FIRM DYNAMICS AND JOB CREATION IN THE UK: 1998-2013

Abstract

A recurring theme in the discussion of policies to stimulate economic recovery in the UK is a desire to unlock the growth potential of the private sector. We are motivated here by a very simple question – "what types of firms create the most jobs in the UK economy?" One popular answer to this question has been High-Growth Firms (HGFs). These firms represent only a small minority - the 'Vital 6%' - of the UK business population yet have a disproportionate impact on job creation and innovation. We re-visit the discussion launched by the 2009 NESTA reports, which identified the 6% figure and, using more recent data, confirm the headline conclusion for job creation: a small number of job creating firms (mostly small firms) are responsible for a significant amount of net job creation in the UK. Adopting our alternative, preferred, analytical approach, which involves tracking the growth performance of cohorts of start-ups, this conclusion still holds. However, we find an even smaller number of job creating firms responsible for a very significant proportion of job creation. We conclude by considering the question – "what are the implications for policy choices?"

Keywords

Job Creation High-Growth Firms Growth Trajectories UK

Introduction

A recurring theme in the discussion of policies to stimulate economic recovery in the UK is a desire to unlock the growth potential of the private sector. Since May 2010 this has been a particular focus of the Coalition Government, whose ambitious fiscal plans rely on a strong private sector recovery and a rebound in investment and export performance. The development of industrial policy in the last 30 years has increasingly incorporated interventions and business support polices designed to stimulate enterprise. The rationale for this has been the assertion that enterprise is a driver of job creation, productivity and economic growth. Much of the support for the job creating dimension stems from the pioneering work of Birch in the 1970s on the job generation propensities of new and small firms (Birch, 1979). As a result there has been a great deal of interest by policymakers in deriving indicators of enterprise which, in turn, may be linked to progress against other specific policy objectives.

Economies thrive when their most ambitious, innovative and productive small businesses are able to thrive. As well as being the major source of job creation in developed economies, a vibrant small business sector is seen as critical to driving economic growth through innovation and market expansion (Bravo-Biosca, 2010). Here, though, we review the evidence on only the job creation part of this contention. We are motivated by a very simple question – "what types of firms create the most jobs in the UK economy?" In answering it we adopt a very simple typology, focusing on firm size (i.e., micro-enterprises, small firms and larger firms), although we also consider the growth dimension. A clear understanding of the evidence on job creation is also crucial if we are to develop more robust models of productivity growth. Currently such models do capture the impact of firm entry and exit rates and their contribution (i.e., churn) to employment growth , but typically do not capture the wider aspects of the growth trajectories of individual firms (e.g. Haltiwanger et al., 2013; Anyadike-Danes et al., 2013b; Knaup and Piazza, 2007; Stangler and Kedrosky, 2010; Bartelsman et al., 2009; Criscuolo et al., 2014).

This paper will provide a brief review of existing knowledge of job creation and the UK evidence on what types of firms are responsible for job creation. We will present in summary form the most recent UK evidence on the processes of job creation and destruction in the private sector which extends our previous work for the Department for Business, Innovation and Skills (BIS) which was published in 2011 (Anyadike-Danes et al., 2011).

We also summarise new evidence on the contribution of High-Growth Firms (HGFs) to job generation in the UK which, for the first time, puts it in the broader context of all job creating firms in the economy. The UK figures which we present include all private sector businesses with one or more employees, but we take no account here of the contribution of the self-employed to job creation.

Our concern in assembling the evidence is to illustrate that some traditional methods of analysing job creation are somewhat problematic and provide only an incomplete answer to the key question about the drivers of employment growth. Some of these methods are also carried across into modelling productivity growth which, in turn, risks encouraging a misunderstanding of the drivers of productivity growth too (Haltiwanger et al., 2013). We conclude by presenting some stylised facts about business demography and job creation in the UK and discuss their policy implications.

The Job Creation Debate

Background

In 1979 the Birch report (albeit unintentionally) initiated what has turned out to be a long-lasting and at times acrimonious debate, a debate which continues to this day.[1] Birch provided an answer to the question: what size firms create the most jobs?

> *"Small firms (those with 20 or fewer employees) generated 66% of all new jobs generated in the U.S."* (Birch, 1979, p. 8)

His answer has formed an important part of the background to analysis and discussion by academics, policymakers and practitioners working in the area of industrial and economic development in the last 35 years.

David Birch is generally credited with having first highlighted this characteristic of the US economy and, since it appears to be a simple enough empirical matter, it seems difficult to imagine how his claim about the extent of the small firm contribution could have become, and remained, so controversial (Davis et al., 1994). Birch's 1979 study of job generation was part of a project on regional industrial policy and was conducted using 'components of change analysis', then a conventional framework much used by industrial geographers. Birch's principal innovation was to have compiled a much more extensive database (both in time and space) of firm-level employment data than had previously been assembled which was compiled from the files of Dun and Bradstreet.

In the 35 years since Birch's publication there have been a number of further studies of the US (by Birch amongst others) and other countries looking at different dimensions of job creation, but as yet

no consensus has emerged. As time passes the heat generated by this 'debate' about the relative importance of the small firm contribution to job creation may seem more difficult to understand. Although Birch did, to some extent, appear to court controversy. For example, his 1987 book “Job Creation in America” (aimed at the popular market) was rather provocatively sub-titled “How Our Smallest Companies Put the Most People to Work” and the claim about small firms was even more dramatic: “Indeed, pulling it all together […] we can see that very small firms have created about 88 percent of all net new jobs [in 1981-1985].” (Birch, 1987, p. 16) Birch’s critics were explicitly concerned with the use that was being made of his conclusions to lobby for programmes to support small business (though Birch himself had never made this case, quite the contrary) but their criticisms focused on the quality of his data and his methods of calculation. Indeed, 15 years after Birch's original report, criticisms were still being made. Some insight can be gained from the July 1994 Special Issue of Business Economics (the journal of the North American Society of Business Economists). The title of the 'economists' contribution, by Davis, Haltiwanger and Schuh is itself indicative "Small Business and Job Creation: Dissecting the Myth and Reassessing the Facts", and the abstract too is quite blunt: "The conventional wisdom [meaning Birch] about the job-creating process of small business rests on a misleading interpretation of the data and the use of unsuitable data." (Davis et al., 1994, p.13). A rejoinder by Dennis and Phillips followed: "Small Business Job Creation: The Findings and their Critics" (two of the authors were senior officials from the Office of Advocacy of the US Small Business Administration). The first sentence of their conclusion reads: "The data clearly show that small businesses have been the primary source of net new employment in the United States over the past twenty to twenty five years" (Dennis and Phillips, 1994, p.28).

