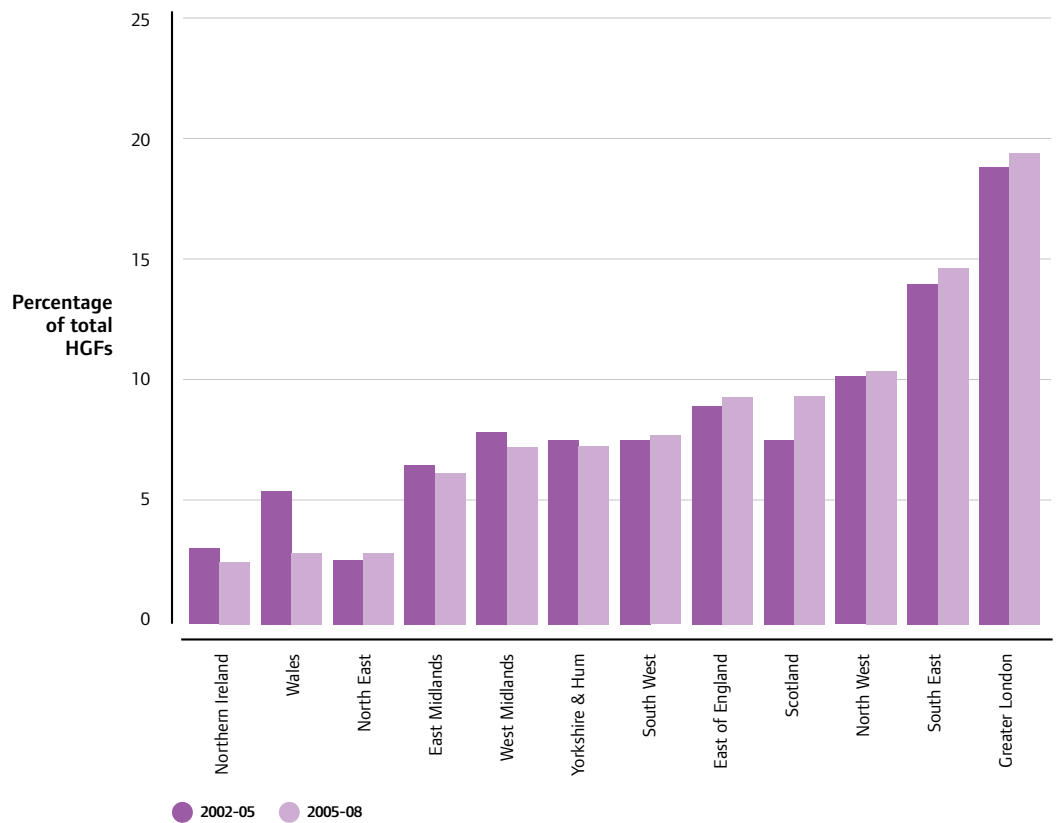
22. Range = 1-19 per cent in Figure 8.

Figure 9: Rate of jobs created/destroyed by growth category



Source: ONS Business Structure Database.

Figure 10: Regional share of high-growth firms in the UK: employment (n=11,369 and 11,530)



Source: ONS Business Structure Database.

23. Note that jobs created by start-ups at the time they are set up are excluded. Similarly, public sector jobs are not included either.

24. Firms are allocated to a region on the basis of the location of their Head Office – in other words, the employment of a multi-plant firm is ‘attached’ to the region where the Head Office is located.

25. This is consistent with some of the earlier research in the UK undertaken by Mason (1985) and Gallagher and Miller (1991).

that is, 1.3 million jobs out of a total of 2.4 million net job creations.

A similar conclusion emerges if we consider all the jobs created by existing businesses, including those jobs created by microenterprises (businesses with fewer than ten employees).²³ Established firms (regardless of their size) created 3.4 million net jobs in 2002-05 and 2.9 million net jobs in 2005-08. Consequently, these 11,500 high-growth firms accounted for 56 per cent of jobs created by existing businesses in 2002-05 and 43 per cent in 2005-08, or an average of 49.5 per cent between 2002 and 2008.

Therefore, putting the numbers in perspective, between 5 and 8 per cent of all private sector jobs at any time have been created by the spurt of high-growth of a ‘few’ firms during the prior three years.

2.5 Where are UK high-growth firms located?

We now examine the regional distribution of high-growth firms in both periods (Figure 10).²⁴ In absolute terms, around one-third of high-growth firms are to be found in Greater London and the South East.²⁵

However, it is more important to investigate the share of high-growth firms across the UK regions standardised by the stock of businesses employing ten or more people. We must be careful interpreting these data as we know that the location of the business is determined by where a business with many local units chooses to record its employment. So, for example, a region which records a high proportion of high-growth firms may benefit statistically if fast growth in plants in other regions of the UK is allocated to the headquarters. It is for that reason that we do not, at this stage, go beyond a simple description of the regional distribution.

Nevertheless, the regional data presented in Table 2 show some notable patterns. Perhaps not surprisingly, Greater London had an above-average share of high-growth firms in both periods with the South East above-average in 2005-08. However, in both periods some peripheral regions (Wales and Northern Ireland in 2002-05 and Scotland and the North East in 2005-08) have above-average shares of high-growth firms than other more central and southern English regions.

If we restrict the analysis to manufacturing only to overcome any industry compositional effects of the business stock in different regions the 'North-South' differences are still in evidence (Table 3). This is particularly the case for Wales and Northern Ireland which have a significantly higher proportion of high-growth firms in manufacturing than any other UK region in the 2002-05 period. This share falls in the later period, although it is still above average, and might reflect a lack of sustainability of growth in small regional economies such as Wales and Northern Ireland.

Apart from Greater London, all the other regions with above average shares of high-growth manufacturing firms in both periods are in the more peripheral areas of the UK in this period, although the East Midlands region records a marginally above-average share in the 2005-08 period. This finding merits further investigation but there may well be some connection here to the role of the major state aid in these UK Assisted Areas.²⁶

2.6 The characteristics of high-growth firms in the UK

The discussion of the characteristics of high-growth firms in this section will concentrate on the employee-based definition which facilitates the widest international comparisons and avoids the problems identified by the OECD which we set out earlier. We present data on the numbers of high-growth firms by initial employment size, business age and sector as well as discuss what sub-groups of high-growth

26. Hart *et al.* (2008a; 2008b) provides some strong supporting evidence on the effectiveness of Regional Selective Assistance (RSA) to businesses in Scotland and England in the 2000-04 period.

Table 2: High-growth firms share of all firms (10+ employees) in the UK regions

Government Office Region (GOR)	2002-05		2005-08	
	No. of High-growth Firms	Percentage of all firms (10+ emps)	No. of High-growth Firms	Percentage of all firms (10+ emps)
East Midlands	740	5.7	720	5.1
East of England	979	5.8	1,025	5.6
Greater London	2,103	7.5	2,219	6.9
North East	357	6.2	389	6.1
Northern Ireland	364	6.5	303	4.6
North West	1,151	6.1	1,199	5.5
Scotland	830	6.3	1,030	7.0
South East	1,583	6.2	1,689	5.9
South West	883	6.2	900	5.6
Wales	596	9.1	335	4.8
West Midlands	904	5.6	851	4.8
Yorkshire & Humberside	879	6.1	870	5.3
United Kingdom	11,369	6.3	11,530	5.8

Source: ONS Business Structure Database.

Table 3: High-growth firms share of all firms (10+ employees) in the UK regions: manufacturing only

Government Office Region (GOR)	No. of High-growth firms	2002-05	No. of High-growth firms	2005-08
		Percentage of all firms (10+ emps)		Percentage of all firms (10+ emps)
East Midlands	172	4.2	147	3.6
East of England	147	3.8	125	3.2
Greater London	166	4.7	144	3.9
North East	65	4.9	70	5.1
Northern Ireland	75	6.5	60	4.8
North West	217	4.5	148	3.0
Scotland	112	4.6	127	5.0
South East	169	3.3	169	3.4
South West	127	4.2	108	3.4
Wales	114	7.1	64	4.0
West Midlands	188	3.4	151	2.7
Yorkshire & Humberside	186	4.7	148	3.5
United Kingdom	1,738	4.3	1,461	3.5

Source: ONS Business Structure Database.

firms make the biggest contribution in terms of job creation.

2.6.1 There is little variation in the share of high-growth firms by firm size

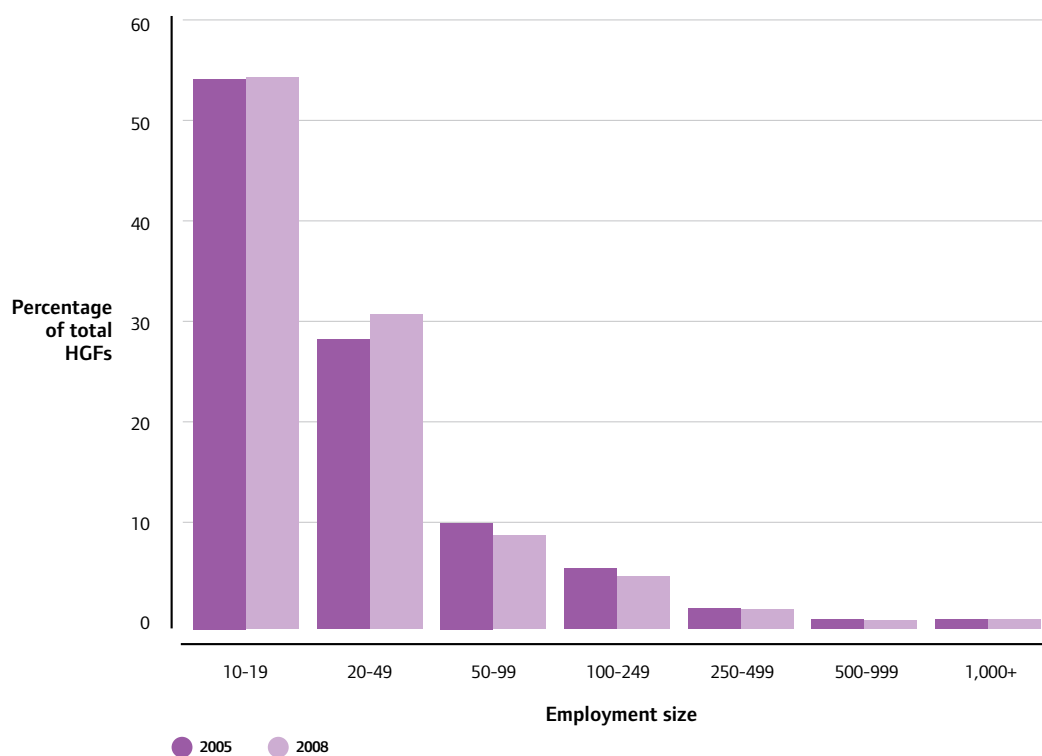
The majority (four-fifths) of high-growth firms in the two periods employed fewer than 50 employees in the base year (i.e. 2005 or 2008) with just over half employing between ten and 19 people (Figure 11). However, when we calculate the proportion of high-growth firms in each employment size category we find very little variation (Table 4). For example, in the 2002-05 period, the share ranges between 5.9 per cent for the 20-49 employee size band to 6.8 per cent in the 50-99 employee category. The other three size bands have slightly above-average shares at 6.5 per cent. In the 2005-08 period, again there is very little variation between 5.2 and 5.9 per cent with the 100-249 employee category recording the lowest proportion and the 10-19 employee the highest.

However, while firms employing fewer than 50 employees were numerically important, it is clear from Table 4 that around half of the 2.67 million jobs in the 11,369 high-growth firms in 2005 were in firms that employed 250 or more people in 2002. Although employing fewer people in 2008 the same pattern was observed for the 11,530 high-growth firms identified between 2005 and 2008.

In both time periods firms with more than 250 employees increased their average size threefold from just over 1,000 employees on average to around 3,000 employees three years later. However, Table 4 also shows that high-growth firms employing fewer than 50 employees recorded a higher ratio of employment increase compared to larger firms.

