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# HIGH GROWTH FIRMS IN SCOTLAND

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## **Acknowledgements**

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# Executive Summary

## Research Objectives, Definitions and Methods

- High growth firms (HGFs) are widely thought to be a key force fuelling economic growth within modern advanced economies.
- This is the first comprehensive analysis of HGFs ever undertaken in Scotland. Given the importance these firms have for a region's economic growth potential and the policy attention they are beginning to receive, it was felt to be important that Scottish Enterprise develops a deeper understanding of these important generators of wealth creation in the Scottish economy.
- The OECD defines HGFs as: 'enterprises with average annualised growth in employees or turnover greater than 20 percent per annum, over a three year period, and with more than 10 employees in the beginning of the observation period'.
- There were four main elements to the study: literature review, aggregate data analysis, secondary information analysis and interviews with HGFs and Scottish Enterprise business account managers.

## Main Literature Review Findings

- The extent to which HGFs share common characteristics is remains uncertain.
- HGFs are not concentrated in particular sectors, such as high tech, but there is some evidence that geographical location is important, with some places generating more HGFs than others.
- There is considerable uncertainty and lack of consensus regarding the factors explaining why some firms grow.
- Team-based starts are more likely to grow than firms started by solo entrepreneurs. The management team's prior experience is also important. HGFs are more likely to have management teams with possess a strong vision for the company, a motivation to grow the business and sales orientation. HGFs have a high propensity to be acquired.
- Business strategy also appears to be important, notably market positioning. HGFs are more likely to have their own intellectual property (e.g. brand names and copyrights). However, technological innovation does not appear to be associated with growth.
- HGFs are also characterised by distinctive HRM practices, notably in terms of the care that they take with recruitment and the degree of employee empowerment, which is reflected in higher productivity.
- Finally, there is no evidence from our review of the literature that fast growth firms make extensive use of government business support.

## Aggregate Analysis of Scottish HGFs

- Between April 2006-April 2009, there were **825** HGFs in Scotland, 4.1% of Scottish companies.
- Medium and larger-sized enterprises dominated the composition of the Scottish HGF population.
- The majority of Scottish HGFs are less than 25 years old, but only a small proportion are genuinely gazelles (less than five years old).

- Services are the single largest source of Scottish HGFs. High tech sectors are weakly represented (e.g. life sciences, energy).
- The vast majority of Scottish HGFs are based around Scotland's main urban agglomerations: Glasgow, Edinburgh, Dundee and Aberdeen.
- A substantial proportion HGFs are foreign-owned (i.e. 39%);
- Vast majority of all Scottish HGFs are privately-owned firms.
- The minority (20%) of Scottish HGFs are account managed by Scottish Enterprise.

### **Findings from Firm Interviews**

- HGFs are heterogeneous, notably in terms of their age, size, ownership and industry sector. This provides a warning against prejudging where HGFs will emerge.
- HGFs have varied origins. They are by no means all de novo start-ups. Many have been 'pre-incubated' in established organisations.
- Serial entrepreneurs are also significant as founders of high growth firms and in one very significant case as business angels.
- Growth is often 'stepped', particularly where it is achieved by acquisition, an important mechanism for high growth.
- Few HGFs are technology-based, but most are knowledge-based and innovative
- Most HGFs sell to other businesses, not to consumers.
- Scottish HGFs are UK and globally-oriented: only a minority sell exclusively within the Scottish market.
- HGFs have business models which are based around building long-term relationships with customers which generate recurring revenue rather than one-off transactions and their business proposition is as much based around selling knowledge and 'solutions' as it is selling tangible products and services.
- Partnering is at the core of the business model of many of HGFs, but takes a variety of different forms such as joint ventures and collaborative agreements with other firms.
- HGFs have a variety of core competences but the most common ones are associated with the quality of their employees, innovative products and services and technical, market and customer knowledge.
- Many HGFs have raised external finance, either to fund growth or to facilitate ownership change.
- HGFs are located in Scotland because this is where their founders live. However, most are weakly embedded in Scotland with few business ties and because of their UK or global market orientation their Scottish footprint is often limited to their HQ.
- Their limited embeddedness in Scotland is illustrated by the lack of research and recruitment links to local universities.
- A majority of HGFs have had had financial support from government. Early stage financial support and support for overseas market entry have been the most significant.
- Government also has had important, often critical, indirect effects on HGFs, creating markets (through privatisation and deregulation) and expanding markets (regulation, public sector tendering and climate change policy).

## **Conclusions and Policy Implications**

- HGFs comprise a small proportion of the overall business stock in Scotland employing more than 10 employees (4.1%).
- The small size of this cohort of businesses should not detract from the fact that these high growth businesses make a disproportionate contribution to economic development and are critical to the growth of the Scottish economy.
- The growth of these firms is not a uniform or linear process. Rather, growth tends to be sporadic and uneven and is often achieved through acquisition. The population of HGFs is therefore constantly changing.
- HGFs are diverse and heterogeneous collection of organisations. Notwithstanding this, Scottish HGFs tend to be older and larger than the archetypal HGF and a large proportion have been pre-incubated in existing businesses.
- This study has a number of potential implications for the future design and shape of innovation and entrepreneurship policies designed to support the growth and development of HGFs in Scotland.

# **1. Research Context, Objectives, Definitions and Methods**

## **1.1 Introduction**

High growth firms (HGFs) are widely thought to be a key force driving economic growth in modern advanced economies (Acs et al, 2008; BERR, 2008; Henrekson and Johansson, 2010). One of the central aims of the current economic strategy of the Scottish Government is to provide responsive and focused enterprise support to increase the number of highly successful, competitive businesses (Scottish Government, 2007). Hence, for the past decade there have been a number of policy initiatives designed to stimulate high growth entrepreneurship in Scotland. Many of these policies have had a strong technology focus. Given the importance these firms have for a region's economic growth potential and the policy attention they are beginning to receive, it was felt to be important that Scottish Enterprise develops a deeper understanding of these important generators of wealth creation in the Scottish economy.

This report examines HGFs in Scotland from both quantitative and qualitative perspectives. This introductory section begins with a brief review of the policy context for the research. This is followed by an outline of the main research objectives of the research project. The next section provides a discussion of the definition of high growth that was used during this research project. The final section describes the methodological approach used in the study.