Evidently neither side was prepared to concede. The controversy continues, though contributions are now rather more intermittent.[2] The 'economists' position has become increasingly nuanced and it now relies on separating the effect of size from age. In most, earlier, studies of US data size and age were confounded because the bulk of young firms are small, the latest finding is that controlling for age, size effects become rather small (Haltiwanger et al., 2013). Of course, it is rather too early to tell whether this result will be regarded as decisive. As we shall see below UK data suggests that even though age might be critical, the size dimension still plays an important role in accounting for job creation.

Yet, despite the controversy, the significance of the role of small firms in job creation became widely accepted quite quickly (Storey and Johnson, 1987) and interest in it continues (Haltiwanger et al., 2013; Neumark et al., 2011). One of the factors that has played an important role in sustaining this debate was (according to Neumark et al.) that “Birch’s argument about the role of small business in

job creation fit perfectly with the US government's long tradition of supporting small businesses"(Neumark et al., 2011, p.16) . Indeed this sentiment has had a great deal of resonance in the public policy debates in the UK as well since the 1980s, and increasingly since the economic downturn in 2008 with the renewed focus on stimulating growth.

Interestingly, there is another strand in Birch's contribution which seemed to prove rather less controversial. It is not obvious in his 1979 report, but it emerged in a paper published just a few years later (see Birch, 1981) which rehearsed much the same arguments and relied on the same data. He argues: "The job creators are the relatively few younger ones that start up and expand rapidly in their youth, outgrowing the 'small' designation in the process." (Birch, 1981, p. 8). These were re-labelled "entrepreneurial firms" in his 1987 book (Birch, 1987, chapter 2), and in 1994 were re-christened "gazelles". (Birch and Medoff, 1994). The key to understanding why this construct may have found easier acceptance (Medoff, his joint author on this occasion had earlier been a critic) is commonly attributed to an apparently slight, but significant shift, which occurred during the re-labelling process. Landstrom notes: "… the distinction between small and large firms as job creators is of less importance – most jobs are created by the Gazelles, which are firms which are neither large nor small." (Landstrom, 2005, p. 169). As we shall see, gazelles became a significant source of inspiration, some years later, to the HGF 'turn' in the discussion of job creation (see Henrekson and Johansson, 2010).

An Accounting Framework in Search of a Theory?

Throughout the long history of work on job creation, and the on-going debates about how metrics should be defined and used, there is a persistent (albeit typically only implicit) question which is rarely addressed. What do the job creation and destruction metrics contribute to our understanding of how the private sector evolves over time? It is simply an accounting framework and so does not itself provide an explanation of the phenomena it measures. Indeed, this was the view put forward by Birch 35 years ago. So we need to take the 'outputs' from these simple job creation metrics and connect them to a theoretical framework if we are to understand the dynamic processes by which the private sector evolves and generates growth over time. The data on job creation (or job flows) can be used as an 'input' to theoretical frameworks drawing on labour market economics, macroeconomics and industrial organisation (Davis and Haltiwanger, 1999): here we rely on ideas about life cycle dynamics and the inter-relationship between survival and growth.

The Data Challenge

For decades systematic work on the job creation propensities of various types of firms was long hindered (and debate much stimulated) by a paucity of appropriate firm-level data. But, particularly since the mid-1990s, as the data deficiency was made good, researchers began to take an increasingly active interest in this question.[3] The greater availability of firm-level data, and the continued interest in the 'gazelle' conjecture -- that a small group of firms are responsible for a large share of newly created jobs -- motivated the OECD to initiate a programme of work which aimed both to measure the contribution to job creation of these 'rapidly expanding firms', ultimately christened High-Growth Firms (HGFs), and to investigate their differentiating characteristics (Schreyer, 2000). One by-product of this work was an internationally agreed definition of an HGF and a chapter dedicated to HGFs in the Manual of Business Demography Statistics (EUROSTAT-OECD, 2007). In the UK the data 'challenge' was answered with release (in 2008) of the Business Structure Database (compiled by the Office for National Statistics) [4] which records annual data on employees for the entire population of firms in the UK which we have used to produce a firm-level database.[5]

Job Creation in the UK Economy

Over the last 30 years there have been a number of UK studies which sought to address Birch's 1979 question ("what size of firm creates the most jobs?") using a variety of datasets and their findings all point in a broadly similar direction. For example, studies for the UK in late 1980s showed that smaller firms (i.e., those employing less than 10 employees), across all sectors, accounted for a disproportionately large share of total job creation in relation to their overall share of employment (Daly et al., 1991; Hart and Hanvey, 1995). Another study claimed that firms employing fewer than 10 people were responsible for about half of all net job creation in the late 1980s, despite employing only about 20% of the workforce (Daly et al., 1991). A succinct summary of the findings from this era is provided by Storey, who observed: *"out of every 100 small firms, the fastest growing four firms will create half the jobs in the group over the decade."* (Storey, 1994, p113)[6].