More importantly, in terms of job creation, we observe that a small number (~350-400) of larger high-growth firms employing more than 250 employees were responsible for almost half

Figure 11: High-growth firms: initial employment size profile



Source: ONS Business Structure Database.
 Note: 2002-05 (n=11,369); 2005-08 (n=11,530)

Table 4: Employment in high-growth firms by initial employment size

Employment Size (base year)	No. of Employees (2005)	Share of Employees (percentage)	Average Size in 2002	Average Size in 2005	Ratio 05/02	Percentage of High-Growth Firms	No. of Employees (2008)	Share of Employees (percentage)	Average Size in 2005	Average Size in 2008	Ratio 08/05	Percentage of High-Growth Firms
10-19	281,669	10.5	13.2	46.4	3.51	6.5	259,417	13.1	13.4	42.2	3.15	5.9
20-49	410,450	15.4	30.3	129.9	4.28	5.9	326,884	16.5	29.8	92.0	3.08	5.8
50-99	370,750	13.9	69.2	323.2	4.67	6.8	185,748	9.4	69.4	197.4	2.84	5.3
100-249	325,279	12.2	152.3	541.2	3.55	6.6	243,882	12.3	151.0	464.5	3.08	5.2
250+	1,284,037	48.1	1,079.7	3,250.7	3.01	6.6	960,677	48.6	1,066.2	2,683.5	2.52	5.6
Total	2,672,185	100.0	68.0	235.0	3.45	6.3	1,976,608	100.0	62.0	171.4	2.77	5.8

Source: ONS Business Structure Database.

Table 5: Job creation in high-growth firms by initial employment size**(a) High-growth firms 2002-05**

Employment size (base year)	No. of firms	Employment 2002	Employment 2005	Employment change 2002-2005	Share of total net job creation	Ratio of employment 2002-2005
10-19	6,067	80,351	281,669	201,318	10.6	3.51
20-49	3,159	95,822	410,450	314,628	16.6	4.28
50-99	1,147	79,372	370,750	291,378	15.3	4.67
100-249	601	91,544	325,279	233,735	12.3	3.55
250+	395	426,462	1,284,037	857,575	45.2	3.01
Total	11,369	773,551	2,672,185	1,898,634	100.0	3.45

(b) High-growth firms 2005-08

Employment size (base year)	No. of firms	Employment 2005	Employment 2008	Employment change 2005-2008	Share of total net job creation	Ratio of employment 2005-2008
10-19	6,152	82,374	259,417	177,043	14.0	3.15
20-49	3,554	106,050	326,884	220,834	17.5	3.08
50-99	941	65,310	185,748	120,438	9.5	2.84
100-249	525	79,288	243,882	164,594	13.0	3.08
250+	358	381,709	960,677	578,968	45.9	2.52
Total	11,530	714,731	1,976,608	1,261,877	100.0	2.77

Source: ONS Business Structure Database.

the jobs (~45 per cent) created in this group of firms (Table 5).

Nevertheless, small high-growth firms employing fewer than 50 employees are not unimportant. They created just over half a million jobs in 2005 and almost 400,000 in 2008. Significantly, the rate of job increase in small high-growth firms is slightly higher than firms employing more than 100 employees. Overall, therefore, between a quarter and a third of net job creation in high-growth firms took place in those firms employing fewer than 50 employees three years earlier.

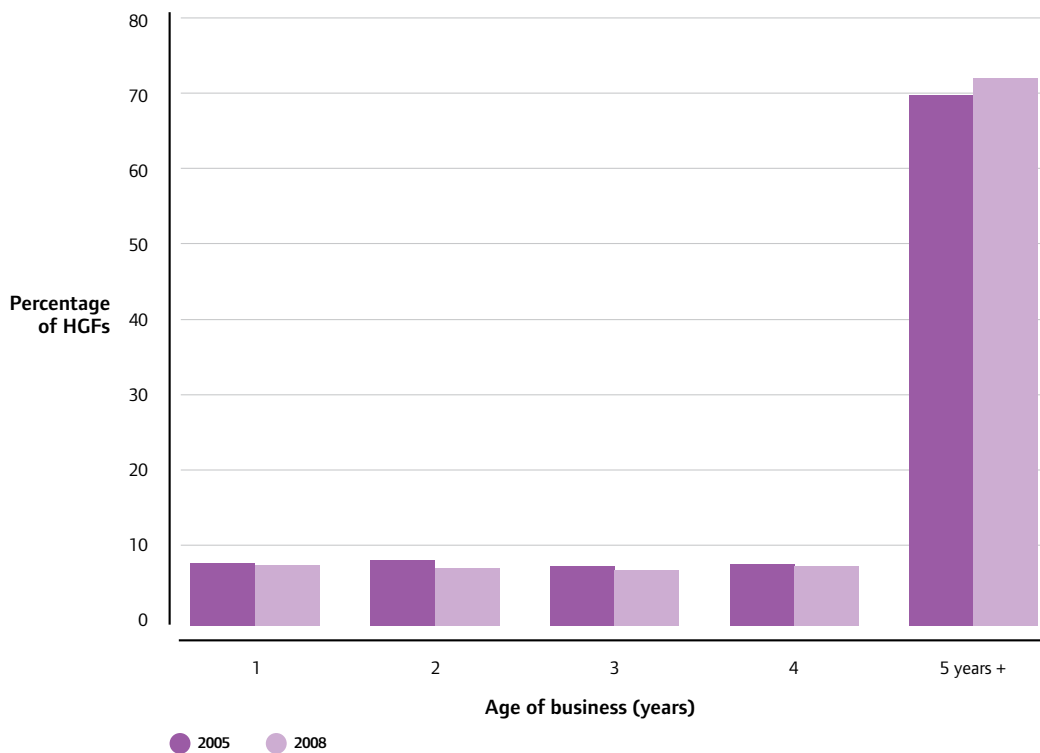
2.6.2 Young firms are more likely to be high-growth, even if most high-growth firms are old

The vast majority (70 per cent) of high-growth firms were at least five years old in both

sub-periods (Figure 12), which is consistent with the fact that most firms are of that age. There were only 3,446 gazelles in the UK in the 2002-05 period and marginally fewer in 2005-08 (3,230 firms) – around a third of all high-growth firms. However, the share of high-growth firms among young firms (less than five years) is significantly higher than for older firms: 11.2 compared to 5.4 per cent in 2002-05 and 8.5 compared to 5.1 per cent in 2005-08.

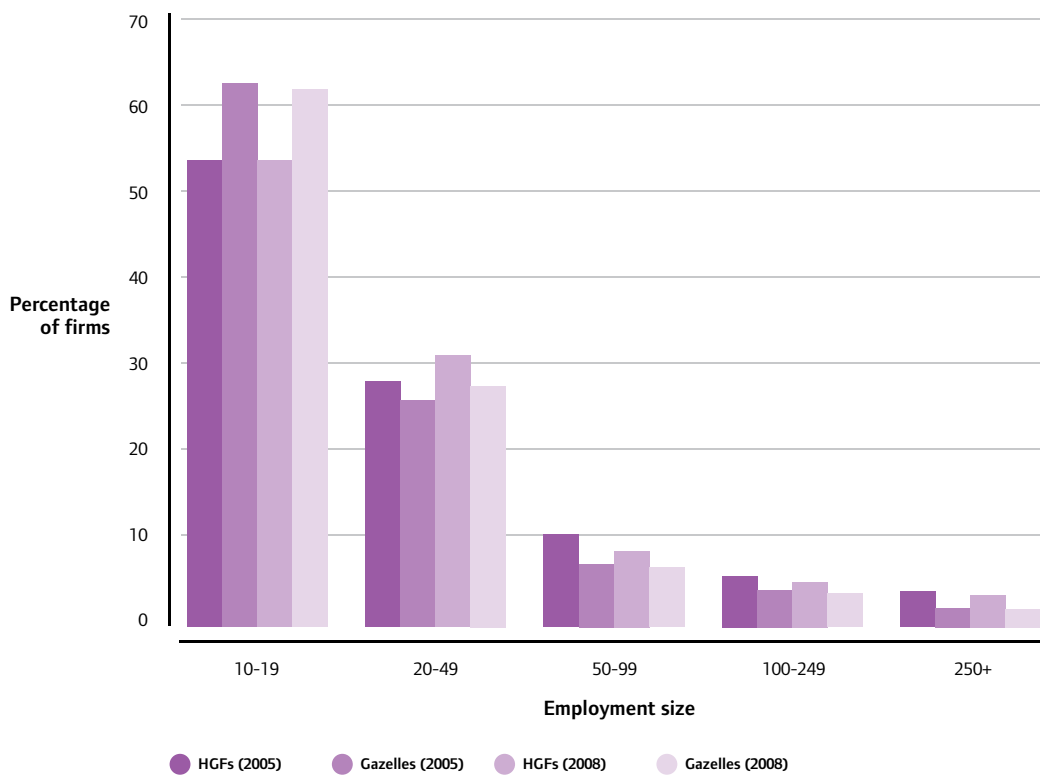
Gazelles are, on average, smaller in size – with over three-fifths employing fewer than 20 employees in the base year compared with over half of high-growth firms (Figure 13). This translates into an average of 42 and 34 jobs in gazelles in 2002 and 2005 respectively, compared with 68 and 62 jobs in all high-growth firms. In 2005 and 2008 the

Figure 12: High-growth firms in the UK by business age



Source: ONS Business Structure Database.
 Note: 2002-05 (n=11,369); 2005-08 (n=11,530)

Figure 13: Size distribution of high-growth firms and gazelles in the UK



Source: ONS Business Structure Database.

average size of gazelles was 139 and 109 jobs respectively and the comparable figures for high-growth firms were 235 and 171.

How important were these gazelles in the overall scale of job increase? We have already established that high-growth firms recorded an increase of 1.9 million jobs in the three years 2002-05 and we can observe that gazelles created only a fifth of those jobs in both periods. Therefore, gazelles were responsible for a very small proportion of net job creation in the UK economy in the period under review: only 9 per cent of jobs in the 2002-05 period and 15.7 per cent in the 2005-08 period.

Figure 14 compares the scale of job increase between gazelles and all high-growth firms across their initial employment size bands. We can see that the main differences are that the majority of the job increase by gazelles is in firms employing fewer than 50 people, whereas for high-growth firms 45 per cent of the net job creation is in firms employing more than 250 people.

So, while we observe a group of firms that may be termed 'super-gazelles' or 'gorillas' in

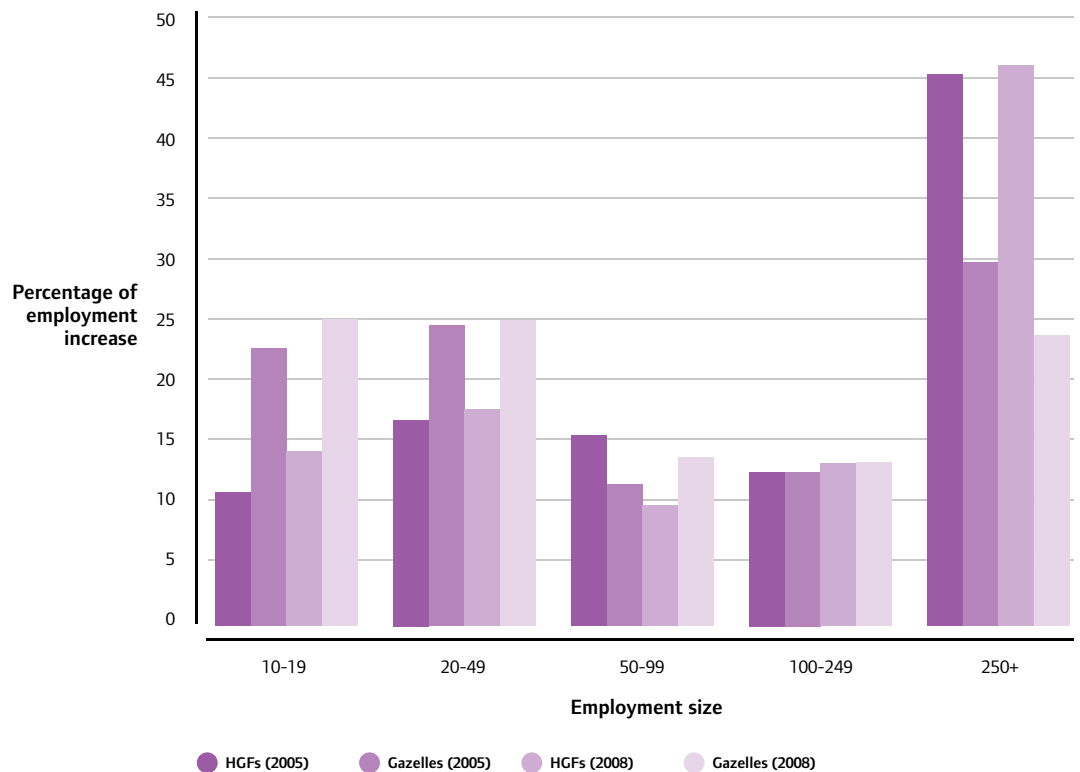
the UK – defined as employing more than 250 employees, they are very few in number (~50 firms) and they were responsible for only 24-30 per cent of the increase in employment in gazelles in 2005 and 2008 respectively. Longer established, larger high-growth firms are, therefore, more important in terms of net job creation than these super-gazelles.