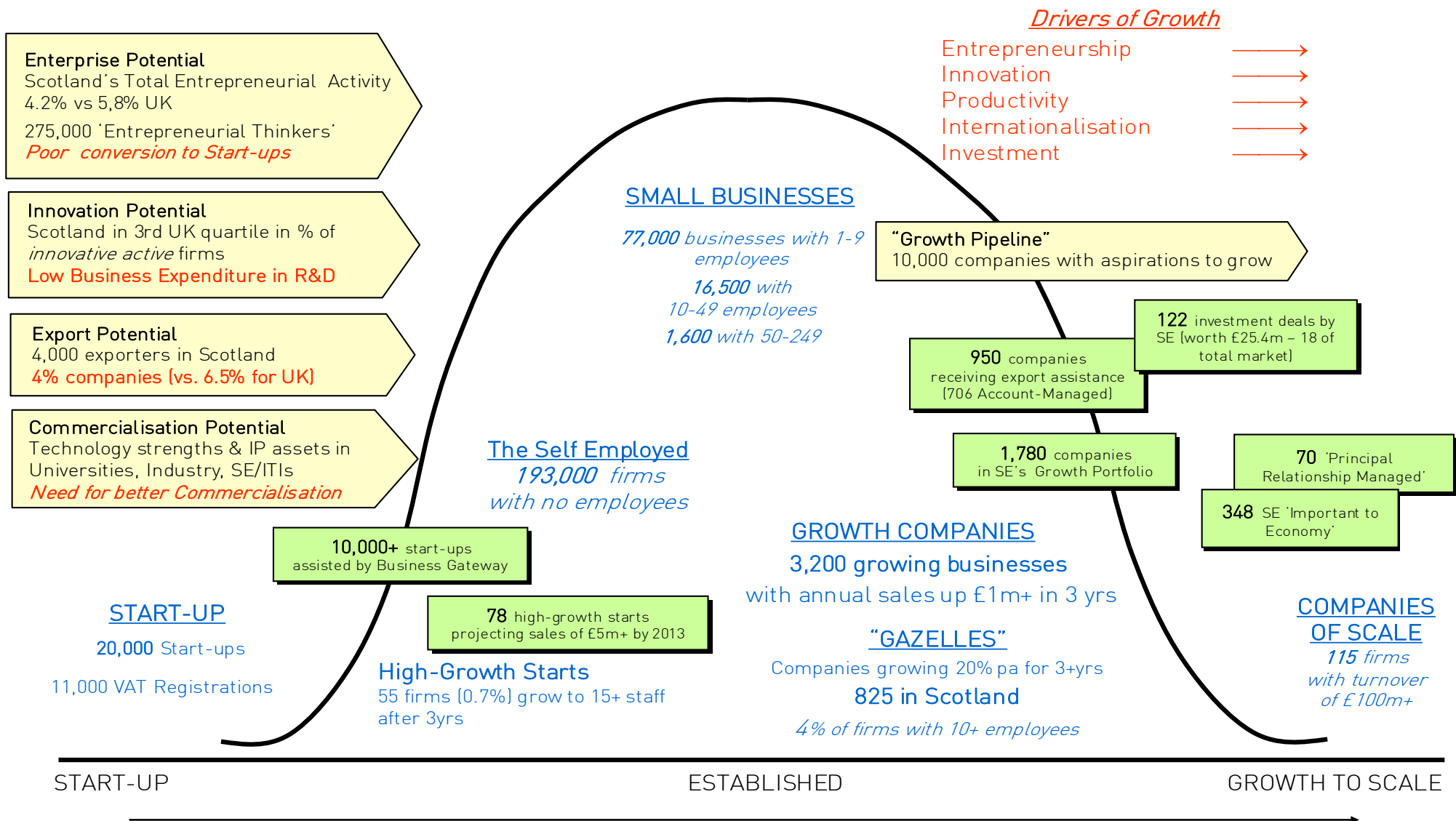
## **1.2 Policy Context**

In recent years Scottish Enterprise has reoriented its business support initiatives away from increasing the number of business start-ups in favour of encouraging the growth of companies. Part of the rationale for this change was evidence that the business birth rate strategy had, to some degree failed (Fraser of Allander, 2001), supporting various academic studies which argued that simply encouraging more and more people to start their own businesses does not lead to job creation or economic growth (van Stel and Storey, 2004; Muller et al, 2008; Shane, 2009). However, this policy shift was also based on the recognition that Scotland has proportionately fewer companies of scale than the rest of the UK, apart from Wales and Northern Ireland and that developing more companies of scale offered greater potential for improving Scotland's economic development. Indeed, there has been a steady decline in the number of sizeable public companies with their headquarters outside of London, the effect of which is to widen the gap between London and the rest of the UK (Financial Times, 2010). The advantages of such companies are the presence of a global head office, employment of graduates and investment in a local supply chain (Bolger, 2010).

In 2002 Scottish Enterprise the Business Birth Rate Strategy was effectively superseded with a focus on SMEs with high growth potential. As a consequence, initiatives such as the creation of the High Growth Start-up Unit (HGSU) and the Companies of Scale programme – providing tailored support to help companies achieve rapid growth - were adopted by Scottish Enterprise. More recently, Scottish Enterprise has begun to take a much more nuanced approach towards stimulating firm growth within Scotland, resulting in the recent development of a segmentation model of the Scottish business base being devised (Scottish Enterprise, 2009) (Figure 1). The analysis which underpinned this new approach sought to provide a baseline for establishing how many firms in Scotland are actually.



# The 'Market' for Company Growth in Scotland



achieving significant levels of growth (Scottish Enterprise, 2009). It revealed that around 15,000 companies in Scotland have any tangible growth aspirations.. In turn, Scottish Enterprise estimates that the number of firms with significant growth potential is about 10,000 from a total population of Scottish firms of 290,000. This means that 3.4% of Scottish firms are deemed to have significant growth potential.

### **1.3 Research Objectives**

Given this context, the rationale for this research project was to provide Scottish Enterprise with a better understanding of the market size of high growth entrepreneurship in Scotland. Prior to this study there had not been any proper investigation of high growth firms in Scotland. This therefore provides the first comprehensive examination of high growth firms HGFs ever undertaken in Scotland. Given that firm growth is an extremely complex and heterogeneous phenomenon (Coad, 2009), a further aim of the research was to gain a deeper understanding of high growth firm dynamics by exploring their origins, activities and strategies.

### **1.4 Definition of High Growth**

In common with a growing number of recent research studies on HGFs (Anyadike-Danes et al, 2009; Mason et al, 2009), we used the high growth definition developed by the OECD (2007). The OECD defines HGFs as:

*‘enterprises with average annualised growth in employees or turnover greater than 20% per annum, over a three year period, and with more than 10 employees in the beginning of the observation period’*

The benefit of using the standard OECD definition is that it enables both longitudinal and international comparisons (OECD, 2007). ‘Gazelles’ (or young high growth firms) are deemed to be a subset of high growth enterprises: ‘they are the high growth enterprises born five years or less before the end of the three year observation period’ (OECD, 2008, pg. 20). The focus of this study was on HGFs as a whole and not just gazelles.

### **1.5 Research Methodology**

The methodology adopted for this research was a multi-method research approach. As we note in Part 2, the majority of studies take a quantitative approach towards measuring the number and characteristics of HGFs, with only a minority adopting a qualitative approach to gain a richer appreciation of the entrepreneurs, business activities, strategies and success factors. The reality, of course, is that these approaches need to be seen as being complementary to one another. Hence, in order to fully capture the complexities of high growth firms this research adopted a multi-method research approach involving both quantitative and a qualitative elements.

There were four main elements to the study:

- Literature review

- Aggregate data analysis
- Secondary information analysis
- High growth firm interviews

*Literature review.* The literature review considered both quantitative studies which have measured the role of high growth firms in job creation and economic growth and also qualitative studies which have sought to explain factors of firm growth. This review provided a useful platform to inform the subsequent empirical investigation of HGFs in Scotland.

*Aggregate analysis.* We identified high growth firms in Scotland from the commercial business database FAME (Financial Analysis Made Easy) using the turnover-based OECD definition of high growth. In contrast to analysis of official data sources (e.g. Anyadike-Danes et al, 2009), this database has the advantage that individual companies are identified. This, in turn, enables it to be used as sampling frame with HGFs defined in a consistent manner, providing a direct link between the quantitative and qualitative parts of the research.

*Secondary analysis.* As background to the face-to-face interviews we undertook a review of secondary empirical information on a sample of around 100 HGFs identified from the analysis of the FAME database, about 12% of the overall population of HGFs in Scotland. This was primarily based on company websites, newspaper archives and Scottish Enterprise internal documentation. Financial information on individual companies was also obtained from FAME.

*Primary data collection.* In-depth interviews were undertaken with senior managers (mainly Managing Directors/Chief Executives) of more than 20 high growth firms to give first hand insight into the activities, competences and histories of their businesses. The vast majority of these interviews were undertaken on a face-to-face basis, with just a handful conducted over the phone. This was complemented where possible by interviews with Scottish Enterprise account managers who work closely with growth companies to deliver customised packages of support.

## **2. Literature Review**

### **2.1 Introduction**

HGFs are now attracting considerable attention. Business media around the world produce lists of fast-growing firms, researchers are taking advantage of the availability of powerful software and better databases to study fast-growth firms, and government is interested in HGFs on account of their contribution to job creation and economic development. As a consequence, governments want to know more about fast-growth firms and how to intervene to support them. However, whether government should intervene to support fast-growth firms and, if so, how best to support such firms are controversial and unanswered questions.

This section reviews the literature on HGFs. The purpose is to provide context and direction for the empirical study of HGFs in Scotland which follows. The literature is of two types: (i) quantitative studies which assess the economic contribution of fast-growth firms and seeks to identify their distinctive characteristics; and (ii) qualitative studies based on surveys of fast-growth firms which again are concerned with identifying their distinctive features as a means of 'explaining' why some firms achieve rapid growth. This literature identifies where the focus of our Scottish research should lie (e.g. what data to collect; how to analyse the data and questions to ask owner-managers) and provides material against which Scottish evidence can be benchmarked.

### **2.2 THE JOB GENERATION PROCESS**

It is 30 years since David Birch first presented evidence that small firms were the main source of job creation in the USA, showing that two-thirds of net new jobs between 1969 and 1976 were in firms with less than 20 employees (Birch, 1979). This turned on its head the conventional wisdom of the day that viewed large firms (i.e. the corporate sector) as the key driver of the economy. Birch's work attracted considerable criticism: his use of net job change was thought to be inappropriate; it was unclear whether his data referred to establishments or enterprises; his findings could not be replicated, which was attributed to the way he scaled up the data base to overcome missing data; the inadequacies of the Dun and Bradstreet database (e.g. slow to delete closures, bias to fast growing firms); and the inferences that he made to compensate for these deficiencies (Storey, 1994: 163-64). Kirchhoff (1994) (also Kirchhoff and Greene, 1998) note that conclusions regarding the contribution of small firms to job creation depends on whether a static or dynamic analysis is performed: in other words, is the size of firm defined in terms of its size in  $t$  or in  $t + n$ ? A dynamic analysis is argued to be more appropriate and the contribution of small firms is significantly greater if this methodology is used. Subsequent work by the US Small Business Administration (SBA) using a cleaned up version of the data for a longer period (1976-88) confirmed that in most two year periods small firms have been the major contributor to job creation, although not as significant as Birch suggested.

Birch's work attracted many replication studies. Hence, there is now a substantial literature, both in the USA (Reynolds and Maki, 1990; Kirchhoff, 1994) and elsewhere, confirming that small firms are the main source of new jobs in an economy. For example, UK research based on Dun

and Bradstreet data, which showed that small firms make a disproportionate contribution to job creation, is largely in line with the USA (Gallagher, 1986; Gallagher et al, 1990). However, the level of 'churn', in terms of gross job gains and losses, appears to be much higher in the USA than the UK (Storey, 1994). Harrison (1994a; 1994b) is one of the few dissenting voices, arguing that large global firms still drive economic development but from the 1980s onwards have a strategy of 'lean production' based around intricate networks of suppliers and sub-contractors. In other words, Harrison argues that the increase in the small business sector has, to a large extent, been driven by the strategic downsizing of the corporate sector which has involved increased subcontracting, outsourcing and partnering with smaller businesses. As a consequence, "many *de jure* independent small companies ... [are] ... in varying degrees .... *de facto* dependent on the decisions made by managers in the big firms on which the smaller ones rely for markets" (1994b: 146).