A further useful original contribution to the job creation debate in the UK using the Annual Respondents Database (ARD) for the manufacturing sector concluded that small establishments (i.e., less than 100 employees) account for between half and two-thirds of jobs created (Barnes and Haskel, 2002). Small establishments also have higher job creation and job destruction rates than larger establishments. Whilst a study of job creation over the period 1995 to 1999 using Dun and Bradstreet data for the UK found that there were 2.3 million extra jobs in new businesses, of which 85% were in small businesses (Dale and Morgan, 2001). Expanding businesses provided 3.5 million new jobs between 1995 and 1999. Although small businesses were less likely to expand than large

businesses, because there are so many of them, they accounted for more than 50% of new jobs in existing businesses. Overall, new and existing small businesses accounted for 66% of all new jobs created in this period, contributing more to job creation than their share in employment (56%) . However, small businesses were also responsible for around 66% of job losses in this period. On balance there was a net gain of 800 thousand jobs and small businesses accounted for around 70% of *net* job creation.

Job Creation and Destruction 1998-2013

Although these contributions have been valuable, here (as elsewhere) research was constrained by the limited availability of suitably comprehensive firm-level data. This has now changed. As mentioned earlier, in 2008 the Office of National Statistics (ONS) launched a new firm-level database, the Business Structure Database (BSD) for the UK, with records of (amongst other things) employment from 1997 onwards for virtually all businesses with employees and here we summarise the key job creation and destruction measures for the UK (using the metrics developed in the US by Davis et al., 2008) compiled from our longitudinal firm-level dataset.[7] Between 1998 and 2013 the average annual job creation rate in the UK was 15% and the average annual job destruction rate was 13% respectively in the UK (the comparable rates for the US for the 1998-2009 were 16% and 15%). So for the UK, over a typical 12 month period, just over a quarter of all jobs in the private sector were either destroyed or created– a remarkable level of turbulence.

[Figure 1 here]

Since the late 1990s smaller firms have been increasing their share of total employment year on year, and in 2010 their share was three times that in 1998. Single employee firms increased from 3% of the total employment in 1998 to 10% in 2010, whilst at the larger end of the size distribution the share of 250+ employee firms fell from 49% to 40% over the same period. The components of job creation and destruction vary by firm size and reveal the origins of the negative relationship between size and net job creation: firms employing more than 50 persons exhibit little net annual employment change whereas micro-enterprises (less than ten employees) record a positive net annual employment change - between two and 12%.

Unfortunately, these job creation and destruction metrics for the UK do not actually shed much light on the growth paths of firms. Whilst we can state with some authority that small firms have higher job creation rates than larger firms we need to go much further if we are to provide policymakers with more fine-grained findings.

High-Growth Firms and Job Creation

The motivation for the OECD's interest in HGFs is put very clearly in one of their early reports on the subject,

> *"[We have] the empirical observation that there is typically a small group of firms that are responsible for a large share of new jobs created. These rapidly expanding firms, by way of their supposed or actual potential to generate jobs, have attracted the attention of policy makers, eager to reduce unemployment."* (Schreyer, 2000)

In 2008, a year after the publication of the Manual of Business Demography Statistics, the OECD began publishing data on HGFs (OECD, 2008), though not for the UK and, as yet, there have been relatively few studies of HGF incidence which make use of the OECD definition (Anyadike-Danes et al., 2009; Bravo-Biosca, 2011; Teruel and de Wit, 2011; Anyadike-Danes et al., 2013b). Of course, there were studies of HGFs in the period before the OECD definition was agreed (Henrekson and Johansson, 2010), but with respect to HGFs it appears that policy makers have been running somewhat ahead of the 'facts'. HGF-oriented policy has been enthusiastically promoted, even though it is accepted that the evidence base is very weak (Lilischkis, 2011).

Here we are concerned with the contribution of HGFs to job creation. Although measuring the contribution to job creation played a role in the choice of HGF definition by the OECD, its potential for use in international comparisons appears to have been decisive in preferring it to the alternative high growth metric proposed by Birch (Ahmad, 2006; Birch, 1987). The first stage in the OECD metric for identifying an HGF (see: EUROSTAT-OECD, 2007, Chapter 8) requires that we consider firms which, over a 'growth period' (typically three years),

- are born before the beginning of the period
- are alive at the end of the period

These two requirements imply that in each period there will be a 'balanced panel' of firms – the same firms are always present throughout the period (often referred to as 'continuing firms'). An HGF is a firm in the balanced panel which,

- has at least 10 employees at the beginning of the period
- records an annual average growth of 20% in employment over the period[8]

Finally, we define HGF incidence[9] and the 'incidence rate' as the number of HGFs divided by the number of firms (in the balanced panel) with 10+ employees.[10]

Contribution of HGFs to Job Creation – what we already know

The first attempt to calculate the contribution of HGFs to job creation in the UK economy showed that they represented only 6% of all UK firms employing ten or more (11,530 firms in 2008), so an even smaller proportion of all firms (Anyadike-Danes et al., 2009). However, HGFs generated the majority of new jobs created -- 1.3 million out of 2.4 million (or 54%) -- by established businesses employing ten or more people in the previous three years. Whilst this finding is useful in underlining the importance of this small group of firms to overall job creation, the method used in its calculation tells only part of the story, as we shall soon see.

Using a slightly improved version[11] of our longitudinal firm-level dataset we updated this analysis, and extended it to cover the period of the recent economic downturn since 2008 and up to 2013. Starting with 1998, there are thirteen 3-year periods: from 1998/2001 to 2010/2013.The results for the number of HGFs and the HGF incidence rate are plotted in Figure 2. In summary, the incidence rate of HGFs averaged 7.2% over the period between 2002-05 and 2007-10 and then dipped to an average of 5.9% in the period of economic downturn before 'bouncing back' to 6.6% in 2010-13. In broad terms, the 'vital 6%' construct appeared to have survived intact the most severe post-war economic shock. There were 10,172 HGFs in 2010-13, one thousand more than in the preceding two periods, and similar to pre-2008 levels.

[Figure 2 here]

HGFs and Job Creation – a necessary re-calibration

Despite the salience of HGFs in policy debates on stimulating growth there has been little discussion of the measurement of their contribution to job creation. Indeed there is no agreed methodology for such measurements (for example, it is not covered by the EUROSTAT-OECD Manual of Business Demography Statistics). This is rather puzzling because the initial interest in agreeing a definition for HGFs was in recognition of their role as prolific job creators. So our motivation here is simple, to consider afresh answers to the question: "what proportion of job creation is contributed by high growth firms?"