2.6.3 High-growth firms exist in all sectors of the UK economy

Figure 15 clearly illustrates that high-growth firms can be found in all sectors and there is no evidence that they are more likely to be in the 'high-tech', knowledge-based or creative sectors of the economy. For example, around one-fifth of high-growth firms are involved in Wholesale and Retail trades with a further third engaged in Construction, Hotels and Restaurants and Personal Services. One in six high-growth firms were in the Manufacturing sector while just over a quarter were in Financial and Business Services. The pattern is broadly consistent over time.

However, Figure 16 reveals that the proportion of high-growth firms varies quite markedly by sector and that the pattern is broadly similar

Figure 14: Share of employment increase by size band: high-growth firms and gazelles in the UK



Source: ONS Business Structure Database.

in both periods. Manufacturing has the lowest proportion (around 4 per cent) with Financial and Business Services the highest (around 8-9 per cent). This above average share is not that surprising given the performance of these sectors in the UK and what this analysis reveals is that one firm in every ten in these sectors (i.e. those employing ten or more employees) recorded high-growth. The remaining sectors had shares around the average for the UK (i.e. 6 per cent).

2.7 UK in context – international comparisons²⁷

This is the first study to provide accurate measures for the number of high-growth firms in the UK which can be compared with other countries. To date, data weaknesses have made international comparisons problematic but the ongoing work within the OECD in collaboration with national statistics offices has made important progress. As a result of the availability of the new UK business

demography database we can now make some comparisons with OECD business demography statistics for 2005.²⁸

What we can see immediately from Figure 17 is that the share of high growth firms in the UK is amongst the highest of the OECD countries for which data was available, with the same share as the US – 5.2 per cent.²⁹ These figures equate to 10,417 high-growth firms in the UK compared to 48,550 in the US.

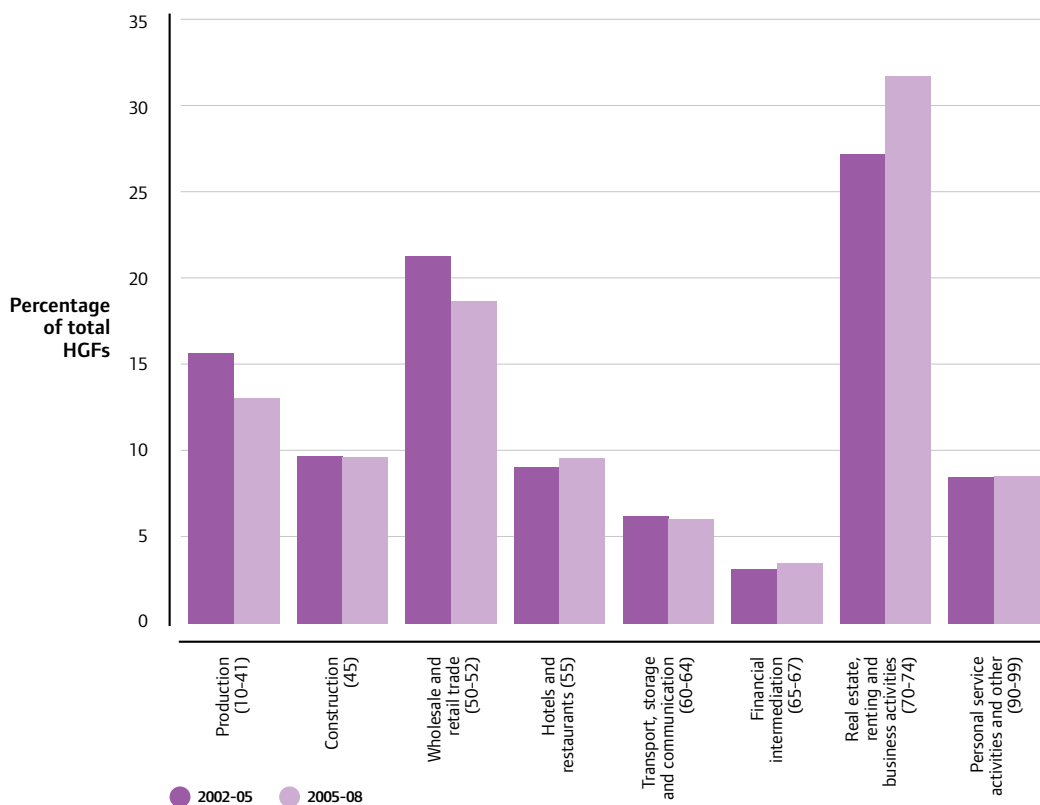
The fact that the share of high-growth firms in the UK is identical to the US goes against commonly held beliefs that the US is a more fertile ground for ‘exceptional’ businesses to thrive. It is perhaps more the case that high growth firms within the two countries have different experiences. The UK could well have high-growth firms that either initially or subsequently grow more slowly, while US firms may be more successful at sustaining high-growth over a long period of time, and thus becoming global champions. In fact, as the next section shows, that scenario is a very uncommon finding in the UK.

27. This section has been amended since this report was originally published. The Eurostat-OECD Manual on Business Demography Statistics states that the share of high growth firms should be the number of high-growth enterprises as a percentage of the total population of active enterprises with at least t employees. We interpreted “the total population of active enterprises with at least t employees” as referring to “all firms that were alive in time t and time t-3 which had ten or more employees in time t-3”. It turns out that the OECD considers instead “the total population of firms alive in period t with ten or more employees in period t (regardless of whether the firms existed or not in period t-3)”. While we consider our approach preferable, Figures 17 and 19, and the text that refers to them, are corrected accordingly so that cross-country comparisons are consistent.

28. This is the latest year for which international comparative data is available. The analysis is restricted to SIC codes 10-74 and for that reason the number of high-growth firms in the UK is 10,417.

29. In order to compare the share of high growth firms across countries we re-calculate the proportion of HGFs in the UK following a methodology which differs from the one adopted in this report. In brief, throughout the report we express the number of HGFs as a proportion of the population of surviving firms in the three-year period with ten or more employees at the beginning of the period. Instead, the figures published by the OECD have as a denominator the total population of active enterprises in the reporting year with at least ten employees. This explains why the proportion of HGF goes down when we follow the OECD implementation.

Figure 15: High-growth firms in the UK by sector



Source: ONS Business Structure Database.
 Note: 2002-05 (n=11,369); 2005-08 (n=11,530)

We can examine some of these hypotheses with existing data, as we do next. But further data is required to shed light on some of these issues. Because of this, NESTA and FORA³⁰ are currently working together to collect more detailed comparable cross-country data on firm growth, which will help to provide a more granular picture of the differences in firm growth across several countries, including the US and the UK.

Existing data does, however, already highlight some interesting differences. In the US the proportion of high-growth firms that can be categorised as gazelles was 9.2 per cent (i.e. 4,457 firms) which compares to almost a third in the UK (i.e. 3,127 firms). In other words, therefore, high-growth firms in the US are more likely to be older (5+ years) than those in the UK.³¹ This is a significant difference and becomes important given the lower contribution by gazelles to net job creation in the UK. This would seem to point towards a smaller overall impact of high-growth firms in the UK compared to the US. This is clearly an important line of enquiry for future research.

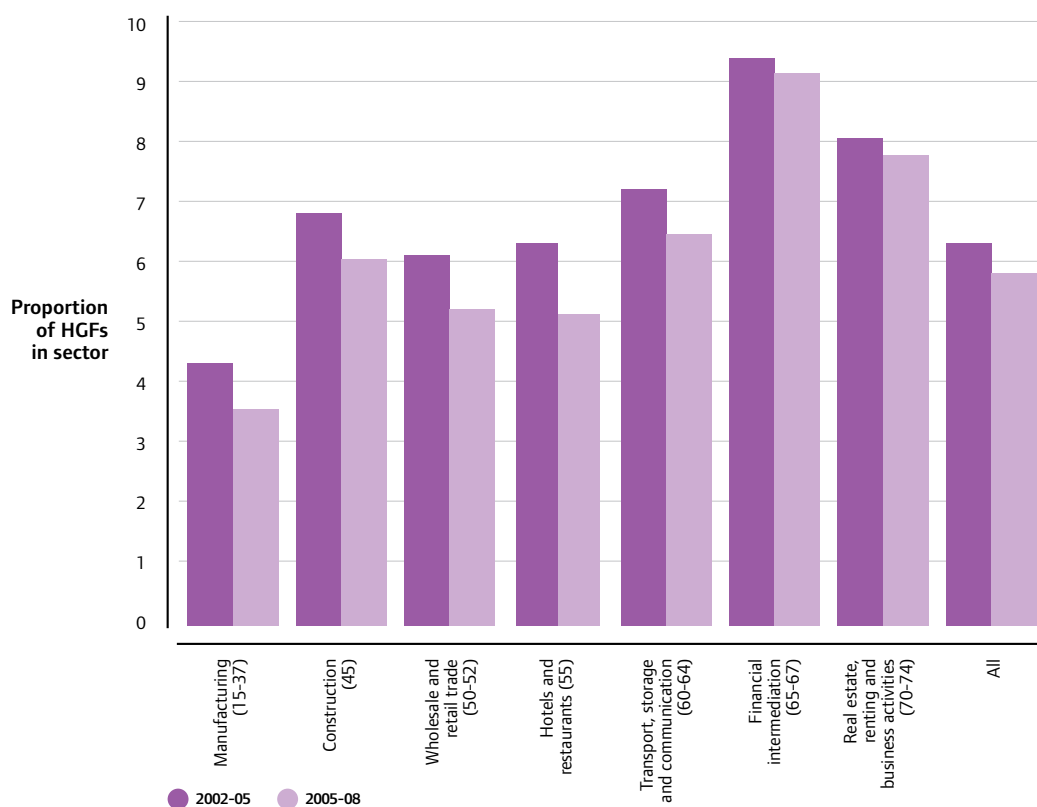
A comparison of the sectoral distribution of high-growth firms in the UK and the US reveals some differences (Figure 18). First, there are more construction high-growth firms in the US than in the UK. Second, there are more Business Service high-growth firms in the UK than in the US. Finally, there are marginally more manufacturing firms among the stock of high-growth firms in the UK than in the US (17 per cent compared to 13 per cent).

Another important issue in this comparison, which is perhaps masked by the overall identical share, is the extent to which the shares of high-growth firms differ within the same sector between the UK and the US. Figure 19 reveals that there are higher overall proportions of high-growth firms in the US in all sectors except for Wholesale and Retail, Hotels and Restaurants and Financial Intermediation. Of particular note is that Financial Intermediation has the largest share of high-growth firms in the UK whilst in the US it is the Construction sector.

30. FORA is the Danish Enterprise and Construction Authority's Division for Research and Analysis. See www.foranet.dk

31. The definition of a 'gazelle' for the UK in this analysis differs from the definition used by the OECD: that is, a high-growth business aged five years and under. This is not an arbitrary decision as we are constrained in the UK because the dataset we use only starts in 1997 and therefore, for the 2005 international comparison of high-growth firms, we are unable to distinguish between businesses born in 1997 from those born in 1996 or earlier. Therefore, as the definition of a 'birth' in this analysis is the first year in which the business has at least one employee, we are obliged to adopt a definition of a gazelle in the UK as 'less than five years'.

Figure 16: Share of high-growth firms in the UK by sector



Source: ONS Business Structure Database.

It is not possible accurately to benchmark the other findings from our analysis in the UK with equivalent data for the US. However, a recent study of 'high-impact firms' in the US shows some findings consistent with our own.³² For example, the average age of a US high-impact firm is 25. Similarly, high-impact firms exist in *all* industries and are by no means confined to high-technology industries. There is, therefore, some consistency between the US and our own analysis for the UK despite the differing time periods and definitions.

2.8 Summary

The small number of high-growth firms in the UK employed around one in every ten jobs in the private sector. They have been responsible for around half of the net job creation by existing businesses in the six years prior to the current recession. So, although they are few in number they have made significant positive contributions to employment change in recent years. International comparisons reveal that the UK had one of the highest shares of high-growth firms in 2005 among OECD countries for which data is available.