However, the broad-brush conclusion that small firms create the majority of jobs needs qualification in several key respects.

First, there are significant geographical differences in job creation. Variations between places in terms of employment change are almost entirely attributable to the rate at which jobs are created, and hence to the formation of new firms and growth of existing firms, rather than to the rate of job loss. Indeed, the rate of job loss is remarkably similar between places (Birch, 1987).

Second, the jobs being created (through new firms and expansions) are not the same as those being lost (through closures and contractions). Not only are they often in different places, as noted above, but are often also different in terms of skill requirements, with jobs requiring brains replacing those requiring brawn and muscle (Birch 1987). There is also evidence that new employment creation, at least in some sectors, is likely to be less well paid, non-unionised, part-time and oriented towards female workers (see Carnoy et al, 1997).

Third, although small businesses are remarkably steady creators of jobs over time, their share of net job creation varies from period to period because of the erratic behaviour of large firms. Small firms make their greatest percentage contribution to job creation during recessionary periods. This is because large firms make significant job cuts in such periods (Birch, 1987; Kirchhoff and Phillips, 1988).

Fourth, and the focus of this study, most small firms do not create many jobs: "it is .. incorrect to speak of small enterprises as a uniformly expanding and active group. It is better to think of them as a large collection of seeds, a few of which sprout and become large plants" (Birch, 1984: 8). Most small businesses typically start small and remain small. For example, Birley (1987: 163) notes from her longitudinal tracking study of a cohort of new firms in Saint Joseph County, Indiana that "in employment terms, the size of the firm was set at the start." Indeed, it is now well-established that only a small proportion of businesses grow rapidly. However, these firms have a disproportionate economic impact (Autio and Hoelzl, 2008). The main contribution to job creation therefore comes from a small number of fast-growing companies. Birch (1987) noted that in the period 1981-85 just 18% of firms were responsible for 86% of the new jobs. Birch famously termed these companies *gazelles*. A number of studies have shown that a relatively small proportion of all new firms generate the bulk of new employment. For example,

Birch et al. (1995) discovered so-called “gazelles” accounted for more than 70% of the employment growth in the U.S. between 1992 and 1996, while representing only about 3% of the firm population. Kirchhoff (1994) found that the 10% of fastest-growing firms contributed up to 75% of new jobs during an eight-year period. Storey (1994) found that only 4% of new firms born in any given year accounted for 50% of all the jobs created by the surviving firms within that cohort after ten years had elapsed. In the Global Entrepreneurship Monitor data, nascent and new entrepreneurs, who expected to create 20 or more jobs in five years’ time, represented only some 7% of the total population of nascent and new entrepreneurs, and yet their contribution to total expected jobs by all early-stage entrepreneurs was 75% (Autio, 2007). Looking in more detail at these companies Birch found them to be volatile: “dynamic firms pulsate sharply as they grow” (1987, p.51), growing sharply in one period, falling back in another period, then growing again. Stanger and Litan (2009) notes that most fast growing new firms maintain their growth for just two or three years and then hit a ceiling. Only a very few are able to sustain their growth to become a company of scale. Moreover, as these companies get older they maintain their growth through acquisition.

The high growth firms literature has three significant weaknesses. In sum, most study’s have attempted to study the level of firm growth rather than trying to understand the specificities of growth within these rapidly growing enterprises (McKelvie and Wiklund, 2010). First, growth is measured in a variety of ways (e.g. employment or sales, absolute or relative growth, length of time) often using a single cross-sectional snapshot. Second, number of different definitions of growth have been used. Third, various terms (e.g. gazelles) have lost their original precision. The OECD (2007) have sought to bring precision to the topic by defining high growth firms as “all enterprises with average annualised growth in employees or turnover greater than 20% per annum over a three year period, and with more than 10 employees at the beginning of the observation period.” Gazelles are defined as a subset of high growth firms: “they are the high growth enterprises born five years or less before the end of the three year observation period” (OECD, 2008: 20). However, this leaves open the issue of the nature of growth: should high growth firms be restricted to those which grow organically or should firms which grow through acquisition also be included? It is often not clear in studies of HGFs whether those which have expanded through acquisition are included.

## **2.3 A CLOSER LOOK AT GROWING FIRMS**

The literature on HGFs that has appeared in the wake of the Birch and US SBA studies has been usefully reviewed by Henrekson and Johansson (2010). Based on a synthesis of 19 studies they note that there is no general agreement on the definition of gazelles. Definitions vary in terms of the following: choice of growth indicator (e.g. employment, sales, profits); measurement of growth; length of time-period over which growth is measured; and whether growth through acquisition is included or just organic growth (Delmar et al, 2003). Birch (1987) defined them as firms which have achieved a minimum of 20% sales growth each year over the interval, starting from a base-year revenue of at least \$100,000. This definition therefore includes three criteria: (i) growth rate, (ii) sales as the measure of growth; and (ii) minimum start-size (to avoid the arithmetic problems associated with growth from a very small base). An alternative approach is to define HGFs as either the N fastest growing (new) firms (e.g. the *Inc. 500*) or the X% fastest growing (new) firms (e.g. The ‘Ten Percenters’: Storey, 1996). The consensus of opinion

favours the performance-based approach, with recent research adopting the OECD measure of fast growth (see above). It also needs to be noted that only three of the 19 studies distinguished between employment created through internal growth or growth as a result of acquisition.

A number of consistent findings emerge from the Henrekson and Johansson (2010) literature review despite the differences in the various studies covered, for example in scope and method, measurements of growth, time-periods, industry coverage, age of firms, and differences in country and regions.

1. They confirm that 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 HGFs continue to grow.
2. There is less consistency between studies in terms of whether HGFs make a disproportionate contribution to total job growth. There evidence is positive for the USA but not for some other countries. For example, there is less evidence of a positive effect in Sweden (Davidsson and Henrekson, 2002). We return to this point below.
3. HGFs can be of all sizes. Whereas small firms are over-represented in the population of HGFs, large firms can also be important creators of jobs, particularly a sub-group of 'super-gazelles' which in some other studies have been called 'gorillas'.
4. HGFs tend to be younger on average. Super gazelles are also relatively young.
5. Younger HGFs are more likely to grow organically, hence they make a greater contribution to net employment growth. Larger and older HGFs are more likely to grow through acquisition.
6. Newness is a more important factor than small size.
7. HGFs are found in all industries. They are not over-represented in high tech industries. If anything, they are over-represented in services. However, Davidsson et al (2002) argue that industry does matter, with HGFs more common in industries that are growing.

These findings, in turn, have provoked a still unresolved debate which is very pertinent to policy makers. Should public policy be focused upon the quality of new firms or the quantity? Is it better to have a large number of business start-ups or a few firms that grow rapidly? Davidsson and Delmar (2006) call this the 'mice' versus 'gazelles' debate. Increasingly observers are recommending that policy makers should pay greater attention to those firms which attain rapid growth on account of their disproportionate economic impact (Shane, 2009). However, Henrekson and Johansson (2010) suggest that it is not an either/or situation. They suggest that employment in new firms is just as crucial for total employment growth as the growth of HGFs. Scottish Enterprise, in its Business Birth Rate Strategy took the view that the way to get more gazelles was through increasing the overall level of entrepreneurial activity:

“contrary to what many people think, the task of increasing the number of fast growing companies is strongly dependent on the need to increase the number of businesses overall ... fast growing businesses the world over seem to thrive in a dynamic entrepreneurial environment with many businesses being born – and many failing” (Scottish Enterprise, 1996, p. 33)

This approach is in sympathy with the view that “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” because research has failed to identify distinctive or distinguishing features of fast growth firms (Hakim, 1989).

Since Henrekson and Johansson’s review, Acs et al (2008) have produced an important study of gazelles in the USA. They refer to HGFs as ‘high-impact firms’ which 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 to 2002. Some of their findings deviate quite considerably from Henrekson and Johansson’s synthesis:

- The average age of a high impact firm is 25 years old. Very few high impact firms are start-ups.
- High impact firms come in all sizes.
- ‘Small’ firms (less than 500 employees) created about half of the jobs and large firms created the other half in the first two periods (1994-1998 and 1998-2002) but not from 2002-2006.
- High impact firms exist in industries and are by no means confined to high technology industries.
- High impact firms exist in almost all regions, states, metropolitan areas and counties.
- There is evidence of some ‘super-high-impact’ firms - firms which have doubled their sales and revenue in more than one time-period and expanded their employment over eight years or more. These firms are most frequent in the 500-plus employee firm size class.

The contrasting findings may be attributable to the time-periods, which differed in terms of the relative importance of manufacturing, the significance of large firms and entrepreneurial activity. Improvements in data availability may be another factor. Finally, Acs et al (2008) do not say one way or the other whether growth through acquisition is included: we assume that it is, and this would favour older and larger businesses.

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% 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.

Other studies have sought to qualify some of the broad-brush conclusions that emerged from these aggregate studies. Six themes can be identified: the heterogeneity of HGFs; the episodic nature of growth; high growth and financial performance; exporting; ownership; and location.