The key difficulty stems from the fact that the number of firms is a stock – measured at a single time point, whereas job creation is a flow – the difference between the stock of jobs at two different time points. Consequently the ratio between the job creation flow and the stock of firms will depend (by implication) on the length of the measurement period. This dependence is important because many firms have relatively short lives and so, as the measurement period lengthens, larger numbers of

firms do not survive; equally, as the measurement period lengthens, larger numbers of new firms are born within the period (indeed firms may be born and die within the measurement period). These side-effects of a lengthening measurement period render the short period dynamics of labour market flows increasingly invisible and serve to blur the distinction 'new' and 'existing' firms and their relative contributions to job creation.

Users of the OECD definition of HGFs typically focus on growth over a three year period (t to (t+3)), so investigating the contribution of HGFs to job creation effectively commits us to a three year measurement period. Obviously, this is an arbitrary choice but we use it here to ease comparability. With a three year measurement period, an obvious starting point is to distinguish between job creation by HGFs from t to (t+3) and job creation by non-HGFs from t to (t+3). However, there is a further important component of the OECD definition: it covers only firms which are at least one year old (so born in (t-1) or earlier). So if we are to have a complete accounting framework for all jobs created in the UK between t and (t+3) we need to include other firms which may create jobs but are not classified as either HGFs or non-HGFs. Specifically, the usual approach to measuring HGF contributions to job creation does not include:

- any firms born in period t and alive in period (t+3)
- any firm born after period t up to and including period (t+3)

Firms in the first category may have jobs at time t and (t+3), whilst those in the second category may only have jobs at (t+3).

The choice of denominator for the HGF contribution to job creation is also (obviously) of considerable importance. In the conventional calculation reported above we compared job creation by HGFs with that by all other continuing firms with more than 10 employees. A more 'natural' comparison would be with all other continuing firms with more than 10 employees *which create jobs*, because, of course, a very large proportion of 10+ continuing firms do not create jobs. Secondly, it seems equally natural to extend the denominator of the job creation calculation to include *all firms alive* at the end of the three year period and which have created jobs.

For these reasons – the three year measurement period and the character of the HGF definition – we need to adapt the conventional (annual) job creation and destruction accounts described earlier. Here we focus on job creating firms only, and distinguish five categories,

- firms born before t, and alive (t+3), at least 10 jobs in t and 20% average annual growth between t and (t+3) – **HGFs**
- firms born before t and alive (t+3) with more jobs in (t+3) than t, but not a HGF with less than ten jobs at t – **smaller Non-HGFs**

- firms born before t and alive (t+3) with more jobs in (t+3) than t, but not a HGF with more than ten jobs at t – **larger Non-HGFs**
- firms born in period t and alive (t+3) with more jobs in (t+3) than t – **Young firms**
- firms born after period t and alive (t+3) with jobs in (t+3) – **New Firms**

HGFs and non-HGFs will be referred to below (as elsewhere) as members of a 'rolling balanced panel' of firms which comprises all firms born before period t and surviving to (t+3)). It is also helpful, again as we shall see below, to distinguish between those relatively large non-HGFs which (like HGFs) have 10 or more employees (large non-HGFs) and those that do not, that is small non-HGFs. The larger non-HGF category is a useful comparator for the HGF category because it is so similar (by construction).[12] Our particular interest here is the role of different categories of job creating firms. We find a very clear hierarchy in the absolute number of jobs for each category:[13]

- New firms are at the top, in slow decline from about 2.25 million in 2002/05 to 1.7 million in 2007/10
- HGFs are next, again in slow, uneven, decline from 1.5 million to 1.4 million 2004/07, then a steeper drop to 1 million over the last three periods
- Larger non-HGFs are virtually constant at around 1 million per period
- Smaller non-HGFs series is more volatile but typically around 0.75 million
- Young firms job creation rate is more or less constant but just 250 thousand per period

Finally it is worth re-visiting the proposition which had originally motivated interest in HGFs: a comparison between the proportion of job creating firms and the proportion of job creation they contributed. Focusing on the broadest measure (all job creating firms) we set out the relative contribution of HGFs in Figure 3.

[Figure 3 here]

Unsurprisingly, when we extend the denominator of the job creation calculation in this, entirely natural, way the importance of HGFs relative to other job creating firms shrinks quite considerably. As we can see from Figure 3, the HGF contribution to job creation averaged around 27% from 1998/2001 to 2004/07, it then dropped in the periods 2005/08 to 2007/10 to 22%. Since 2007/10 the contribution has dropped even further, to below a fifth (averaging 19.3%). By 2010/13, the most recent period, it was down to 18.4% – its lowest ever recorded share.

In brief, over the most recent 2010-13 period, HGFs accounted for about 1% of all job creating firms but 18% of the jobs created by job creating firms. In absolute terms the 10,172 HGFs added 839,352 jobs of the 4.6 million added between 2010 and 2013 by all job creating firms – in the periods up to 2005-08 the comparable HGF figure was more than one million. Although HGFs continue to make a significant contribution to job creation over a three year period, they have declined in importance.

From Growth Rates to Growth Trajectories

A useful way of understanding the focus on HGFs – and the OECD metric for identifying them – is as a shortcut to identifying the relatively small class of prolific job creating firms to which Birch had drawn attention. Of course the HGF approach succeeds in capturing such firms. How could it not? The definition alone – three years of 20% plus growth in jobs -- virtually guarantees it. But what the HGF approach does not do is provide much insight into the dynamics of job creation over a firm's life, because the metric rests on a growth rate which it uses as a proxy for job creation. However, we are not convinced that the OECD HGF definition provides a useful basis for policy discussions, and wish to suggest a different approach to measuring the contribution of rapidly growing firms to job creation. Here we shift from growth rates as the central concern (the preoccupation of the OECD HGF metric) towards 'growth trajectories' - our shorthand term for the dynamics of job creation over a firm's life – which allows us better to capture the interplay between growth and survival.