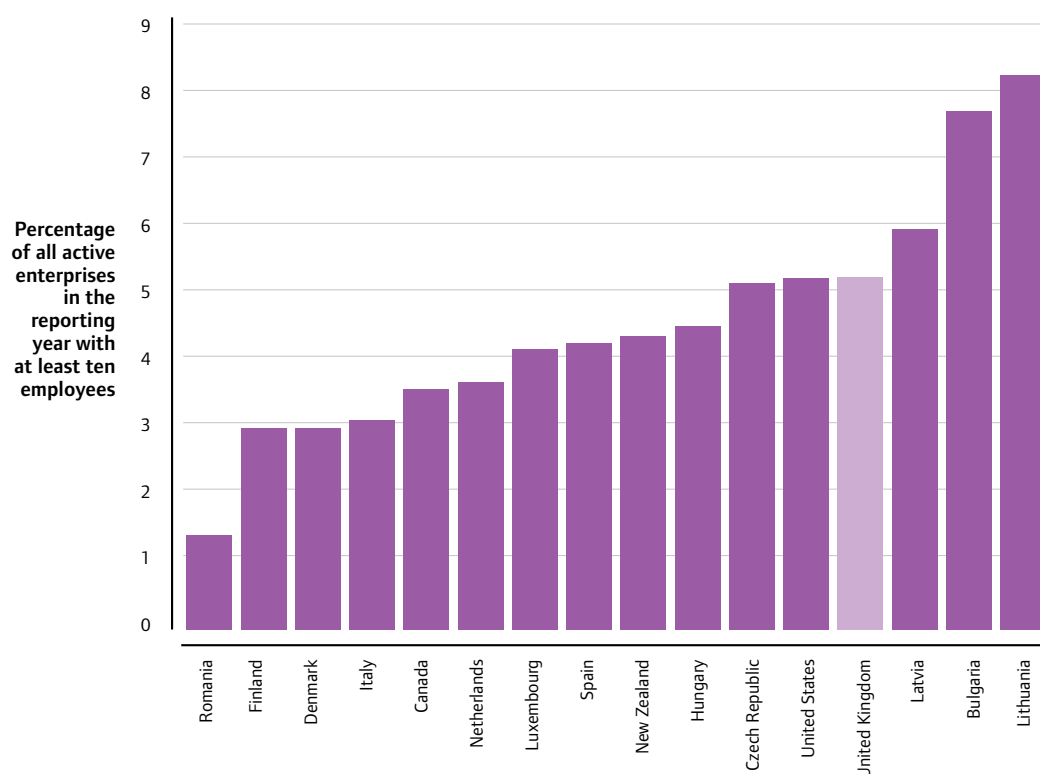
We observe that high-growth firms are found in a diverse range of sectors and are particularly concentrated in Business Services, Wholesale and Retail as well as Production. This is consistent with other studies and is a reminder not to assume that 'high-growth' businesses are solely to be found in high-technology sectors or other industries which have attracted considerable policy attention in recent years such as knowledge-based sectors and the creative industries.

Numerically, high-growth firms tend to be small (fewer than 50 employees) and indeed these smaller firms created between 26-31 per cent of all the net job growth in this group of firms.

The majority are well established (i.e. more than five years of age) in the markets they are operating and, therefore, we conclude that gazelles are not a common feature of the population of high-growth firms in the UK. Further, the sub-set of gazelles is not the major source of net jobs within the UK as the more established high-growth firms are responsible for most of the increase in employment.

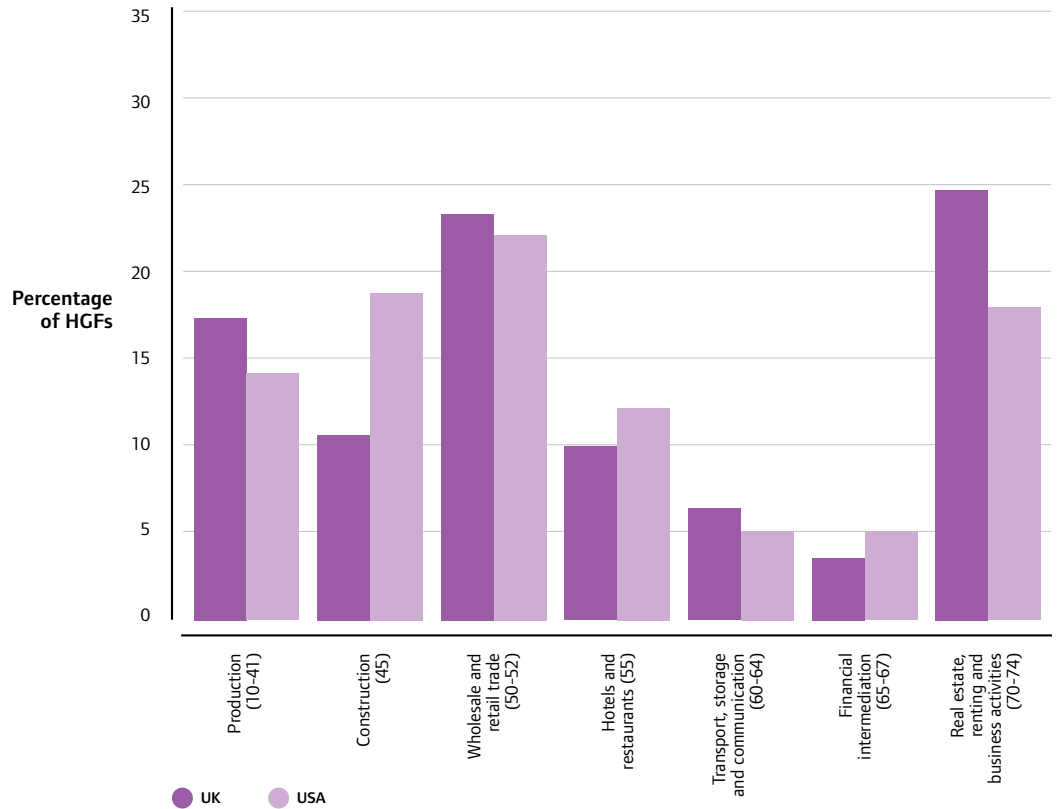
32. See Acs *et al.* (2008). High impact firms are defined as enterprises whose sales have at least doubled over a four-year period and which have an employment growth quantifier (the relationship between its absolute and percentage change) of two or more over the period. Firms were tracked from 1994-1998 and from 1998-2002.

Figure 17: Share of high-growth firms in selected OECD countries (2005) – employee-based measure



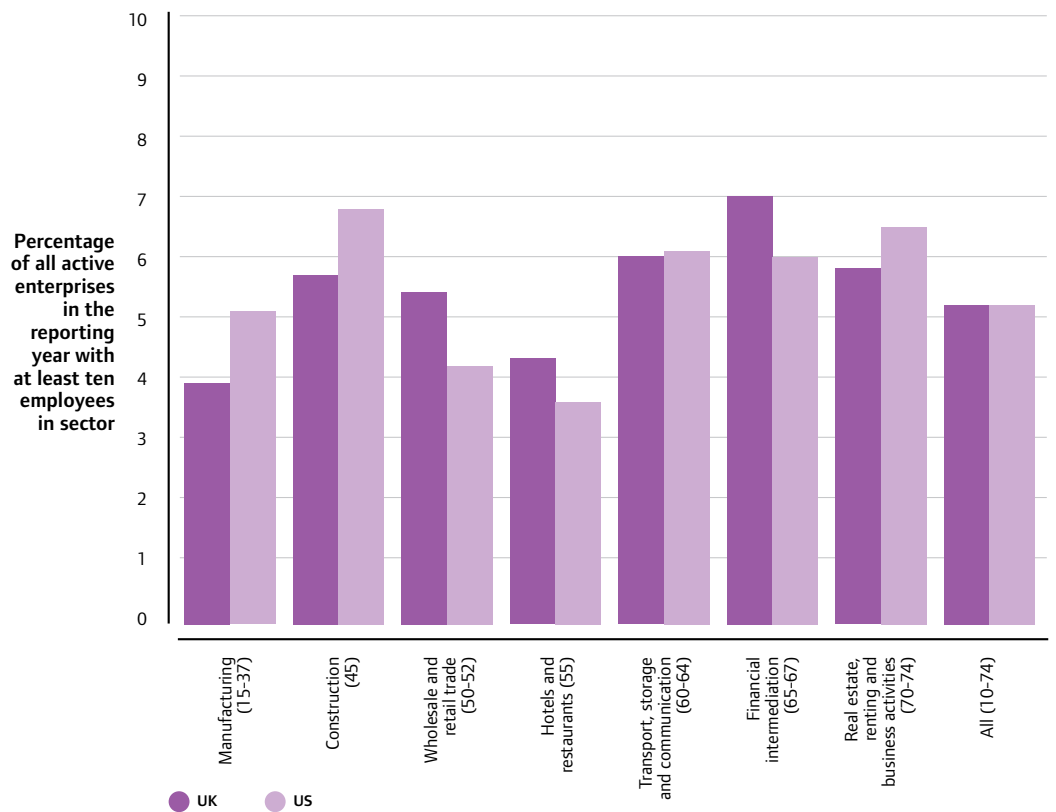
Source: ONS Business Structure Database; OECD Business Demography Statistics.

Figure 18: High-growth firms in the UK and US: sectoral distribution, 2005



Source: ONS Business Structure Database; OECD.

Figure 19: High-growth firms in the UK and US by sector



Source: ONS Business Structure Database; OECD.

Part 3: Growth and survival: a ten-year cohort perspective

3.1 Introduction

An analysis of growth over three-year periods allows international growth comparisons and is more timely, but it does not provide a full picture of a firm's long-term development. Therefore, we present a detailed examination of the 1998 cohort of new entrants ('births') in the UK. We are interested in how these firms grew year after year from inception – with ten years of data from the UK business demography dataset we can undertake this analysis.

We will explore a number of related questions. First, we are interested in the timing of the 'high-growth events'³³ in a ten-year period. For example, does high-growth occur immediately after start-up or some years later when firms are more established in the market? Second, we investigate the extent to which survival rates for firms recording a 'high-growth' event are higher than those businesses that have not. Third, we present a detailed analysis of job creation by the 1998 cohort of start-ups over ten years.

3.2 Growth trajectories of the 1998 cohort

3.2.1 Achieving 'high-growth' in consecutive years is rare

We examine the 221,731 firms that were born in 1998 and had at least one employee.³⁴ We compute the annual growth rate in employment for each year in the ten-year period (1998/99 to 2007/08) and then code each year into three categories:

- 'High-growth': ten or more employees and growth of 20 per cent in that year (note that this is different from the average over a three-year period definition used in the previous sections).³⁵
- Alive but not high-growth (this category includes firms growing more slowly, not growing at all or declining in that year, and those growing by more than 20 per cent but having fewer than ten employees).
- Not Active or no employment which signals its disappearance from the database (the IDBR reference number ceases to be live). This could be for a number of reasons which do not necessarily relate to the death or closure of the firm – for instance, they could have been acquired and be still operating as another legal entity (e.g. subsidiary).

Of the almost quarter of a million firms in the 1998 cohort, just 7,239 recorded one or more annual instances of 'high-growth' in the decade 1999 to 2008. That is, only 3.1 per cent of all start-ups grew by more than 20 per cent in a single year (once they had achieved ten or more employees). Not only was the experience of high-growth relatively rare, but multiple instances were even rarer, affecting only about one-third of high-growth firms (2,776). In other words, only 1.2 per cent of firms in the cohort achieve annual growth higher than 20 per cent (on a base of ten employees) more than once over a ten-year period.

The number of firms recording a single instance of high-growth varied considerably over time, there were many more episodes in 2001 and 2002 than before or after. In other words, firms were more likely to experience an annual spurt of high-growth when they were three or

33. We use the term 'high-growth' to refer to firms with ten employees or more who grow by more than 20 per cent in a particular year. This differs from the OECD definition, which looks at average growth over a three-year period rather than the annual data we use in this chapter.

34. Firms are 'employer enterprises' (i.e. at least one employee) and birth is defined as the first appearance of non-zero employment.

35. About 4 per cent of strings were anomalous – they died but subsequently 'came back to life'. Since we have no means of separating measurement error from any other explanation for these 8,672 anomalous records they have been excluded. The 1998 cohort population for our analysis is therefore 221,731 firms. Between them the firms in the 1998 cohort displayed more than 650 distinct 10-element strings: the commonest string, recorded 82,505 times (37 per cent of all 1998 cohort firms), was ten years of not high-growth.

four years old (although it is not possible to distinguish between the effect of age and that of the economic cycle).