We briefly look at each of these in turn

### ***The heterogeneity of HGFs***

Delmar et al (2003) have sought to emphasise the heterogeneity of high growth firms, arguing that they do not all grow in the same way. They also argue that firm growth is not a uni-dimensional but a multi-dimensional phenomenon. They found seven types of high growth firms in their Swedish study:

- Super absolute growers that grew in both employment and sales
- Steady sales growers that grew in terms of sales but declined in employment
- Acquisition growers that grew in sales and employment through acquisition
- Super relative growers had the strongest growth in relative terms and most periods of growth
- Erratic one-shot growers have one period of rapid growth which is cancelled out by subsequent decline
- Employment growers which exhibited greater growth in employment than in sales
- Steady overall growers with strong absolute growth in employment and sales.

These clusters exhibited differences in terms of firm age, size and industry. Delmar et al (2003) go on to suggest that this diversity has implications for future empirical studies of HGFs. The obvious implication is that the decision on how to measure growth will produce different results. To address this concern Delmar et al (2003) propose that future studies of HGFs ought to take one of two possible research strategies. First, is to focus on narrow aspects of growth using a single measure of growth and population of companies defined by a single criterion. The second approach is to openly acknowledge this diversity whilst using comprehensive methods of assessing the potential causes and consequences of growth.

Chandler et al (2009) also note that sales growth does not always translate into job growth. They suggest that this relationship is governed by the logic of transaction cost economics. This perspective suggests that employment growth accompanies sales growth in emerging companies when human asset specificity is relatively high and the costs of uncertainty associated with the screening of potential employees and monitoring performance are lower than the cost of external contracting.

Extending this discussion, Daunfeldt et al (2010) compare HGFs in terms of both sales and employment and also value added and productivity. They report limited overlap between the firms defined as high growth in different ways, although young HGFs are most likely to be HGFs irrespective of definition.

### ***The episodic nature of high growth***

A number of recent studies have emerged which point to the episodic nature of growth even amongst high growth firms, with examples of sustained growth being extremely rare (e.g. Dodds and Hamilton, 2007; Parsley and Halabisky, 2008; Blackburn and Brush, 2009; Parker et al, in

press). HGFs have difficulty sustaining their frenetic pace of growth. Being a HGF is therefore a temporary phenomenon (Garnsey et al, 2006).

In reality, rather than being linear, growth takes the form of disconnected jumps or spurts of growth interspersed by periods of stability or decline (Dodds and Hamilton, 2007). This is well-illustrated by Vinnell and Hamilton (1999) in a fascinating case study of the development of one small family firm over a 50 year period using information from the firm's own archives. The HGFs studied by Blackburn and Brush (2009) report four different patterns of growth: hockey stick, incremental, erratic and plateau. The Industry Canada research makes the following comment: "the 'hockey stick' model of growth (i.e. slow growth during the early stages of a firm's life cycle, followed by a sudden takeoff of very high growth) likely does not apply to all firms. Instead, firms appear to reinvent themselves with innovation to achieve high levels of growth, which is consistent with the notion of product life cycles" (Parsley and Halabisky, 2008: 9). Garnsey and Heffernan (2005) argue that growth setbacks are common amongst new growing firms, indeed, they "are sufficiently common to require that growth models explain growth reversal as a predictable feature of early firm growth (p. 698)." The causes of such setbacks are varied: initial resources (especially finance) may be exhausted before the opportunity can be fully exploited; the pace of growth may outstrip the synchronisation of the specialist resources and the time, competence and knowledge of the management; insufficient information to understand the environment in an emerging industry; industries can move abruptly from under to over-capacity. Such setbacks may be overcome and so represent an interruption to growth, but they could equally be fatal. Garnsey and Heffernan therefore warn that the future cannot be extrapolated from the past. A period of growth does not necessarily lead to further growth; reversal is equally possible. Rather less evidence is available on the triggers for renewed growth. This is a valuable comment in the context of 'fast growth' lists which are typically based on only three or four years of evidence.

Garnsey et al (2006) also argue that new firm growth is not an indeterminate process but rather the outcome of 'systemic feedback mechanisms', the effects of which may be mistaken for randomness when statistical methods are used to examine this complex phenomenon. They argue that further detailed studies are needed to explore the way entrepreneurs respond to developments that determine which firms recover from periods of decline and which ones fail.

Further evidence on growth is provided by BERR (2008). More than half of a sample of UK and US firms that appeared on fast-growth lists continued to grow fast following their appearance on the lists, although in many cases their growth has been unpredictable and variable. However, very few firms failed. Most striking is the high proportion of firms that were subsequently acquired – around 40%, with the proportion similar in both countries. Moreover, in a large number of cases the firms which were acquired continued to operate with their original founding team retaining senior management positions. This may suggest that acquisition was a means of sourcing further growth finance and gaining access to the networks and infrastructure of the acquiring firm.

### ***High growth and financial performance***

Markman and Gartner (2002) argue, based on an analysis of *Inc 500* firms, that rapid growth in sales and employment is unrelated to profitability. The lack of association between growth and financial performance is supported by Blackburn and Brush (2009) who note that fast growth does not necessarily equate to profitability and by Coad and Holtz (2010) who find no link between growth and profits. Davidsson et al (2009) find no general support for a positive relationship between growth and profitability. However, they go on to report that firms which show high profitability at low growth are more likely to reach a state of high growth and high profitability in subsequent periods than firms which first show high growth and low profitability.

### ***Exporting and HGFs***

Research by Industry Canada (Parsley and Halabisky, 2008) reports that exporting companies are more likely to be hyper or strong growth companies. This is particularly marked in the smaller firm size categories where exporters were more than twice as likely as non-exporters to be hyper and strong growth firms. Moreover, nearly half of micro firms (1-4 employees) that exported were hyper or strong growth firms. Not surprisingly the analysis also found that “exporters created a disproportionate number of jobs” (p. 11). Exporting is also likely to be a characteristic of HGFs in smaller peripheral regions and countries, in order to broaden the customer base and increase sales volume (Dodds and Hamilton, 2007).

### ***Ownership and high growth***

A study of Scottish SMEs discovered that multiple-ownership and cross-linkages is an important contributory factor explaining firm growth (Rosa and Scott 1999b). Using directorships as a proxy for ownership or influence on decision-making, the study revealed that ‘new’ Scottish companies are in fact significantly linked to existing companies. They found that many new companies are part of the ‘growth’ strategies of existing firms rather than being traditional de novo start ups. The work also discovered that failure rates were low in associated companies and that the highest rate of inter-company links were found in the sample of high growth companies. The implication arising from their work suggests that there may be a need to better segment businesses, to identify (and presumably support) truly novice entrepreneurs who are weakly linked to the business community. According to Rosa and Scott, existing businesses should not be categorized using Storey’s basic dichotomy of ‘high fliers’ or ‘trundlers’ (Storey, 1994), but rather should be viewed as a ‘dynamic network’ in which entrepreneurs ‘realign resources to start new businesses’ (1999b, p.35).

More recently, Bjuggren et al (2010) have explored whether family-owned firms are more, or less, likely to be HGFs. Their conclusion is rather ambiguous. Family-owned firms are less likely to be HGFs when absolute employment is used as the measure of growth, but more likely to be HGFs when a relative measure of growth was used. They also noted that a change from family ownership to private non-family ownership increased the probability of being a HGF when absolute employment was used.

Despite the vast amount of work done on FDI overall, unfortunately, there has been an absence of work examining the differing growth performance of indigenous versus foreign-owned HGFs. There is also a paucity of work on the impact foreign takeovers have on HGFs post-acquisition and the consequences this has on the local 'host' economy.

### *Location and HGFs*

One theme that is largely absent from the HGF literature is evidence on their geographical dimension, hence it is unclear whether HGF make the same contribution to job creation across all regions and sub-regions. Work by economic geographers, now quite dated, suggests that HGFs do exhibit a distinctive geography. In the US, Wheeler (1990) indicates that fast-growth firms (defined as the Inc. 500) are disproportionately concentrated in the South and West regions. A more recent study notes that 20% of high growth firms are located in California (BERR, 2008). In the UK, Mason (1985) highlighted the disproportionate concentration of 'successful' firms in London and the South East. Gallagher and Miller (1991) noted that high fliers are three times more prevalent in the South East of England than in Scotland per head of population. BERR's (2008) analysis of the Fast Track tech database found that 57% are located in London and 33% in the South East well above these regions' combined share of UK GVA. The dominance of the South East of England was also found in a recent analysis of UK Government's data (Anyadike-Danes et al, 2009). Stam (2005) also notes that the regional distribution of HGFs in The Netherlands is more uneven than that of new firms – or, to put it another way, “there is no strong correlation between regional new firm formation rates ... and the relative number of gazelles” (p. 123). Acs and Mueller (2008) also find that the locational distribution of HGFs is far from random, with 40% of HGFs in the USA located in just 20 cities. These 'gazelle regions' are primarily large cities on the west coast (e.g. Los Angeles, Seattle, San Francisco, San Diego), around Chicago and on the east coast (e.g. New York, Boston, Washington DC, Miami, Tampa). The employment effect of new firm formation is greatest in these cities.

In contrast, Davidsson et al (2002) found an almost complete lack of location effect, suggesting that building a high growth business is possible in almost every region. Indeed, it is important to emphasise that fast growing firms are found in all states in the USA and in all regions of the UK (Vaessen and Keeble, 1995). However, Gallagher and Miller (1991) highlight qualitative differences between HGFs in Scotland and the South East, with those in the South East having a much higher turnover and creating twice as many jobs on average as those in Scotland (348 cf. 160), and accounting for a much bigger share of job creation: higher fliers in Scotland accounted for 11% of firms but created 60% of all jobs created whereas in the South East higher fliers accounted for 18% of all firms but accounted for 92% of all jobs created. They also note sectoral differences, with manufacturing firms over-represented in Scotland and financial services firms under-represented compared with South East England. Stam (2005) similarly finds that the HGFs in knowledge-intensive business services have a different geography to HGFs in high technology manufacturing: the former are disproportionately concentrated in highly urbanised regions whereas the latter are concentrated in rural areas. Thus, there is some evidence to suggest that HGFs contribute to a widening of regional disparities within countries.