Firm Birth, Survival and Growth – Age is Crucial

A first step in appreciating the significance of 'growth trajectories' is to consider what we call 'the five brutal facts of UK business demography' which derive from our work on the longitudinal firm-level dataset for 1998-2010[14]:

1. every year a very large number of private sector firms are born : typically between 200,000 and 250,000 firms;
2. most new born firms are very small: around 90% have less than 5 employees;
3. a decade later between 70% and 80% of the new born firms are likely to be dead;
4. a cohort is born with about 1 million jobs: a decade later the survivors employ just half a million;
5. of those firms which have survived to age 10: around 75% of those born with less than five employees will, ten years later, still have less than five employees.

We knew already from the standard job creation and destruction accounting that births and deaths of firms are responsible for a considerable amount of 'churning', but what the 'brutal facts' remind us is that much of this churn is age-related. So it provides a pointer to the dynamic underpinning to the evolution of the stock of firms in the economy over time: as each new 'wave' of firms is born, firms from earlier waves - younger rather than older, smaller rather than larger - die away (for similar findings from a cross-country study, see Anyadike-Danes et al., 2013a).

Job Creation – Next Steps

How then does job creation fit into this picture? Focusing on a 15-year horizon (1998-2013) we find that just over 10% of firms born in 1998 survive until 2013 and these survivors have about 390 thousand employees in 2013, up from about 160 thousand at birth. Although, taken together, the

survivors have added about 230 thousand jobs this is a 'net' figure: some firms will have added jobs; some shed jobs; others will have exactly the same number as they had at birth.

In fact 60% of the surviving firms are job creators and the bulk of these job creators (like the bulk of all firms) are born very small (with less than five employees) and most of them remain very small and create very few jobs. But within the class of very small firm start-ups (those with less than 5 employees in 1998) there is a very, very, small group (6% of them: just over 1,200 firms) which are extraordinary prolific job creators (EPJCs): between them adding 90 thousand jobs, about 40% of net job creation by all 15 year survivors. It is this group of firms that require further analysis as we seek to understand the process of small business growth.[15]

Discussion and Conclusion

We have found in our research on employer-only businesses that the majority of jobs in the UK are created by small firms (notably micro-enterprises) and that these new small firms also exhibit the greatest rates of churn. We also confirm a widely accepted proposition that a relatively small proportion of firms are responsible for a disproportionate share of job creation. Whilst metric provides one approach to calibrating this relationship: there are a very small number of HGFs in the UK, and that HGF prevalence rates have remained largely unchanged, there has been a fall in the HGF contribution to job creation. However, although HGFs are an important category of job creating firm, their closest comparators – the larger non-HGFs – are quite important too. The point is, surely, that definitions are important, and that summary statements which gloss over the detail of the definitions may seriously mislead, especially since we have found that within each cohort of start-ups there are a small number of extraordinarily prolific job creators many of which are not HGFs (see (Anyadike-Danes and Hart, 2013; Hart and Anyadike-Danes, 2014a; 2014b)).

We have reached the conclusion that for policy discussion purposes it may be better to abandon the OECD HGF metric – its definition is somewhat arbitrary and, more importantly, it does not satisfactorily capture the episodic nature of the growth in many rapidly growing small firms.[16]Our preferred approach, which tracks the growth performance of cohorts of start-ups, reaches a similar conclusion, but avoids the intricacies of the HGF definition and the attendant difficulties in interpreting the job creation record. Our EPJCs are most certainly an easy to identify small group of firms which make a hugely disproportionate contribution to job creation, and that, after all, was the rationale for having distinguished HGFs in the first place. Having identified this group of small firms we are now undertaking further analysis to understand in more detail the key drivers of their growth and will be using a range of ONS business surveys to explore such issues as the role of innovation, exporting as well the relative importance of organic growth and growth by acquisition.

These findings take us quite close to the edge of what we presently know. Roughly, we can quantify the relationship which juxtaposes a relatively small number of small firms with a disproportionately large proportion of job creation over (in this case) 15 years. Obviously, that relationship can be generalised by computing it by sector, by geography and for varying time horizons (limited only by data availability and the rules governing its disclosure). What we don't yet know is much about the pace of job creation at the firm-level. For example, we don't yet know whether there is any uniformity in the performance the small group of very small EPJCs; nor whether there are any firms not in that group which would have been had we interrogated the data at some other time horizon.

So what we need to do next is to investigate the growth trajectories of firms – tracking their employment history from birth to (say) age ten, because from such trajectories we can map directly into job creation (see Hamilton, 2012). Indeed, such a 'cohort' approach is beginning to gain some traction in the UK with the use of business bank account data to analyse the 'growth paths' of all businesses and not just those with employees (see Coad et al., 2013a, 2013b, 2013c) and in the wider international community of researcher and policymakers (Criscuolo and Squicciarini, 2012).

What does this mean for policy? Well, we have confirmed some of the evidence upon which the rationale for the current range of policy initiatives has been based, which is certainly encouraging. However, on its own, the job creation narrative does not yet track into a set of clear conclusions for policy. Our analysis treats all jobs as equal and tells us nothing about the persistence of those jobs. It is also silent on the leadership role of the owner-manager(s) and managerial capabilities in the firm-level growth dynamic. So while we can identify prolific job creators in the UK economy we are not yet able to say too much more.

There is an obvious tension in existing policy discussions between the focus on developing the growth potential of existing firms and the promotion of start-ups (particularly by certain under-represented groups e.g., young people). Our evidence suggests that both start-ups and established businesses have rapid growth potential. Nonetheless, missing from this set of 'facts' is an understanding of the (causal) processes which drive them, which is required if we are to develop a robust set of policy interventions.