Figure 20 is a sequence index plot³⁶ which is designed to provide some further insight into the timing of these annual high-growth episodes recorded by all the 7,239 firms which experienced such an episode. Each firm's history is represented by a single horizontal 'strip'. Firms are split into those which are not active (white), those with 'high-growth' (purple) and the remaining firms which were still alive (light purple).³⁷

Needless to say, we are most interested in the high-growth firms: a purple rectangle one row 'high' and one year 'wide' is a single episode of high-growth. The firms experiencing only one year of rapid growth stand out very clearly as the relatively large purple rectangles, one for each year with their height proportional to their frequency. Equally clear are the mixed fortunes which follow an instance of high-growth. For example, in a number of cases, most obviously for those whose high-growth instance comes quite early, white patches – denoting that the

business is not active subsequently – are clearly visible. Most commonly, though, high-growth (purple) is followed by slower growth, no change or decline (light purple).

So, if we take the 1,185 firms which were born in 1998 and achieved their first episode of substantial growth in 2000-01, the plot shows us that only 42 per cent of them experienced another year of high-growth and were still active by 2008, 36 per cent subsequently never experienced high-growth and 22 per cent became inactive.

We can also see that relatively few firms record multiple instance of high-growth. However, because of the relative rarity, and also because consecutive episodes (even for firms recording multiple instances of high-growth) are even rarer and so difficult to 'see', the frequency of multiple instances is recorded on Table 6. There are only 2,776 firms out of the 221,731 UK start-ups born in 1998 that experience more than one year of high-growth, and almost two-thirds of these are accounted for by the 1,822 firms recording just two instances (i.e. less than half as common as single instances). It is

36. This terminology is due to Brzinsky-Fay *et al.* (2006).

37. Before plotting, to aid visualisation, we organise the collection of strings of ten letters in ascending (alphabetical) order, starting with the first year (1999). Non Active firms will appear at the top of the list, then the 'not high' and then the 'high-growth'. Then, each of the three groups – not active, not high, and high – is separately re-ordered, again in ascending order, according to the second year's (2000) string element. Then each of the nine groups (three groups of three) is re-ordered separately, in ascending order again, according to the third year's (2001) string element. This algorithm, involving successive re-sorting, is repeated for the remaining years (2002 through to 2008), and yields an arrangement of the firms where those which recorded an instance of high-growth in the last year – 2007/08 – are close to the top; whilst firms which record an instance of high-growth in 1998/99 are at the bottom. These sorted strings form the display on Figure 20.

Figure 20: Start-ups in 1998: timing of 'high-growth' events 1998-99 to 2007-08 (n=7,239 firms in categorical size order)

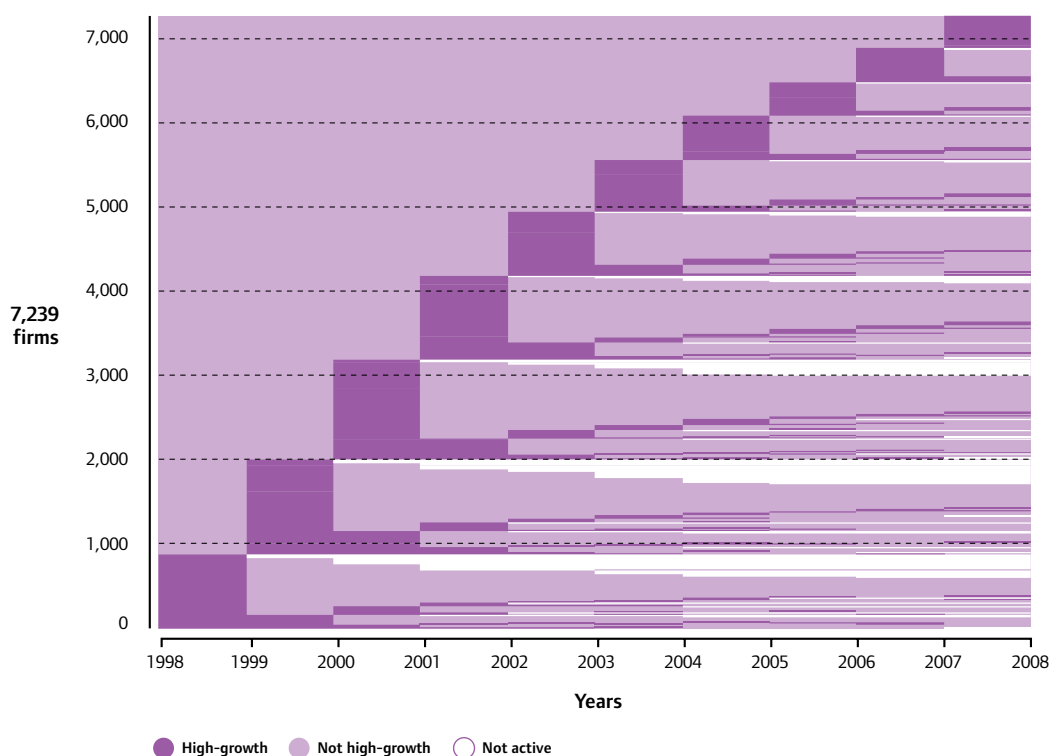


Table 6: United Kingdom, cohort 1998: high-growth firms by number of high-growth instances

Instances of high-growth	Number of firms
1	4,463
2	1,822
3	639
4	218
5	71
6+	26
All	7,239

Source: ONS Business Structure Database.

worth noting that amongst firms experiencing high-growth twice, only one-third record consecutive instances.

Very few firms record more than two instances of high-growth. Just 639 firms recorded three instances. The largest number of instances was eight, recorded by only one firm: so for the 1998 cohort, the chances of experiencing eight years of ‘high-growth’ were around 1: 221,731.

3.2.2 Firms experiencing high-growth are more likely to survive

We saw earlier in Figure 20 that some high-growth firms do disappear from the BSD (presumed closed), but Table 7 shows the number is small, both absolutely and relatively. Whilst 60 per cent of the overall cohort has ‘died’ by 2008, the proportion of high-growth firms dying is just 18 per cent. Evidently, the experience of high-growth and survival are very closely and positively related. Moreover, the proportion ‘dead’ amongst firms recording a ‘high-growth’ event is inversely related to the number of high-growth instances. For firms with a single instance of high-growth almost one-quarter are dead by 2008, while for multiple instance firms the average proportion is just one-tenth.³⁸

3.3 Job creation and the start-up cohort of 1998

The previous section examined the scale of employment increase in high-growth firms. Here we return to this issue by looking at the

profile of employment change in a cohort of start-ups (those firms that started in 1998) since their first year of operation. What we are interested in showing here is the relative contributions of different sized start-ups as they survive and grow over a ten-year period. This is a different, yet complementary, way of investigating which firms make the most important contributions to employment growth in the UK.

The 1998 cohort of start-ups contained 221,731 firms and 1.1 million employees; a decade later the 83,165 survivors had 644,000 employees (Table 8). At birth, the distribution of firms and employees by size-band were quite different: 80 to 90 per cent of firms have fewer than five employees; whilst 70 to 80 per cent of employees are in firms larger than five employees. By 2008, although the strong contrast in concentrations remains, there are fewer very small firms, and employees in this cohort of firms are even more likely to work in larger firms.

3.3.1 Very few firms grow from 1 to 20 employees

We can use an origin/destination matrix to track the movement of firms between employee size-bands over the decade, from 1 employee to 20+ employees. While it would be interesting to examine large firms’ size-bands in more detail, data confidentiality requirements constrain us to choose 20+ as our ‘large’ category.³⁹

Most firms (58 per cent) starting with a single employee still had only one employee at the

38. All the repeatedly high-growth firms – six instances or more – survived to 2008.

39. When we investigate ‘origin/destination’ classifications by size-band over the decade 1998 to 2008, it emerges that there are relatively few small firms (born with fewer than five employees) that become very large (more than 250 employees, for example). But, even more importantly, there are tiny numbers of firms born very large which shrink to less than five employees in ten years. So the character of our data combined with restrictions on disclosure led us to choose 20+ as our ‘large’ size-band. However, a (necessarily) unpublished analysis using finer grained categories showed that none of our substantive conclusions about firm survival and contributions to job generation were affected by combining all (relatively) large firms into a single 20+ category.

Table 7: United Kingdom, cohort 1998: firms by 'high-growth' status, alive and 'not active'

		Number	Alive/Not Active (%)
'High-growth' (3.3%)	All	7,239	
	Alive	5,934	82.0
	Not Active	1,305	18.0
Not 'High-growth' (96.7%)	All	214,492	
	Alive	77,231	36.0
	Not Active	137,261	64.0
All	All	221,731	
	Alive	83,165	37.5
	Not Active	138,566	62.5

Source: ONS Business Structure Database.

Note: The 8,672 'anomalous' cases (see endnotes) are not included in this calculation.

end of the decade (Table 9). And almost half of those who grew added just one employee. Very few firms achieve 20+ employees from a one-employee start-up – there is only a 1:68 chance (1.5 per cent).

For most of the smaller size-bands the pattern is similar. In short, there is a relatively large likelihood of staying in the size-band of birth,

with the chance of a move (in either direction) decaying with 'distance' between size-bands.

The share of firms with more than 20 employees doubled between 1998 and 2008. But only half of the firms born in the 20+ size-band stayed there (43 per cent shrank below 20 employees). So the increase was due to new entrants from smaller size-bands who grew beyond 20 employees. Over half of these

Table 8: Cohort 1998, distribution of firms and employees by size-band (birth and 2008)

	Firms		Employees	
	Birth	2008	Birth	2008
Number - All	221,731	83,165	1,104,184	643,852
Shares (%) size-band				
1	56.0	42.7	11.2	5.5
2	19.6	21.0	7.9	5.4
3	7.9	7.8	4.7	3.0
4	4.5	6.3	3.6	3.2
5-9	7.5	11.7	9.5	9.9
10-19	2.8	5.9	7.2	10.2
20+	1.8	4.5	55.8	62.7

Source: ONS Business Structure Database.

Table 9: Cohort 1998 – survivor firms (2008) – origin/destination matrix by size-band (%)

Origin Size-Band (1998)	Destination Size-Band (2008)							All
	1	2	3	4	5-9	10-19	20+	
1	31.3	10.5	3.4	2.5	4.1	1.6	0.8	54.1
2	7.0	6.7	1.8	1.4	2.3	0.9	0.5	20.5
3	1.8	1.8	1.2	0.8	1.4	0.6	0.3	8.0
4	0.9	0.8	0.6	0.6	1.0	0.5	0.3	4.7
5-9	1.2	0.9	0.6	0.7	2.1	1.2	0.8	7.5
10-19	0.4	0.3	0.2	0.2	0.6	0.8	0.7	3.1
20+	0.2	0.1	0.1	0.1	0.2	0.3	1.2	2.1
All	42.7	21.1	7.8	6.3	11.7	5.9	4.5	100.0

Source: ONS Business Structure Database.

Note: Base is 83,165 survivor firms.

new additions were from firms that started with fewer than five employees. In fact, 1,517 firms out of 72,602 survivor firms 'born' with 1-4 employees made the transition from fewer than five employees in 1998 to 20+ employees in 2008, and 640 of them grew from starting with a single employee.

3.3.2 The distribution of employees changes

Total employment by firms born in 1998 falls from 1.1 million to 644,000 over the decade (Table 10, top row). But survivors experience a growth of jobs from 363,000 to 644,000.

The first two columns in Table 10 show that the distribution of employees across size-bands

Table 10: Cohort 1998 – distribution by size-band of employees for all firms and survivors (%)

	All Firms 1998 Employment	Survivors 1998 Employment	Survivors 2008 Employment	Survivors 2008 Employment
	1,104,184	363,157	643,852	643,852
Number of Employees	Shares (percentage) by Size-Band in 1998	Shares (percentage) by Size-Band in 1998	Shares (percentage) by Size-Band in 2008	Shares (percentage) by Size-Band in 1998
1	11.2	12.4	5.5	25.5
2	7.9	9.4	5.4	10.5
3	4.7	5.5	3.0	6.0
4	3.6	4.3	3.2	4.8
5-9	9.5	10.9	9.9	12.0
10-19	7.2	9.4	10.2	11.7
20+	55.8	48.2	62.7	29.5

Source: ONS Business Structure Database.

at birth for survivors is very similar to that for all start-ups. But the distribution for survivors changes as the cohort evolves (columns 2 and 3). Firms grow larger, so the distribution contracts at the small end and expands at the large end. In other words, the share of employment in firms with one employee falls from 12.4 to 5.5 per cent, while the share for firms with 20+ employees increases from 48.2 to 62.7 per cent.