## 2.4. NEW UK EVIDENCE

What is conspicuous in both the job creation and high growth firm literature is the very limited number of UK studies. This largely reflects the poor quality of data available. As noted above, Gallagher undertook one study in the immediate aftermath of Birch's initial work, but was hampered by the much poorer quality of data in the UK, and another study covering the 1980s. Some other studies were also undertaken during the 1980s based on government statistics which were also restricted in scope because of data limitations. However, with the advent of the Inter-Departmental Business Register (IDBR) in the UK now enables us to examine HGFs with a degree of rigour found in other studies.

Anyadike-Danes et al (2009) present a preliminary analysis of firm-level growth rates and high growth firms in the UK based on the Government Business Structures Database. Firm growth is examined in time-periods, 2002-5 and 2005-8, and the incidence of HGFs is examined by tracking the 1998 cohort of start-ups. *Fast growth firms* are defined using OECD guidelines as firms with an average annualised growth greater than 20% over a three year period. *High growth firms* have this same growth performance but in addition had 10 or more employees at the start of the period.

Most businesses did not grow over this period. Using employment as the main performance criteria, 10% of firms meet the fast growth definition in the 2002-5 period and 9.5% in 2005-8. High growth firms are much less common, comprising 6.4% of firms in 2002-5 and 5.8% in 2005-8. Defining high growth firms in terms of turnover increases the proportion of both fast growth and high growth firms. The 10,073 high growth firms identified in the 2002-5 period employed 2.62 million people, 11.4% of the total private sector workforce, while the 10,304 high growth firms in the 2005-8 period employed significantly fewer people – 1.93 million – or 8.2% of the private sector workforce.

As noted above, in terms of regional distribution one-third of high growth firms are in Greater London and South East England. This is a lower figure than reported in a previous study by BERR (2008). But controlling for size of region, with the exception of Greater London, all the regions with the highest proportions of high growth firms are in the 'north'. In both the time periods examined, peripheral regions such as Wales and Northern Ireland in 2002-05 and Scotland and the North East in 2005-08, had above average shares of HGFs in comparison to more central and southern English regions. Importantly, from a Scottish perspective the percentage of HGFs as a share of all firms with 10 employees and more was above the UK average in both time periods (6.3% and 7.0% respectively).

Consistent with previous research, HGFs are found in all sectors and there is no evidence that they are disproportionately concentrated in high tech sectors.

The majority of HGFs in both periods are small, with four-fifths employing less than 50 employees and half employing between 10 and 19 people. Firms of this size are likely to grow organically rather than by acquisition. The vast majority of high growth firms were under five years old. This also highlights the relatively small number of gazelles – i.e. new firms - which achieve high growth. Gazelles accounted for under 20% of total employment in high growth

firms in both 2005 and 2008. In other words, and consistent with Acs et al (2008), that it is **well established growth firms that create most of the jobs, not gazelles**.

Turning to the longitudinal analysis of the 1998 cohort of new firms very few recorded multiple instances of growth over a ten year period. Indeed, few experienced significant change in size. The biggest contribution to employment was firms which were born with one employee and which achieved the 20+ employee sizeband. The analysis also revealed that high growth is strongly associated with survival: 18% of high growth firms closed whereas the proportion for the entire population was 60%.

## **2.5. QUALITATIVE STUDIES OF GROWTH**

Quantitative studies of the type reviewed above have been important in indicating the significance of high growth firms, the nature of growth and where high growth firms occur in the economy. However, standard cross-sectional attribute/performance correlations fail to capture important features of the complex dynamics of growth in firms (see Garnsey et al, 2006). For example, they ignore fluctuations in growth. They can identify factors that accompany growth but are less able to shed light on the factors that contribute to growth (Dodds and Hamilton, 2007). Nor can they shed light on barriers to growth or the behaviours and strategies for growth. To explore these issues we turn to survey-based studies that have examined growth firms from a qualitative perspective. The number of qualitative studies is relatively small when compared to the quantitative literature (Blackburn and Brush, 2009), hence “our current understanding remains limited” (Dodds and Hamilton, 2007). A synthesis is provided in an appendix to this section (Appendix 2.1).

It is important to state at the outset that the task of drawing out conclusions is challenging for a number of reasons. First the definition of growth used varies between studies. This has major implications for the types of firms studied (Janssen, 2009). Second, the length of time over which growth was examined varies. Third, sample sizes vary quite considerably. Fourth, the samples of high growth firms may not be ‘representative’. Fifth, there may be cross country differences. Finally, firm growth in all of its manifestations (e.g. nature of growth, growth strategies) may vary with macro-economic conditions: growth in recessionary periods is likely to be different from growth in economic boom conditions (Storey, 1994).

David Storey’s book *Understanding the Small Business Sector* (1994) provides a useful starting point. His review of the literature on growth identifies three themes.

The first theme is the entrepreneur and his/her access to resources. The characteristics and prior experience of the entrepreneur appears to exert only a modest impact on the subsequent performance of the business. Just three factors appear to have some influence. First, founders who start businesses for ‘push’ (such as people made unemployed) reasons are less likely to start businesses which grow than those who start because they see an emerging market opportunity. Second, faster growing firms are more likely to be founded by teams rather than individuals. Third, faster growing firms are more likely to have been started by middle-aged founders. In addition, education and prior management experience register as important in some studies.

Factors which have no effect on growth are family background in business and prior experience in the same industry.

The second theme is the characteristics of the firm itself. The pattern here is more consistent. Younger firms grow more rapidly, and there are sectoral differences. Legal form also matters, with limited companies growing faster than either sole traders or partnerships. Location also exerts an influence, with small firms in accessible rural locations growing faster than firms in urban areas (Keeble, 1993). Finally, with the exception of the very smallest firms, small firms grow faster than larger ones.

Finally some elements of strategy emerge as important. Growing firms are more likely to have external shareholders, implying that they have raised external equity finance. Second, growing firms have made a conscious decision about market position, choosing market niches where they can exploit quality advantages. The introduction of new products is also important. Finally, growth is influenced by the willingness of the owners to devolve decisions to non-owning managers. This, in turn, suggests that the creation of a strong management team is an important factor in growth.

In the intervening 15 years there have been quite a number of studies of HGFs some of which contradict some of the original assertions made by Storey (1994). A useful review is provided by Dodds and Hamilton (2007).

Littunen and Tohmo (2003) adopted Storey's framework to compare the performance of a cohort of new firms in metal-based manufacturing and business services in Finland. They confirmed that the founders of HGFs were more likely to have been motivated to start their business by positive situational and pull factors (such as the emergence of new market opportunities or technological development) and had a distinctive management style that was inclusive. Fast-growth firms had distinctive internal and external networks and had an active market development strategy. However, location – and by inference local environmental characteristics – did not influence the likelihood of firm growth.

The importance of the founder(s) as being a distinctive feature of high growth firms emerges in several studies (Rosa and Scott, 1999b); Gompers et al, 2006; Dodds and Hamilton, 2007; Capelleras and Greene, 2008). Previous studies have identified four key founder-related variables that are associated with high growth (Dodds and Hamilton, 2007): (i) start-up motivation, with the desire to exploit a market opportunity much more important than push-related motives; (ii) amount of education and educational subject along with soft skills such as search, foresight, imagination and communication emerge as important; (iii) experience – the role of prior entrepreneurial experience is a distinct advantage; and (iv) size of the management team – with larger teams linked to high growth on account of their greater resources and expertise.

Founder/owners play a key management role and even if they have stepped back from day-to-day operations will still maintain a high level of control, hence the skills and knowledge that they bring is critical to the success of their businesses (Hilton and Hamilton, 2009). As well as creating the concept of the new business, founders also instill its culture from the outset. As

Barringer et al (2005) comment, the founder places their 'stamp' on the culture and behavior of their business. Specifically, the founder must have a commitment to growth and a vision of growth. Delmar and Wiklund (2008) find that growth motivation has a unique impact on firm growth, as might be expected. However, they also find that there is an important feedback mechanism from growth to motivation to grow. In other words, having successfully grown over a period encourages management to want further growth, creating a virtuous growth cycle.

The link between high growth and innovation has also been explored in several studies. O'Regan et al (2006) examined high growth manufacturing firms. Three of their conclusions are particularly interesting. First, they found that innovation does not influence high growth. O'Regan's et al claim that SMEs encounter difficulties in converting R&D into effective innovation. Second, they found that high growth manufacturing firms are strongly sales oriented: they regarded themselves as "prospectors, rather than defenders, analysers or reactors" (p. 39). Third, they found that external market positioning attributes explain high growth performance more than internal, resource-based, explanations. Freel and Robson (2004) also observed a negative relationship between product innovation and sales growth of small manufacturing businesses in Scotland and Northern England, at least in the short term, but a positive relationship between novel product innovation and growth in employment for both manufacturing and service sector firms. The majority of other studies report a positive relationship between firm-level innovation and high growth (see Freel, 2000; Coad and Rao, 2008; Mason et al, 2009). According to some, although innovation is not very important in explaining the growth of the average firm, 'it is of crucial importance for a small number of fast-growing firms' (Coad, 2009, p. 83).