In a deliberately provocative paper: "Why encouraging more people to become entrepreneurs is bad public policy", Shane argued forcefully for a shift in policy priorities:

> *"It is about encouraging the formation of high quality, high growth companies. Policy makers should stop subsidizing the formation of the typical start-up and focus on the subset of businesses with growth potential." (*Shane, 2009, p. 145)

However, even if his negative argument is accepted (stop subsidizing start-ups), it still not at all clear what his positive argument (encouraging formation of high growth companies) would entail by way of policy . Indeed, if we return (where we began) with Birch's 35 year-old study, there is a very little cited passage in his conclusion which may now seem ironic, given the stimulus that his work has given to the high growth 'agenda'. He was profoundly sceptical about the practical policy usefulness of his 'discovery' of prolific job creating firms:

> *"We know that smaller, volatile firms are the major replacers of lost jobs, but we have no experience in identifying and assisting them in large numbers. Because they are small, we must reach many of them to have a measureable effect. Because they are volatile, we must monitor each individual firm's performance carefully if we are to gain maximum benefit from our invested dollars (on the high side) and avoid scandal (on the low side). From this researcher's viewpoint it seems like a very difficult problem to solve administratively. A massive bureaucracy would be required to monitor individual small businesses on the scale required ..."* (Birch 1979, p.4)

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Figure 1:

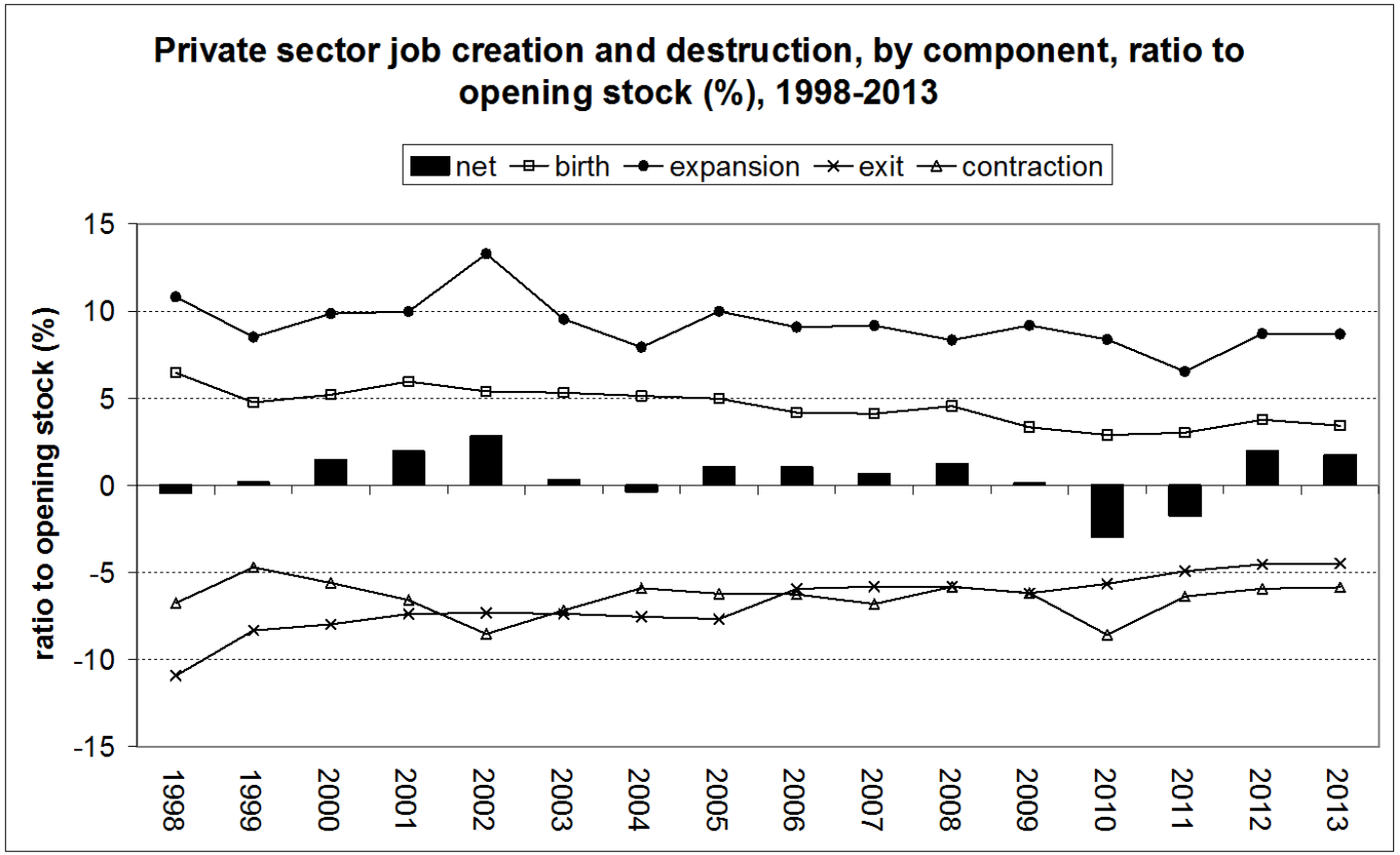

Private sector job creation and destruction, by component, ratio to opening stock (%), 1998-2013
net
birth
expansion
exit
contraction
ratio to opening stock (%)
15
10
5
0
-5
-10
-15
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013

Figure 2:

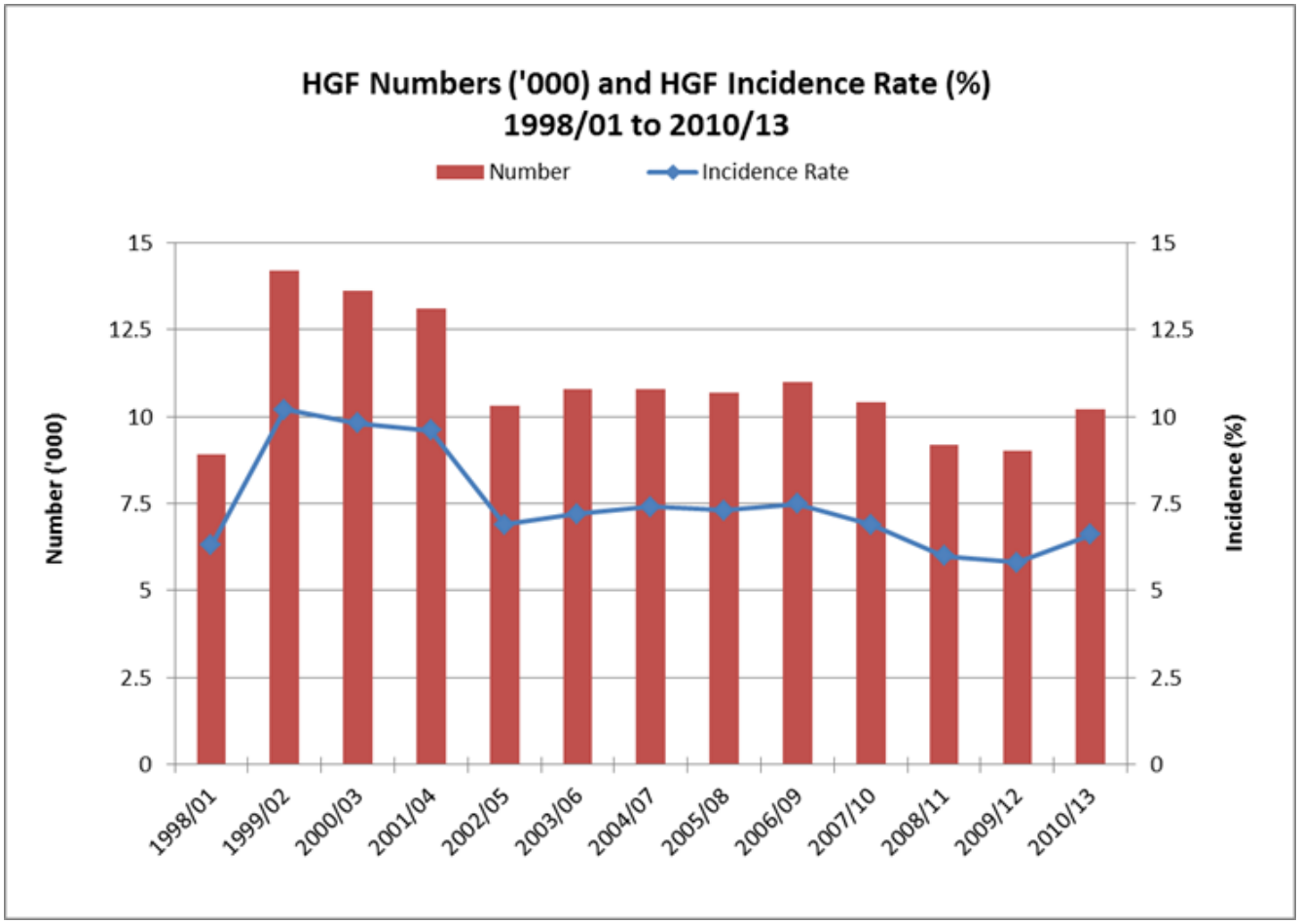
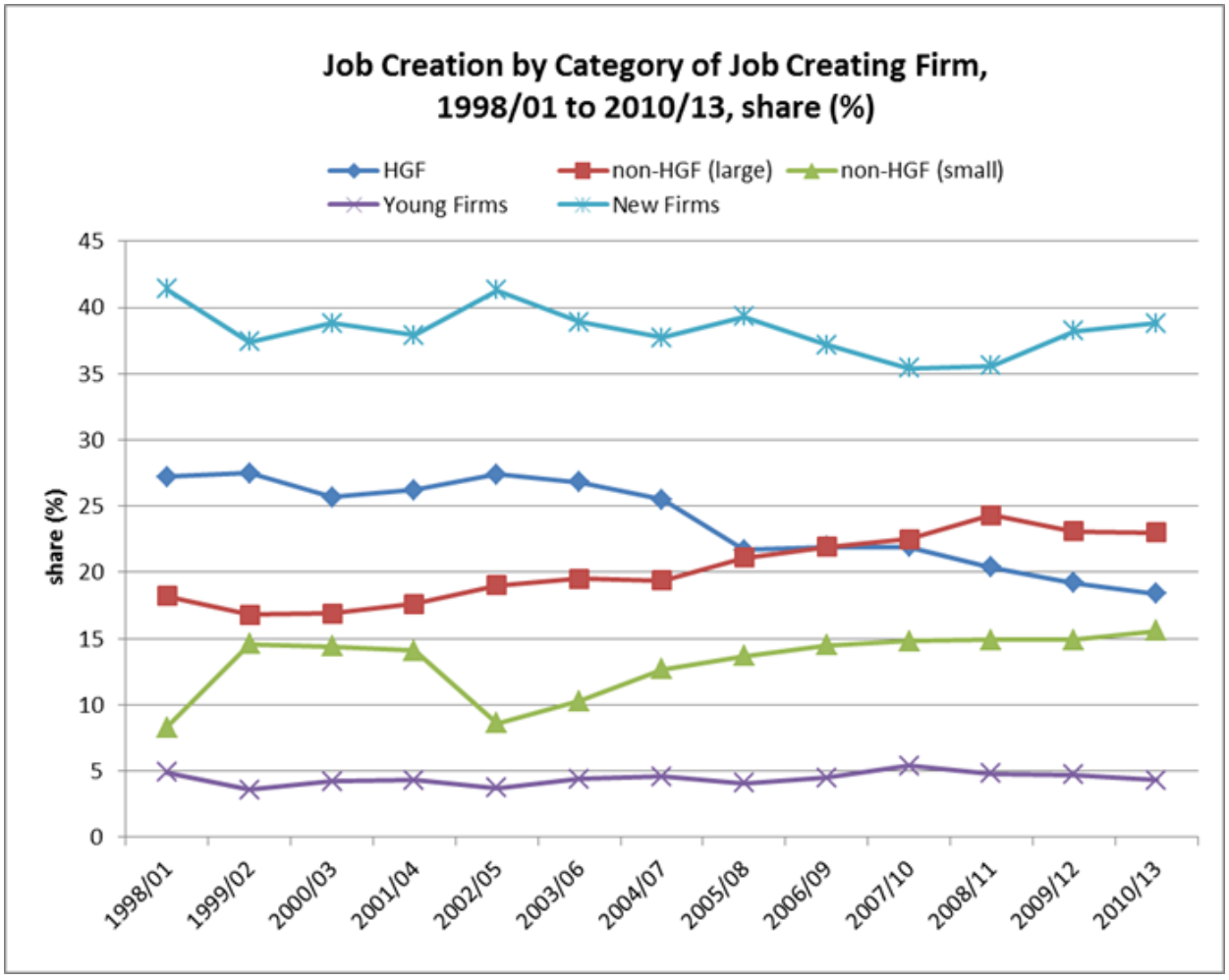