The comparison between shares in the last column with the shares in the second column provides a useful insight into the pattern of employment growth by size-band. The final column of Table 10 shows the result of re-distributing the 643,852 employees of the 2008 survivors from their 2008 size-bands into their size-bands at birth. So, for example, we allocate to size-band 1 the employees of firms now 20+ but born size 1; similarly we allocate to size-band 1 the employees of firms born size 1 but now size 10-19; and so on. As a result we can see that the share of employment in survivors employing 20+ employees which started with one employee doubled (from 12.4 per cent to 25.5 per cent) over the decade, whilst the employment share of survivors born in the 20+ size-band almost halved (from 48.2 per cent to 29.5 per cent).

These results connect directly with the change in the size distribution of firms discussed earlier: the employment share of firms which employed one person at birth but are 20+ employees in 2008 will necessarily have increased; and the converse will be true of firms with 20+ employees which have slipped into a smaller size-band. Whilst this comparison provides an overview of survivors' growth, to understand the detail we need to examine the matrix of connections between the distribution of survivors' employment by size-band at birth and the distribution by size-band in 2008, the subject to which we now turn.

3.3.3 Where did the jobs in 2008 come from?

An origin/destination matrix by size-band for employees can improve our understanding of the changes in the distribution of jobs as firms move between size-bands. This matrix (constructed along the same lines as that for firms) has origins in the rows, destinations in the columns, and all the entries expressed as ratios (in per cent) to the 2008 employee total (Table 11). The margins of this table correspond to the last two columns in Table 10 – the final column is shares in 2008 employment by 1998 size-band and the bottom row is shares in 2008 employment by 2008 size-band. We now populate the rest of the matrix.

Table 11: Cohort 1998 – survivor firms employment (2008) – origin/destination matrix by size-band (%)

Origin Size-Band (1998)	Destination Size-Band (2008)							
	1	2	3	4	5-9	10-19	20+	All
1	4.0	2.7	1.3	1.3	3.4	2.7	10.0	25.5
2	0.9	1.7	0.7	0.7	1.9	1.6	3.0	10.5
3	0.2	0.5	0.5	0.4	1.2	1.0	2.2	6.0
4	0.1	0.2	0.2	0.3	0.9	0.9	2.2	4.8
5-9	0.2	0.2	0.3	0.4	1.8	2.0	7.2	12.0
10-19	0.1	0.1	0.1	0.1	0.6	1.5	9.4	11.7
20+	0.0	0.0	0.0	0.0	0.2	0.5	28.7	29.5
All	5.5	5.4	3.0	3.2	9.9	10.2	62.7	100.0

Source: ONS Business Structure Database.

Note: Base is 643,852 jobs in 2008 survivor firms: Totals may differ from Table 10 due to rounding.

The column of greatest interest here is, of course, that for the 20+ employee size-band which accounts for almost two-thirds of all employees. Just under half of the employment in the 20+ size-band is accounted for by firms which started with at least 20 employees.

However, the relative importance of the contribution of the smallest start-ups is striking: those with a single employee at start-up alone contribute 10 percentage points, and those with 2-4 employees another 7 percentage points between them.

So, firms with fewer than ten employees at birth contributed about a quarter of the jobs in the 20+ category in 2008. Even more significant though is that firms born with fewer than five employees accounted for 17 per cent of all the jobs in the 20+ category in 2008.

3.3.4 Growth trajectories of larger survivors

We now take a closer look at those surviving firms in the 1998 cohort that employed 20 or more people in 2008, examining their evolution over the decade. Figure 21 shows how the average number of employees in each firm size

category at birth grew between 1998 and 2008 using a log scale.⁴⁰

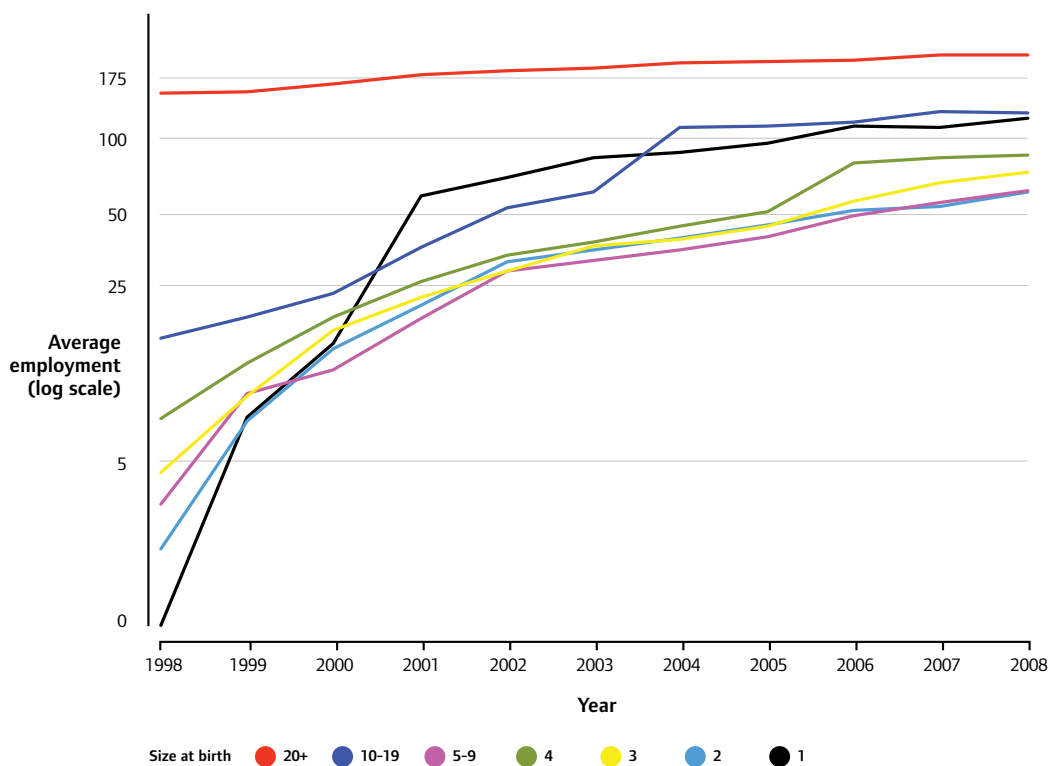
Employee start-ups that reach the 20+ threshold grow extremely fast, particularly when young. By 2001, when these firms were three years old, this group had gone from one employee to 50 employees on average. After the initial spurt, growth slowed and over the next seven years this group of firms averaged about 10 per cent growth a year, reaching 100 employees by 2008.

None of the other groups recorded such a striking surge in growth as those born with one employee, although all of those starting life with fewer than ten employees had around 20 employees by 2001, and by 2008 had between 50 and 75 employees.

Remarkably, the firms born with between two and nine employees are very similar in both their growth trajectories and their employment size in 2008. So there is no evidence of any systematic association over time between size at birth and growth for small firms that achieve the 20+ employee threshold.

40. A log scale is used in order to overcome the problem of plotting values which range over many orders of magnitude – such as in this case the growth of employment in firms over a ten-year period.

Figure 21: Cohort 1998 – average employment trajectory for all surviving firms in 20+ size-band category in 2008



Source: ONS Business Structure Database.

At the top of the plot (in Figure 21) we can see that firms born with 20+ employees (average size at birth of about 130 employees) grow very little over the decade: on average about 3.3 per cent per year and by 2008 they had grown to just 179 employees.

3.4 Summary

The analysis of the 1998 cohort of almost a quarter of a million start-ups in the UK shows that relatively few firms record multiple instances of 'high-growth' (i.e. a 20 per cent increase in employment in any one year). Indeed, few firms record more than two instances of high-growth over a ten-year period.

When we look at the relationship between business growth and survival the picture that emerges is dramatic. Firms recording at least one year of 'high-growth' in the cohort of 1998 start-ups are significantly more likely to survive than those firms not having any occurrence of high-growth.

Few firms experience a significant change in their size over the decade. Well over half (58 per cent) of the start-ups with one employee in 1998 still had a single employee ten years later. Almost half of those that grew added just one employee and movement into the 20+ category from a one-employee start-up was very rare. Over the decade 1,517 survivor firms made the transition from fewer than five employees in 1998 to 20+ employees, and only 640 of them grew from size 1 employee at birth.

But those firms born with one employee which achieved the 20+ employees threshold experienced extremely quick growth, and by their third year had an average of 50 employees. After the initial spurt, growth slowed and over the next seven years this group of firms averaged about 10 per cent growth a year, and reached 100 employees by 2008.

None of the other groups of firms who reached the 20+ employee threshold recorded such a striking surge in growth as those born with one employee, although all of those starting life at fewer than ten employees had around 20 employees by 2001, and by 2008 had between 50 and 75 employees.

Part 4: Conclusions

4.1 Introduction

For the first time we have been able to undertake a comprehensive analysis of the number and nature of high-growth firms in the UK economy.

We now know that in both time periods 2002-05 and 2005-08 there were around 11,500 high-growth firms in the UK (or ~20,000 using a turnover-based measure of growth). This represents around 6 per cent of the total number of surviving businesses in both time periods and is a slightly greater proportion of firms than the 5.2 per cent reported for the US in 2005.

Here we do two things. First, to set out some of the policy implications arising from this initial analysis of the UK business demography dataset and second, to make some suggestions on how our knowledge of high-growth firms and the growth dynamic within individual firms can be deepened.

4.2 Policy discussion – lessons for policy in an economic downturn?

It may seem strange to talk in terms of high-growth firms during a recession when many firms are in the process of retrenchment, decline and closure, but there are important lessons from this research which may serve to inform policymakers.

1. We have now quantified the number of high-growth firms in the UK economy to add to our understanding of processes by which growth takes place. Further, we have arrived at some broad measures of their economic contribution through an analysis of job creation. Overall, these 11,500 high-growth firms were responsible for the creation of around half of the net employment change in existing businesses in the UK in the years before the current recession.
2. The relative rarity of high-growth firms in the UK economy is common across the developed economies and makes the task of finding them and working with them very difficult. This is consistent with the long-established view that, since research has failed to identify, *ex-ante*, the distinctive features of fast growth firms, “a selective policy of support for small firms is simply unworkable” because it is “not feasible on operational grounds, neither at the business start-up stage nor later on when the small firm has begun to expand into a sizeable company” (Hakim, 1989). That continues to be the nature of the challenge facing policymakers at national and regional level in the UK.
3. However, the results show that supporting high-growth firms is perhaps a better policy option in terms of job creation than a general business support policy for all SMEs many of whom have achieved only modest growth. So whenever feasible, government-funded business support should be targeted at businesses that have the potential to grow. And policymakers should continue to develop policies that facilitate the emergence of high-growth firms and which do not require their identification *ex-ante*.
4. Young firms are more likely to achieve high-growth, but the majority of high-growth firms have been established for many years.

This suggests that if we are looking to stimulate growth in the private sector, we need to look not only at young firms but also to the established stock of businesses. After all, around 80 per cent of the jobs created by high-growth firms were created by firms older than five years.

5. High-growth firms engage in diverse activities and are not only involved in the high-tech sectors such as nanotechnology and biotechnology. So, while there are reasons to support the development of high-growth businesses in a few promising sectors, 'traditional sectors' should not be forgotten. In fact, Business Services and the Wholesale and Retail sector provide almost half the high-growth firms in the UK, while Manufacturing is a source of just over one in ten high-growth firms.
6. A small number of new micro-enterprises in 1998 made an important contribution to net job creation in surviving businesses employing 20 or more employees ten years later. This underlines the importance in policy terms of continuing to support small-scale start-ups in the current economic climate.

Clearly, there are still many unanswered questions relating to high-growth firms but we now have some clear insights from the UK firm-level data of where we might look for the answers. All we have done is set out some basic measurement indicators on high-growth. The task now is to understand more about the drivers of that growth and the overall efficiency of these firms. We cannot possibly infer behaviour and strategy from the stylised facts presented in this report regarding size, age, sector and region. While many of drivers and barriers (e.g. skills and knowledge, innovation, access to finance, business networks and culture) to growth have been identified, the task remains to be investigated more thoroughly and rigorously with the application of econometric techniques (BERR, 2008).