Hilton and Hamilton (2009) in their study of HGFs in New Zealand offer a more nuanced view of the link between innovation and growth. They report that while all of their HGFs viewed their product, service or value proposition as innovative, in all cases the innovation stopped short of true novelty and was, instead, an alternative marketing or distribution strategy or an amendment to an existing service value proposition (and hence did not require significant R&D expenditure). In short, innovation was derivative – leveraged from an existing offering developed by another firm – but nevertheless sufficient to create a compelling value proposition.

In terms of business strategy there is evidence that HGFs use innovation to compete on the basis of differentiation, enabling them to be price setters rather than price takers. Collaboration strategies such as joint ventures, consortia and alliances also appear to be critical for HGFs, enabling them to access a broader base of resources (Dodd and Hamilton, 2007). A further key strategy, suggested by Hilton and Hamilton (2009), is to seek market niches with little in the way of effective competition. They do this in three ways: first, by favouring business rather than consumer markets; second by developing close relationships with a small number of large customers; and third, by emphasizing customer service as a key basis of differentiation in the market which, in turn, requires a significant emphasis on staff training. Exporting is also likely to be a characteristic of HGFs, particularly in small countries, in order to broaden the customer base and increase sales volume (Dodds and Hamilton, 2007).

Barringer et al (1998) explored how rapid growth firms overcome the management capacity problem. They identified three distinctive strategies: (i) alliance formation which enables firms



to access their partner's managerial and other resources; (ii) cash forms of incentive compensation to induce superior performance by staff and reduce shirking; (iii) employee empowerment to equip employees to achieve high levels self-supervision and performance. Other management practices which typify rapid-growth firms are: an emphasis on careful recruitment and selection of employees; close customer relations, channel development; emphasis on planning; quality emphasis that transcends industry norms; a growth-oriented culture and team working training and communication. They followed up this study, using the same data source but rather than examining rapid-growth firms in isolation, they compared 50 rapid-growth and 50 slow-growth firms (Barringer et al, 2005). In terms of the entrepreneur's background and characteristics, rapid growth entrepreneurs were more likely to have prior industrial experience, college education and an 'entrepreneurial story' (reflecting extreme motivation). Rapid growth firms also had a commitment to growth and a growth oriented vision. In terms of business practices they were creating unique value for their customers and had detailed customer knowledge. Finally, rapid-growth firms had distinctive HRM practices, emphasising employee training, employee development and a remuneration system that gave employees financial incentives. The wider literature also highlights a firm's employees as being critical for the achievement and maintenance of rapid growth and the consequent need for HGFs to manage their HRM practices accordingly (Dodds and Hamilton, 2007).

Robson and Bennett (2000) found that use of external government sources of advice does not have significant effects on SME growth. Rather, SME growth is related to the use of private sector sources of advice. Types of business advice most directly associated with growth related to business strategy and staff recruitment. Similarly, Smallbone et al (2002) examined the high-growth start up programme in the East Midlands of the UK and discovered that many of the existing high-growth start-up businesses do not currently access mainstream support systems, with only one-third of their sample making use of external business support services. The limited use that HGFs make of public sector advice contrasts with their openness to, and active search for, relevant advice. In their study of HGFs in New Zealand Hilton and Hamilton (2009: 9) note the willingness of the founders to "seek at the outset, and to continuously seeking ongoing external strategic advice." Input from external advisers was particularly critical when the businesses were in their infancy. Such advice was particularly important in three areas: ensuring the correct market was entered, at the correct time, ensuring the correct people were employed and installing robust systems and processes.

BERR (2008) has compared the characteristics of fast-growth firms in the US and UK based on interviews with samples of firms on the INC 5000 and Fast Track lists. The findings confirmed previous research on the characteristics of HGFs and their founders and there were relatively few differences between the US and the UK. HGFs tended to be founded by highly educated and experienced entrepreneurs, almost exclusively male, who started the firm in their early 30s following a period of management experience. However, US founders were more likely to have a degree and post-degree qualification, and the number with MBAs was particularly high. In addition, US entrepreneurs were more likely to have had prior entrepreneurial experience. US firms were also more likely to be founded by individuals rather than teams - which may reflect the greater number of serial entrepreneurs who, as a result, have the finance, personal experience and confidence to set up a business alone. IP-active firms are more likely to be high growth than non IP-active firms. Specifically, investment in brand names and trademarks are particularly

associated with high growth. High growth firms also predominantly engaged in business-to-business activities. Strategic alliances are common. Finally, US companies were found to be less likely than UK firms to use venture capital. This appears to be linked to the greater personal wealth of US entrepreneurs (related to their greater likelihood of being a serial entrepreneur<sup>1</sup>) and their greater use of business angel finance.

One of the criticisms of such studies is that they are restricted to the influence of micro-factors on firm growth. However, business occurs in specific economic, social and political contexts. Henrekson and Johansson (2009) therefore argue that micro-scale studies of HGFs need to be complemented by macro-oriented analyses. They take an institutional perspective, arguing that because institutions are important to economic performance in general they are also likely to influence the generation and growth of HGFs. They further suggest, from a 'competence bloc' perspective (Eliasson and Eliasson, 1996), that rapid growth is a complex process requiring a number of different but complementary competences. A competence bloc is an entire chain of actors and complementary competences that work together to generate and exploit knowledge. This leads them to identify three bundles of institutions which are likely to be of particular importance for the generation and growth of HGFs: the tax system, the organisation and regulation of labour markets and product market regulations. The effect of these institutions can promote, on the one hand, dynamic capitalism or, on the other hand, sclerotic capitalism with implications for the emergence of HGFs.

The importance of country context is further illustrated by Sweden. As noted above, Swedish research based on the early 1990s concluded that there was little evidence of a small group of elite firms collectively accounting for a substantial proportion of total job creation. Davidsson and Henrekson (2002) explain this in terms of institutional arrangements. Because of high taxation, which encourages household D-I-Y practices, Sweden has a large household sector which limits the opportunities for entrepreneurship in many service sectors. The state also plays a large role in the production of goods and services in Sweden. State monopoly in certain sectors (e.g. health) prevents the emergence of private-sector businesses. Other factors that have depressed the emergence of HGFs include weak incentives for wealth accumulation (e.g. high taxes, especially on stock options), job security regulations that limit labour market flexibility and centralised wage setting institutions. A rise in entrepreneurial activity rates in Sweden in the late 1990s is consistent with pro-enterprise changes in the institutional environment.

Hölzl (2009) offers a different perspective on the influence of country context on the emergence of HGFs. Based on a classification of European countries on the basis of their stage of technology development he notes that firm growth strategies in countries at the technology frontier require strategies that focus on R&D whereas in catch-up countries HGFs are not required to make substantial innovations. Hölzl (2009) explains the greater importance of R&D to HGFs in countries close to the technology frontier rather than in less developed economies. .

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<sup>1</sup> Although this assumes that these previous ventures were successful and produced a significant 'harvest event'. Harvest events are situations which enable a business or entrepreneur to 'cash-in' their investment in a company such as a trade sale or MBO. No information is provided on these issues.

## 2.6 CONCLUSION

Understanding the contribution of small firms, and specifically fast growth firms, to job creation has progressed significantly since Birch's pioneering contribution. In many respects research has created uncertainty around issues that had been thought to have been accepted. In the case of HGFs, which is the focus of this paper, the extent to which they share common characteristics is now less certain. In part this is because databases do not allow the distinction to be made between organic growth and growth through acquisition. If just firms growing organically are considered then the generalisation that they are typically young and small largely holds. HGFs also have a high propensity to be acquired. However, fast growth is not consistent over time, especially amongst young firms, which often experience growth setbacks after a period of rapid growth. HGFs are not concentrated in particular sectors, such as high tech, but there is some evidence that geographical location is important, with some places generating more HGFs than others.

Turning to the factors which explain why some firms grow we find relatively few areas of consensus and considerable uncertainty. Team-based starts are more likely to grow than firms started by solo entrepreneurs. The management team's prior experience is also important. HGFs are also more likely to have management teams which possess a strong vision for the company, a motivation to grow the business and strong sales orientation. Decision-making is also likely to be devolved. Business strategy also appears to be important, notably market positioning. HGFs are more likely to have their own intellectual property (e.g. brand names and copyrights). However, technological innovation does not appear to be associated with growth. HGFs are also characterised by distinctive HRM practices, notably in terms of the care that they take with recruitment and the degree of employee empowerment, which is reflected in higher productivity. Finally, there is **no evidence** from our review of the literature that fast growth firms make extensive use of public sector business support.

This overview provides the backdrop against which our Scottish high growth study is conducted. The literature establishes certain expectations about the significance of HGFs in Scotland, but Swedish evidence indicated how this can be influenced by country-specific institutional arrangements. Therefore there may be important differences between HGFs in different geographical contexts. We also have certain expectations concerning the characteristics of HGFs but here again the evidence is not sufficiently strong for these to be prescriptive.