HGF Numbers ('000) and HGF Incidence Rate (%)
1998/01 to 2010/13
Number
Incidence Rate
Number ('000)
Incidence (%)
15
12.5
10
7.5
5
2.5
0
1998/01
1999/02
2000/03
2001/04
2002/05
2003/06
2004/07
2005/08
2006/09
2007/10
2008/11
2009/12
2010/13

Figure 3:


Job Creation by Category of Job Creating Firm, 1998/01 to 2010/13, share (%)
HGF
non-HGF (large)
non-HGF (small)
Young Firms
New Firms
share (%)
45
40
35
30
25
20
15
10
5
0
1998/01
1999/02
2000/03
2001/04
2002/05
2003/06
2004/07
2005/08
2006/09
2007/10
2008/11
2009/12
2010/13

[1] For a very useful, semi-biographical, summary of Birch's contribution and the debates which followed see (Landstrom, 2005, chapter 6).

[2] An interesting recent reprise of the debate appeared in 2011: see (Hurst and Pugsley, 2011), and the reply by (Haltiwanger, 2011).

[3] See Criscuolo et al. 2014, which reports on an OECD study using a harmonised dataset of job creation data from 18 countries.

[4] This data is compiled from a series of annual 'snapshots' of the Inter-Departmental Business Register, an administrative database which captures information from a range of sources, amongst them VAT returns and employer Pay As You Earn (PAYE) tax and social security records. The unit of analysis is an "employer enterprise" – a business with at least one employee – which we refer to as a firm. Firms may comprise a number of distinct local units (establishments or plants) but our data refer to firm-level employee numbers.

[5] We linked together the annual 'snapshots' from the BSD using firm-level identifiers and have devised algorithms to produce firm-level demographic markers for 'birth' and 'death' For a full discussion of how the longitudinal version of the BSD has been constructed see (Anyadike-Danes et al., 2013b).

[6] However, the evidence for the precise numbers ("four firms" and "half the jobs") is quite difficult to pin down, see (Anyadike-Danes, 2014).

[7] An early study using the BSD-data for the years 1997-2005 (Hijzen et al., 2010) found that 'small' firms (those with fewer than 100 employees) accounted for a disproportionately large fraction of job creation (between 50% and 70%) and destruction (between 50% and 60%). They found the entry of new firms accounted for about 40% per cent of job creation and the exit of firms accounted for about 50%.

[8] Alternatively, an annual average growth of 20% in turnover over the period can be used as the criterion, but only employment is used here.

[9] We use the term 'incidence' here by analogy with epidemiology, to serve as a reminder that HGF status is time-dependent – in the present framework a firm which is an HGF in one three year period may, or may not, be an HGF in some other period.

[10] The 'incidence rate' is similar to the term "share" used by the OECD in its most recent digest of indicators OECD, 2011. However the OECD (for reasons which are not explained) use a denominator in this calculation wider than the balanced panel: "The share of high-growth enterprises is compiled as the number of high-growth enterprises as a percentage of the population of enterprises with ten or more employees." (OECD, 2011, p. 74). In other words their denominator also includes all firms which are alive at the beginning of the period (so adding in those born in the first year of the period), whether or not they survive the period. It is also worth noting that in the earlier Manual of Business Demography did use the term "rate" rather than share, but its treatment of the dating of the denominator was only slightly less vague: "Rate of high growth enterprises: Number of high-growth enterprise as a percentage of the total population of active enterprises with at least 10 employees." (EUROSTAT-OECD, 2007, p. 63). The use of incidence rate, instead of 'share' (or HGF rate), allows us to distinguish clearly between conclusions about the incidence of HGFs *by* characteristics and their distribution *across* characteristics.

[11] The newer version of the dataset has, amongst other improvements, a better algorithm for determining births and deaths and produces smaller numbers of HGFs and slightly higher estimates of the incidence rate.

[12] This framework has been designed to account for job creation, and firms which do not create jobs have simply been left out of the picture – some of these will have the same number of jobs at period (t+3) as they had at t, others will have died (so no jobs at (t+3)).

[13] For a more detailed discussion of the results of these calculations, based on data up to 2010, see (Anyadike-Danes et al., 2013b).

[14] See (Anyadike-Danes, 2013) for more detail, the analysis builds substantially on earlier work using these data for cohort analysis and published in (Anyadike-Danes et al., 2009) as well as in (Anyadike-Danes et al., 2010).

[15] For a discussion of EPJCs in the cohort of UK firms born in 1998 their contribution to job creation up to 2008 and a comparison with HGFs over the same period see (Anyadike-Danes and Hart, 2013).

[16] For example, we found in a study of the 240 thousand UK private sector firms born in 1998 over their first decade of life that almost half the EPJCs were not classified as OECD HGFs, despite having grown from less than 5 employees at birth to considerably more than 20 jobs by 2008 (see Anyadike-Danes and Hart, 2013).