Therefore, the next stage for researchers would involve undertaking a more detailed analysis of the 11,500 high-growth firms and the small number of 1998 start-ups who grew rapidly over the decade. In particular, three initial questions need to be urgently addressed:

- Who are the owners and managers running these firms and to what extent are these firms independent and UK-based?
- How has this growth been funded, and in particular, has there been any involvement of the formal and informal equity markets operating in the UK?
- How has the current publicly-financed business support offer across the UK been involved in the process of growth in these high-growth firms over the last ten years?

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Appendix 1: UK firm growth rates tables

Table A1: Distribution of firms across employment growth categories by initial size. All firms. Period: 2002-05

Size	Growth rate											Total
	$-\infty ; -20$	$-20 ; -15$	$-15 ; -10$	$-10 ; -5$	$-5 ; -1$	$-1 ; 1$	$1 ; 5$	$5 ; 10$	$10 ; 15$	$15 ; 20$	$20 ; \infty$	
1-9	91,555	5,155	24,354	21,245	2,634	600,029	3,633	12,999	35,193	7,301	96,096	900,194
10+	21,359	6,276	10,441	15,814	16,706	51,019	16,338	14,637	8,991	5,238	11,369	178,188
10-19	11,503	3,107	5,337	7,442	6,856	31,840	6,550	7,080	4,538	2,734	6,067	93,054
20-49	5,846	1,816	2,924	4,947	5,760	14,307	5,886	4,371	2,683	1,450	3,159	53,149
50-99	2,140	692	1,112	1,708	2,062	2,909	1,901	1,667	967	558	1,147	16,863
100-249	1,174	390	624	987	1,190	1,280	1,201	903	483	297	601	9,130
250+	696	271	444	730	838	683	800	616	320	199	395	5,992
Total	112,914	11,431	34,795	37,059	19,340	651,048	19,971	27,636	44,184	12,539	107,465	1,078,382

Source: ONS Business Structure Database.

Table A2: Distribution of firms across employment growth categories by initial size. All firms. Period: 2005-08

Size	Growth rate											Total
	$-\infty ; -20$	$-20 ; -15$	$-15 ; -10$	$-10 ; -5$	$-5 ; -1$	$-1 ; 1$	$1 ; 5$	$5 ; 10$	$10 ; 15$	$15 ; 20$	$20 ; \infty$	
1-9	123,491	7,660	35,041	33,813	4,350	1,055,056	6,042	20,933	54,906	11,207	150,802	1,503,301
10+	19,794	6,439	10,846	17,311	18,812	65,246	18,522	15,746	9,680	5,557	11,530	199,483
10-19	10,910	3,286	5,775	8,311	7,754	39,648	7,233	7,316	4,845	2,876	6,152	104,106
20-49	5,646	2,061	3,243	5,669	6,789	17,495	6,741	5,033	3,058	1,734	3,554	61,023
50-99	1,651	525	897	1,725	2,090	4,527	2,292	1,671	921	507	941	17,747
100-249	981	347	585	920	1,337	2,314	1,375	1,033	510	275	525	10,202
250+	606	220	346	686	842	1,262	881	693	346	165	358	6,405
Total	143,285	14,099	45,887	51,124	23,162	1,120,302	24,564	36,679	64,586	16,764	162,332	1,702,784

Source: ONS Business Structure Database.

Table A3: Distribution of firms across employment growth categories by age of business. All Firms. Period: 2002-05

Age	Growth rate											Total
	$-\infty ; -20$	$-20 ; -15$	$-15 ; -10$	$-10 ; -5$	$-5 ; -1$	$-1 ; 1$	$1 ; 5$	$5 ; 10$	$10 ; 15$	$15 ; 20$	$20 ; \infty$	
1	17,521	907	3,970	3,017	701	80,568	806	2,062	6,000	1,350	23,881	140,783
2	15,247	922	3,787	3,104	779	64,434	877	2,086	5,835	1,259	17,646	115,976
3	11,734	757	2,948	2,583	643	49,858	760	1,786	4,389	1,159	12,148	88,765
4	12,803	941	3,268	2,904	791	50,821	886	2,029	4,305	1,130	11,447	91,325
5+	55,609	7,904	20,822	25,451	16,426	405,367	16,642	19,673	23,655	7,641	42,343	641,533
Total	112,914	11,431	34,795	37,059	19,340	651,048	19,971	27,636	44,184	12,539	107,465	1,078,382

Source: ONS Business Structure Database.

Table A4: Distribution of firms across employment growth categories by age of business. All Firms. Period: 2005-08

Age	Growth rate											Total
	$-\infty ; -20$	$-20 ; -15$	$-15 ; -10$	$-10 ; -5$	$-5 ; -1$	$-1 ; 1$	$1 ; 5$	$5 ; 10$	$10 ; 15$	$15 ; 20$	$20 ; \infty$	
1	19,648	978	4,367	3,388	852	177,068	879	2,295	7,628	1,496	34,386	252,985
2	15,269	802	3,523	3,063	773	140,188	879	2,205	6,243	1,387	22,635	196,967
3	12,335	786	3,097	2,835	794	121,573	899	2,090	5,007	1,196	15,522	166,134
4	10,501	762	2,831	2,732	812	103,304	847	2,082	4,567	1,091	12,831	142,360
5	9,439	716	2,778	2,722	792	81,890	952	1,990	4,287	1,072	10,701	117,339
6	7,219	601	2,136	2,200	754	63,704	793	1,622	3,280	873	7,549	90,731
7	7,664	618	2,334	2,434	772	64,732	996	1,825	3,475	858	7,680	93,388
8+	61,210	8,836	24,821	31,750	17,613	367,843	18,319	22,570	30,099	8,791	51,028	642,880
Total	143,285	14,099	45,887	51,124	23,162	1,120,302	24,564	36,679	64,586	16,764	162,332	1,702,784

Source: ONS Business Structure Database.

Table A5: Distribution of firms across employment growth categories by age of business. 10+ employees. Period: 2002-05

Age	Growth rate											Total
	$-\infty ; -20$	$-20 ; -15$	$-15 ; -10$	$-10 ; -5$	$-5 ; -1$	$-1 ; 1$	$1 ; 5$	$5 ; 10$	$10 ; 15$	$15 ; 20$	$20 ; \infty$	
1	1,734	287	452	542	499	1,831	495	544	369	272	861	7,886
2	1,712	314	427	544	545	1,648	542	562	401	271	909	7,875
3	1,390	282	430	529	481	1,501	459	512	435	297	823	7,139
4	1,547	370	469	657	562	1,589	561	612	461	305	853	7,986
5+	14,976	5,023	8,663	13,542	14,619	44,450	14,281	12,407	7,325	4,093	7,923	147,302
Total	21,359	6,276	10,441	15,814	16,706	51,019	16,338	14,637	8,991	5,238	11,369	178,188

Source: ONS Business Structure Database.

Table A6: Distribution of firms across employment growth categories by age of business. 10+ employees. Period: 2005-08

Age	Growth rate											Total
	$-\infty ; -20$	$-20 ; -15$	$-15 ; -10$	$-10 ; -5$	$-5 ; -1$	$-1 ; 1$	$1 ; 5$	$5 ; 10$	$10 ; 15$	$15 ; 20$	$20 ; \infty$	
1	1,685	263	455	617	586	2,749	533	536	373	258	843	8,898
2	1,468	267	422	595	559	3,780	544	533	434	271	797	9,670
3	1,313	295	464	556	561	3,985	584	604	458	297	761	9,878
4	1,153	308	412	593	580	4,017	528	604	397	289	829	9,710
5	979	278	430	559	582	3,516	587	600	472	288	732	9,023
6	854	270	366	531	563	2,992	522	538	419	286	607	7,948
7	961	250	430	616	596	3,030	668	644	442	280	619	8,536
8+	11,381	4,508	7,867	13,244	14,785	41,177	14,556	11,687	6,685	3,588	6,342	135,820
Total	19,794	6,439	10,846	17,311	18,812	65,246	18,522	15,746	9,680	5,557	11,530	199,483

Source: ONS Business Structure Database.

Table A7: Distribution of firms across employment growth categories by sector. All firms. Period: 2002-05

Sector	Growth rate											Total
	$-\infty ; -20$	$-20 ; -15$	$-15 ; -10$	$-10 ; -5$	$-5 ; -1$	$-1 ; 1$	$1 ; 5$	$5 ; 10$	$10 ; 15$	$15 ; 20$	$20 ; \infty$	
10-14	158	14	47	48	51	800	54	57	45	13	139	1,426
15-37	11,069	2,023	4,947	6,873	5,324	65,329	4,676	4,869	5,268	1,811	10,048	122,237
40-42	22	*	*	*	13	113	*	*	*	*	31	225
45	9,809	919	2,898	3,071	1,636	63,605	1,876	2,673	4,747	1,325	12,387	104,946
50-52	23,561	2,651	8,311	8,935	4,336	144,053	4,871	7,233	11,502	3,068	24,548	243,069
55	13,696	1,581	4,142	4,087	1,507	42,722	1,490	2,299	3,829	1,227	9,955	86,535
60-64	4,657	510	1,504	1,799	1,018	23,540	1,063	1,437	2,068	660	4,982	43,238
65-67	1,825	183	661	688	400	12,215	429	584	855	273	1,873	19,986
70-74	37,011	2,467	8,858	8,225	3,601	234,368	3,924	6,040	11,018	2,962	31,233	349,707
Total	101,808	*	*	*	17,886	586,745	*	*	*	*	95,196	971,369

Source: ONS Business Structure Database.

Note: * in a cell indicates a disclosive figure i.e. cell count of <10. Where there is only one disclosive figure per column or row the totals are also replaced with * to prevent secondary disclosure through subtraction or addition.

Table A8: Distribution of firms across employment growth categories by sector. All firms. Period: 2005-08

Sector	Growth rate											Total
	$-\infty ; -20$	$-20 ; -15$	$-15 ; -10$	$-10 ; -5$	$-5 ; -1$	$-1 ; 1$	$1 ; 5$	$5 ; 10$	$10 ; 15$	$15 ; 20$	$20 ; \infty$	
10-14	95	15	36	46	45	1,105	61	57	51	19	122	1,652
15-37	13,493	2,314	6,047	8,459	5,651	93,381	5,289	5,620	6,976	2,096	12,259	161,585
40-42	44	*	10	*	*	346	14	11	*	*	47	501
45	13,187	1,273	4,277	4,681	2,026	107,521	2,237	3,646	7,057	1,753	21,992	169,650
50-52	30,370	3,227	10,807	12,660	5,316	206,850	5,944	9,289	16,125	4,002	33,423	338,013
55	15,675	1,770	4,929	5,164	2,065	97,192	1,945	3,190	5,777	1,599	15,375	154,681
60-64	5,649	621	1,877	2,243	1,170	39,656	1,276	1,788	2,794	821	6,685	64,580
65-67	2,299	226	821	924	429	17,532	491	818	1,221	343	2,435	27,539
70-74	47,829	3,323	12,502	12,238	4,690	452,086	5,220	8,725	17,223	4,335	51,834	620,005
Total	128,641	*	41,306	*	*	1,015,669	22,477	33,144	*	*	144,172	1,538,206

Source: ONS Business Structure Database.

Note: * in a cell indicates a disclosive figure i.e. cell count of <10. Where there is only one disclosive figure per column or row the totals are also replaced with * to prevent secondary disclosure through subtraction or addition.

Table A9: Distribution of firms across employment growth categories by sector. 10+ employees. Period: 2002-05

Sector	Growth rate											Total
	$-\infty ; -20$	$-20 ; -15$	$-15 ; -10$	$-10 ; -5$	$-5 ; -1$	$-1 ; 1$	$1 ; 5$	$5 ; 10$	$10 ; 15$	$15 ; 20$	$20 ; \infty$	
10-14	48	*	23	27	49	88	47	44	18	*	23	383
15-37	3,688	1,487	2,762	4,579	4,927	10,996	4,152	3,282	1,770	987	1,738	40,368
40-42	12	*	*	*	13	13	*	*	*	*	13	85
45	1,852	499	827	1,292	1,390	4,694	1,500	1,426	932	527	1,091	16,030
50-52	4,116	1,287	2,233	3,281	3,600	12,177	3,883	3,534	2,173	1,182	2,413	39,879
55	2,755	726	1,029	1,343	1,264	4,479	1,162	1,062	701	472	1,016	16,009
60-64	1,041	296	525	862	871	2,711	901	827	553	306	691	9,584
65-67	415	103	180	271	338	973	356	292	230	141	341	3,640
70-74	5,575	1,333	2,037	2,990	3,020	11,105	3,069	3,061	1,913	1,204	3,091	38,398
Total	19,502	6,265	*	*	15,472	47,236	*	*	*	5,224	10,417	164,376

Source: ONS Business Structure Database.