## Appendix 2.1: A Summary of Factors Explaining the Rapid Growth of Firms

Growth Variable	Main Findings	Importance of Issue for fast growth firms
Age of Business	HGFs tend to be younger on average  High impact firms are relatively old (on average are 25 years old)	Ambiguous
Size of Business	HGFs can be of all sizes but small firms are over-represented	Ambiguous
Industrial Sector	HGFs are found in all industries but particularly prevalent in knowledge-intensive service industries  HGFs are found in all sectors of the economy, not just high-tech sectors	HGFs are found in all sectors and not just high-tech
Gender of Founder	Female businesses grow more slowly than male owned firms	Males dominate HGFs
Human Capital of Founder	Positive effect of human capital on growth	Human capital is beneficial to firm growth
Background of Entrepreneur	Serial entrepreneurs with a track record of success more likely to succeed and are more likely to generate greater returns for venture capitalists	Prior entrepreneurial experience benefits the high growth firm
Business Management Strategy	The best performing firms were the most active in managing their products and markets. Market driven rather than being 'production-led'.  Fast growth places pressure on managerial and human resources more than finance and premises issues	HGFs appear to follow distinctive strategies regarding product and market

Innovation	<p>Product innovators are more likely to experience rapid growth</p> <p>HGFs are significantly more innovative than other firms in the economy</p> <p>However, such innovation is not generally the outcome of significant R&amp;D expenditure</p>	Innovation is important for HGFs
Proximity to Customers and Strategic Information	Proactive ‘growth spurts’ occur in contexts where close proximity to customers is maintained	Close connections to customers is important to firm growth
Exporting	HGFs are more likely to be export oriented	Firm internationalisation benefits firm growth
Institutional context	Institutional factors such as tax systems, labour markets and product market regulations influence the generation and promotion of HGFs	Regulatory variables impinge on HGFs.
Role of Public Sector Business Development	<p>HGFs make limited use of the public sector for business development. The main support service required by these firms is assistance with raising finance</p> <p>HGFs favour assistance from peers rather than from other sources of advice such as lawyers, public sector agencies, business angels etc.</p>	Ambiguous

### 3. The Anatomy of High Growth Firms in Scotland

#### 3.1 Introduction

This section discusses the quantitative data analysis undertaken for the research project. It begins with an outline of some of the different methods of measuring HGFs. We then examine the main data sources for identifying HGFs, including an overview of some of their limitations. This is followed by an analysis of the FAME database which indicates the number of HGFs in Scotland and some of the main characteristics of these firms such as size (employment and turnover), age, sector, location, ownership, company status (private versus public) and their relationship with Scottish Enterprise.

#### 3.2 Measuring High Growth

Previous studies have used a variety of different definitions of HGFs to measure the number within any given economy (see Henrekson and Johansson, 2010). Broadly speaking, firm growth can be measured in three different ways: inputs (investment, employees); value (assets, market capitalisation); and outputs (sales turnover, profits) (Garnsey et al, 2006). However, the overlap between these different measures of growth is relatively weak, hence a firm may be identified as high growth in terms of sales turnover but not employment, or vice versa (Delmar et al 2003; Chandler et al, 2009). While recognising that a single metric will not capture all elements of firm growth (Janssen, 2009), turnover was used as the main indicator of high growth during this study. We used turnover rather than employment because turnover demonstrates the impact of growth on a company whereas employment is an input measure. Moreover, growth in employment is rarely, if ever, a goal of a business owner whereas sales and turnover growth is (Dodds and Hamilton, 2007). It should also be noted that in the Anydike-Danes et al, (2009) study of HGFs in the UK a turnover measure of growth produces significantly more HGFs than an employment definition.

Methods of capturing HGFs are typically based on either threshold measures (growth above a certain percentage) or relative measures (e.g. percentage of firms in upper decile) (Mason et al, 2009). A number of studies have used relative measures such as the fastest growing ten percent of firms (the so-called ten percenters) (see Parker et al, 2010). Relative measures have a number of drawbacks (Janssen, 2009); specifically they cannot be used to make comparisons between regions or countries on the basis of the numerical significance of HGFs. Threshold measures are therefore preferable because they generate an actual number of high growth businesses which enables various comparisons to be made. For example, using a threshold measure enables a longitudinal tracking of the levels of HGFs to be undertaken, it also comparisons between Scotland and other countries and regions in terms of their numbers of HGFs. Accordingly, in this analysis, in common with a growing number of other research studies (e.g. Anydike-Danes et al, 2009), we used the high growth threshold measure as defined by the OECD (2007). The OECD (2007) defines HGFs as:

*‘enterprises with average annualised growth in employees or turnover greater than 20% per annum, over a three year period, and with more than 10 employees in the beginning of the observation period’.*

Using the standard OECD definition enables both longitudinal and international comparisons (OECD, 2007).

### 3.3 High Growth Data Sources

Datasets documenting economic phenomena are growing in terms of their sophistication, level of detail, sample size and availability (Coad, 2009). Moreover, many countries have statistical offices which undertake regular business censuses which, in combination with more sophisticated methods of matching information on firms from different databases, enables HGFs to be examined in much greater depth than ever before. There are several methods of identifying HGFs together with a burgeoning variety of different data sources. Previous studies have used official government data sources (see Deschryvere, 2008; Mason et al, 2009), fast growth business listings, such as Inc 500 in the US and Fast Track in the UK (BERR, 2008) and non-governmental databases such as Dun and Bradstreet (Birch and Medoff, 1994; Parker et al, 2010). The main method used for identifying HGFs in this study was the business database FAME (Financial Analysis Made Easy) operated by Bureau van Dijk. FAME uses data obtained directly from Companies House, the official register for companies in the UK. FAME contains detailed information on all public and private companies currently registered in the UK. The data used for our research was taken from the FAME database in April 2009.

FAME has two main disadvantages however. First, although companies are required to submit their accounts within 28 days of the end of their financial year, some are late in filing, despite financial penalties for doing so. For such companies the information on FAME will be out-of-date. Second, because the financial year-end will differ between companies, the information covers different time-periods for different firms. Thus, the information that we collected in April 2009 covers a range of different time periods ranging from (newest) April 2008 to March 2009 to (oldest) April 2007 to March 2008, and even older for companies that did not submit on time. Nevertheless, as a live database that is being continually updated it is reasonable to assume that the majority of the information is fairly up-to-date. However, the primary advantage of using FAME is that in contrast to official data sources such as the IDBR, individual companies are identified. This gives greater confidence in analyzing and interpreting the numbers, with scope to identify outliers, to assess their validity. It also enables a much closer integration of quantitative and qualitative analysis, with the FAME database used for sampling and in-depth case study research.

### 3.4 Aggregate Analysis of High Growth Firms in Scotland

#### *Number of High Growth Firms*

Our analysis of the overall stock of businesses in Scotland identified a total of **825** HGFs (i.e. firms that have grown in sales turnover by over 20% for three consecutive years with more than 10 employees). In Scotland, there are 144,067 registered firms on the FAME database and 290,000 firms in total. Therefore, HGFs represent significantly less than 1% of all registered Scottish companies. However, given our use of a 10 employee cut-off, in line with the OECD definition, it is more meaningful to say that HGFs comprise approximately **4.1%** of all registered businesses in Scotland employing more than 10 employees.

Because of the definitional and data issues identified above it is difficult to judge how Scotland's number of HGFs compares with other UK regions and similar-sized nations. Comparison with studies from various Scandinavian countries suggests that the number of HGFs found in Scotland to be broadly similar. For example, research using data from the

Finnish Business Register discovered that there were 750 HGFs in Finland, roughly 5% of registered businesses (Deschryvere, 2008). A similar figure of 721 HGFs was reported in Denmark (Peterson, 2006). However, it is important to add the caveat that the figures for both these countries have been calculated using employment data whereas the figures for Scotland were derived using turnover data. Nevertheless, the evidence available would seem to suggest that levels of HGFs in Scotland are not significantly out-of-line with those in other small European nations.

This tentative conclusion that Scotland may not be deficient in HGFs is given more authoritative support by the recent UK study of HGFs based on analysis of the IDBR which undertook a regional comparison of HGFs. This indicates that, based on an employment definition of growth, Scotland's proportion HGFs in 2002-5 was identical to that of the UK as a whole (6.3% of all firms with 10+ employees) and was not only above the UK rate in the 2005-8 period (7.0% cf. 5.8%) but actually highest of all regions (Anyadike-Danes et al, 2009).

### *Size Composition*

Previous studies have reported that the relationship between HGFs and firm size was deemed to be ambiguous (Henrekson and Johansson, 2010). Small firms are nevertheless overrepresented in the surveys of most studies of HGFs. This was not the case in Scotland. In fact, if anything the reverse is true, with medium and larger-sized enterprises dominating the composition of the Scottish HGF population. The breakdown of the 825 HGFs in Scotland is as follows<sup>2</sup>:

- 227 Small firms (10-49 employees) (27.5%)
- 398 Medium sized firms (50-299 employees) (48.2%)
- 200 Large enterprises (300+) (24.2%)

As shown in Figure 3.1, HGFs can be found in all sizes of Scottish companies measured in terms of their employment. The largest concentration of HGFs is in the medium-sized category of firms employing between 50 and 299 employees. There are also a sizeable number of HGFs firms which employ between 300 and 750 employees. Although previous studies have not considered large firms or 'elephants' to be significant generators of new employment and that they tend to demonstrate relatively stable employment levels (Acs et al, 2008) this is contradicted by our evidence that Scotland's large firms, employing over 500 employees, comprise a substantial proportion of the population of HGFs.