Note: * in a cell indicates a disclosive figure i.e. cell count of <10. Where there is only one disclosive figure per column or row the totals are also replaced with * to prevent secondary disclosure through subtraction or addition.

Table A10: Distribution of firms across employment growth categories by sector. 10+ employees. Period: 2005-08

Sector	Growth rate											Total
	$-\infty ; -20$	$-20 ; -15$	$-15 ; -10$	$-10 ; -5$	$-5 ; -1$	$-1 ; 1$	$1 ; 5$	$5 ; 10$	$10 ; 15$	$15 ; 20$	$20 ; \infty$	
10-14	29	13	17	31	42	120	53	40	19	10	23	397
15-37	2,850	1,361	2,392	4,343	4,937	13,798	4,389	3,153	1,740	905	1,461	41,329
40-42	14	*	*	*	*	40	14	*	*	*	*	109
45	1,736	567	955	1,601	1,617	5,849	1,655	1,569	983	549	1,097	18,178
50-52	3,758	1,334	2,222	3,616	4,102	12,965	4,307	3,565	2,089	1,166	2,145	41,269
55	2,811	863	1,322	1,784	1,693	7,672	1,453	1,332	815	521	1,091	21,357
60-64	974	294	565	847	984	3,414	999	877	626	331	684	10,595
65-67	373	109	180	280	353	1,431	361	404	250	148	391	4,280
70-74	5,651	1,428	2,335	3,590	3,705	15,528	3,790	3,499	2,378	1,449	3,657	47,010
Total	18,196	*	*	*	*	60,817	17,021	*	*	*	*	184,524

Source: ONS Business Structure Database.

Note: * in a cell indicates a disclosive figure i.e. cell count of <10. Where there is only one disclosive figure per column or row the totals are also replaced with * to prevent secondary disclosure through subtraction or addition.

Table A11: Distribution of firms across employment growth categories by region. All firms. Period: 2002-05

Region	Growth rate											Total
	$-\infty ; -20$	$-20 ; -15$	$-15 ; -10$	$-10 ; -5$	$-5 ; -1$	$-1 ; 1$	$1 ; 5$	$5 ; 10$	$10 ; 15$	$15 ; 20$	$20 ; \infty$	
North East	2,838	350	923	1,035	656	16,929	636	881	1,290	380	2,823	28,741
North West	11,028	1,158	3,352	3,719	2,046	66,395	1,998	2,756	4,370	1,336	10,325	108,483
Yorks & Humber	7,342	824	2,444	2,713	1,564	44,622	1,643	2,099	3,219	895	7,680	75,045
East Midlands	7,228	726	2,268	2,518	1,423	42,069	1,585	2,073	3,070	876	7,110	70,946
West Midlands	9,110	974	3,006	3,314	1,859	53,349	1,773	2,324	3,533	1,010	8,431	88,683
East	11,411	1,070	3,383	3,595	1,857	66,842	1,966	2,628	4,311	1,132	10,240	108,435
London	21,162	1,979	5,964	5,821	2,532	119,439	2,623	3,910	6,526	1,846	18,663	190,465
South East	18,887	1,680	5,585	5,534	2,726	110,844	2,857	4,065	6,769	1,908	16,487	177,342
South West	9,132	840	2,937	2,990	1,510	55,962	1,657	2,383	4,018	1,085	9,397	91,911
Wales	4,574	463	1,380	1,440	766	23,839	788	1,099	1,804	525	4,430	41,108
Scotland	7,064	801	2,119	2,549	1,500	42,242	1,502	1,927	2,974	847	7,603	71,128
Northern Ireland	3,133	566	1,433	1,829	901	8,456	941	1,490	2,299	699	4,266	26,013
Total	112,909	11,431	34,794	37,057	19,340	650,988	19,969	27,635	44,183	12,539	107,455	1,078,300

Source: ONS Business Structure Database.

Table A12: Distribution of firms across employment growth categories by region. All firms. Period: 2005-08

Region	Growth rate											Total
	$-\infty ; -20$	$-20 ; -15$	$-15 ; -10$	$-10 ; -5$	$-5 ; -1$	$-1 ; 1$	$1 ; 5$	$5 ; 10$	$10 ; 15$	$15 ; 20$	$20 ; \infty$	
North East	3,827	425	1,307	1,608	790	27,362	789	1,127	1,905	539	4,527	44,206
North West	14,399	1,607	4,802	5,496	2,404	114,161	2,574	3,787	6,563	1,766	16,606	174,165
Yorks & Humber	10,489	1,039	3,383	3,924	1,987	75,378	2,001	2,950	5,117	1,366	12,001	119,635
East Midlands	9,826	1,002	3,299	3,704	1,727	68,962	1,754	2,640	4,582	1,164	10,918	109,578
West Midlands	12,023	1,243	4,211	4,656	2,111	87,399	2,156	3,096	5,525	1,411	13,005	136,836
East	14,181	1,366	4,607	4,954	2,225	110,515	2,283	3,627	6,517	1,539	15,816	167,630
London	25,478	2,192	7,228	7,507	2,964	216,097	3,116	4,914	9,143	2,369	27,475	308,483
South East	23,258	2,157	7,157	7,564	3,337	202,230	3,463	5,342	9,894	2,540	25,333	292,275
South West	12,380	1,139	3,862	4,304	1,925	92,244	2,144	3,354	6,135	1,543	14,749	143,779
Wales	5,432	534	1,815	2,074	977	39,709	1,046	1,533	2,715	678	6,727	63,240
Scotland	8,941	911	2,844	3,303	1,661	67,036	1,988	2,732	4,427	1,312	11,673	106,828
Northern Ireland	3,037	483	1,372	2,029	1,052	18,497	1,249	1,577	2,062	536	3,495	35,389
Total	143,271	14,098	45,887	51,123	23,160	1,119,590	24,563	36,679	64,585	16,763	162,325	1,702,044

Source: ONS Business Structure Database.

Table A13: Distribution of firms across employment growth categories by region. 10+ employees. Period: 2002-05

Region	Growth rate											Total
	$-\infty ; -20$	$-20 ; -15$	$-15 ; -10$	$-10 ; -5$	$-5 ; -1$	$-1 ; 1$	$1 ; 5$	$5 ; 10$	$10 ; 15$	$15 ; 20$	$20 ; \infty$	
North East	586	200	311	491	586	1,696	534	514	294	174	357	5,743
North West	2,125	638	1,137	1,642	1,778	5,855	1,658	1,494	975	564	1,151	19,017
Yorks & Humber	1,507	485	789	1,306	1,374	4,470	1,389	1,150	730	393	879	14,472
East Midlands	1,407	420	746	1,138	1,234	3,719	1,311	1,174	645	373	740	12,907
West Midlands	1,774	578	926	1,597	1,642	4,889	1,461	1,266	701	426	904	16,164
East	1,977	595	1,044	1,504	1,605	4,861	1,610	1,348	807	469	979	16,799
London	4,218	1,075	1,587	2,274	2,181	8,305	2,142	2,016	1,269	813	2,103	27,983
South East	3,072	886	1,447	2,234	2,354	7,551	2,328	2,089	1,248	800	1,583	25,592
South West	1,621	433	857	1,165	1,277	4,250	1,304	1,230	751	401	883	14,172
Wales	950	277	467	657	663	967	661	643	439	260	596	6,580
Scotland	1,533	434	743	1,181	1,311	3,786	1,228	1,068	717	344	830	13,175
Northern Ireland	588	255	387	624	701	666	710	645	415	221	364	5,576
Total	21,358	6,276	10,441	15,813	16,706	51,015	16,336	14,637	8,991	5,238	11,369	178,180

Source: ONS Business Structure Database.

Table A14: Distribution of firms across employment growth categories by region. 10+ employees. Period: 2005-08

Region	Growth rate											Total
	$-\infty ; -20$	$-20 ; -15$	$-15 ; -10$	$-10 ; -5$	$-5 ; -1$	$-1 ; 1$	$1 ; 5$	$5 ; 10$	$10 ; 15$	$15 ; 20$	$20 ; \infty$	
North East	575	218	349	583	656	2,008	611	505	303	197	389	6,394
North West	2,068	725	1,193	1,936	1,947	7,386	1,956	1,654	1,029	592	1,199	21,685
Yorks & Humber	1,576	509	861	1,442	1,649	5,361	1,526	1,283	802	449	870	16,328
East Midlands	1,375	488	827	1,288	1,412	4,537	1,324	1,127	678	406	720	14,182
West Midlands	1,727	575	1,040	1,651	1,748	6,114	1,611	1,330	808	428	851	17,883
East	1,745	604	1,085	1,626	1,773	5,817	1,729	1,503	856	484	1,025	18,247
London	3,757	1,017	1,593	2,328	2,388	12,125	2,318	2,090	1,388	844	2,219	32,067
South East	2,922	970	1,525	2,483	2,646	9,201	2,522	2,275	1,373	811	1,689	28,417
South West	1,545	507	868	1,348	1,565	5,078	1,597	1,326	897	453	900	16,084
Wales	581	236	395	693	817	1,806	815	667	368	199	335	6,912
Scotland	1,363	416	780	1,237	1,369	4,232	1,578	1,300	803	507	1,030	14,615
Northern Ireland	554	174	330	696	841	1,489	934	686	374	187	303	6,568
Total	19,788	6,439	10,846	17,311	18,811	65,154	18,521	15,746	9,679	5,557	11,530	199,382

Source: ONS Business Structure Database.

Table A15: Distribution of firms across employment growth categories by initial size. All firms. Period: 2002-05

Size	Growth rate											Total
	$-\infty ; -20$	$-20 ; -15$	$-15 ; -10$	$-10 ; -5$	$-5 ; -1$	$-1 ; 1$	$1 ; 5$	$5 ; 10$	$10 ; 15$	$15 ; 20$	$20 ; \infty$	
1-9	111,814	37,263	61,120	84,589	120,351	88,045	99,108	84,108	47,640	29,568	105,993	869,599
10+	18,443	7,444	12,658	18,950	24,674	14,489	21,751	19,280	11,897	7,317	18,995	175,898
10-19	9,940	4,042	6,788	10,191	13,464	7,596	10,980	9,616	5,924	3,580	9,633	91,754
20-49	5,279	2,158	3,803	5,565	7,314	4,377	6,742	5,907	3,600	2,257	5,540	52,542
50-99	1,787	536	1,125	1,711	2,102	1,365	2,078	1,916	1,252	730	1,902	16,648
100-249	863	285	592	869	1,111	741	1,189	1,079	654	418	1,149	9,031
250+	574	423	350	614	683	410	762	762	467	332	771	5,923
Total	130,257	44,707	73,778	103,539	145,025	102,534	120,859	103,388	59,537	36,885	124,988	1,045,497

Source: ONS Business Structure Database.

Table A16: Distribution of firms across turnover growth categories by initial size. All firms. Period: 2005-08

Size	Growth rate											Total
	$-\infty ; -20$	$-20 ; -15$	$-15 ; -10$	$-10 ; -5$	$-5 ; -1$	$-1 ; 1$	$1 ; 5$	$5 ; 10$	$10 ; 15$	$15 ; 20$	$20 ; \infty$	
1-9	142,070	42,186	60,390	92,920	632,601	94,477	96,157	86,609	53,672	36,118	146,755	1,483,955
10+	15,800	5,756	9,590	18,133	53,093	15,419	22,703	19,405	11,925	7,390	18,641	197,855
10-19	8,607	3,035	4,987	9,569	30,029	7,900	10,955	9,308	5,784	3,564	9,446	103,184
20-49	4,517	1,770	2,988	5,633	15,446	4,878	7,293	6,211	3,771	2,371	5,675	60,553
50-99	1,391	505	843	1,503	4,146	1,381	2,243	1,962	1,172	752	1,721	17,619
100-249	810	284	500	862	2,252	778	1,289	1,154	737	406	1,056	10,128
250+	475	162	272	566	1,220	482	923	770	461	297	743	6,371
Total	157,870	47,942	69,980	111,053	685,694	109,896	118,860	106,014	65,597	43,508	165,396	1,681,810

Source: ONS Business Structure Database.

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