When assessing HGFs by level of turnover a similar pattern emerges. Once again, the majority of HGFs are concentrated in the middle to upper ranges of turnover levels (Figure 3.2). Smaller firms with a turnover of less than £5 million account for around one in seven of the overall population of HGFs. The largest cohort of HGFs is in the £20-50 million bracket. In fact, more than half of the firms have a turnover in excess of £20 million. According to recent analysis conducted by BERR (2009) large companies are deemed to be firms with a

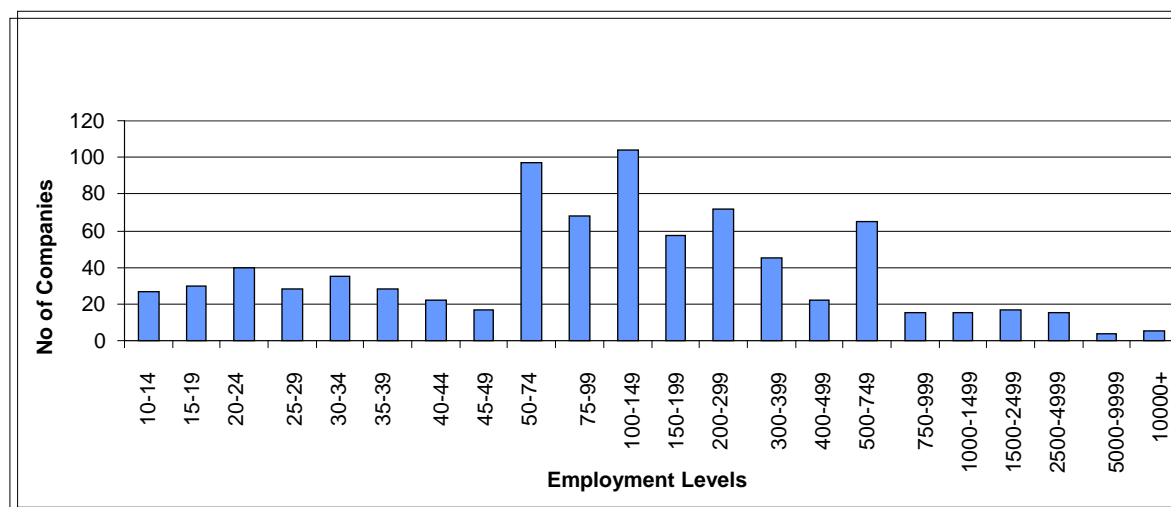
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<sup>2</sup> Our analysis of the FAME database included both employment and turnover as the main indicators for size of company. Following the OECD definition of HGFs we do not count micro-firms with less than 10 employees.

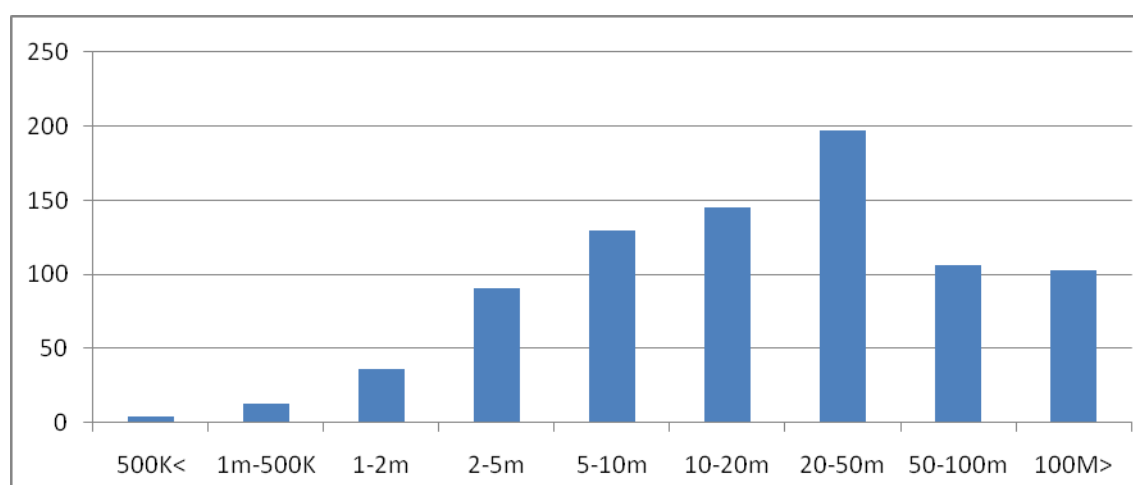


turnover in excess of £22.8 million. Large firms, by turnover levels, are therefore clearly an important source of HGFs in Scotland.

**Figure 3.1: Scottish High Growth Firms by Employment Size**



**Figure 3.2: High Growth Firms by Turnover**

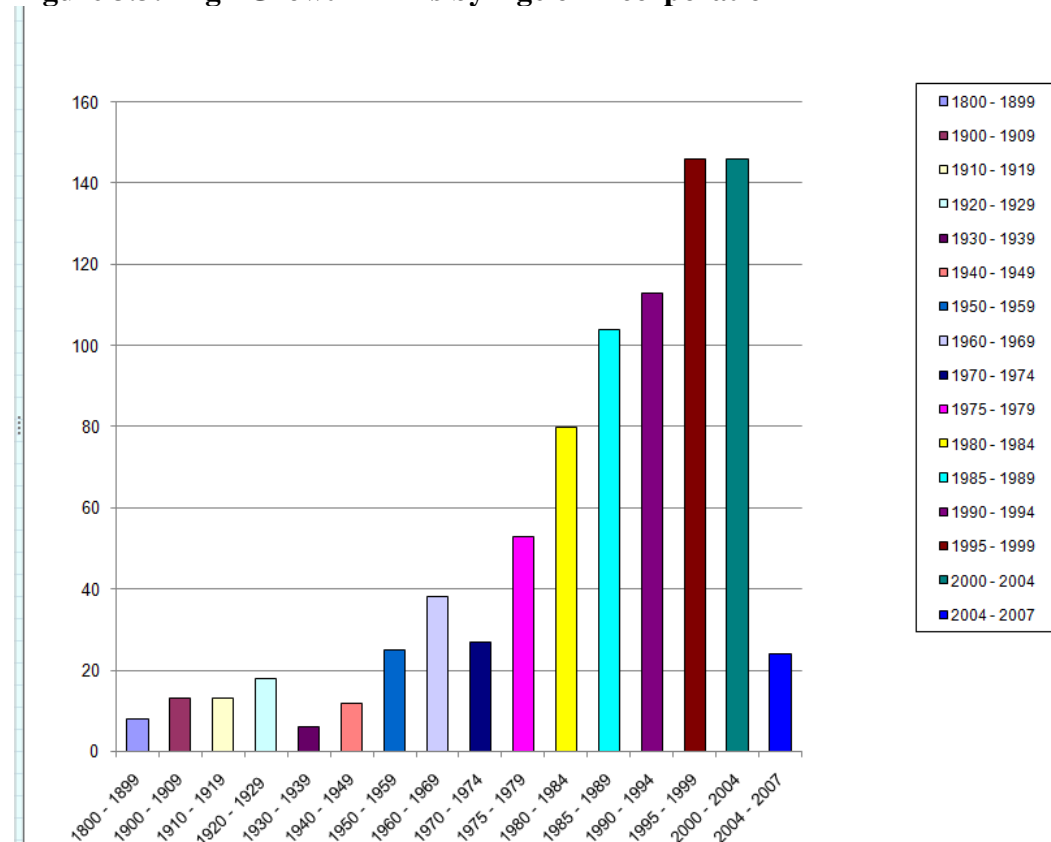


HGFs comprise a tiny 1.6% of all small enterprises in Scotland companies employing more than 10 employees but less than 50 people. However, a much greater proportion of medium and large enterprises (11% and 8.75% respectively) are HGFs. The reasons behind this size composition are difficult to disentangle but it may reflect weaknesses in the population of small (under 50 employee) businesses in Scotland. Interestingly, the dominance of these medium and larger sized firms contradicts recent analysis of US official data which shows that ‘high impact firms’ are concentrated in those firms with size thresholds below 20 employees (Acs et al, 2008). Scottish HGFs clearly come in all shapes and sizes but are more likely to be larger (in both employment and turnover terms).

## Age of Companies

Popular images of HGFs typically associate growth with youthfulness. This is consistent with much of the research evidence which finds a high correlation between newness and high growth (Henrekson and Johansson, 2010). In contrast, Acs et al (2008) report that the average age of ‘high impact firms’ in the USA is 25 years old. Our analysis finds that Scottish HGFs lie somewhere in-between. As shown in Figure 3.3, the vast majority (roughly two-thirds) of Scottish HGFs were established between 1985-2004. The two largest age cohorts of companies which are rapidly growing in Scotland are those founded between 1995-1999 (146) and 2000-2004 (146). Over one-third of Scottish HGFs, therefore, are less than 15 years old. Newer companies - genuine gazelles under five years of age - established from 2004 onwards are much less significant in the population of HGFs (fewer than 25 or less than 3% of the entire high growth population). However, there is also a significant tail of very old, well established companies experiencing high growth. Quite often these firms are now operating in different markets to those which they were originally established to serve. For example, one of the most successful Scottish indigenous firms is the Wood Group which began as a fishing business and has diversified to become a transnational oil services company. As noted in the previous section, growth through acquisition is much more prevalent for older high growth firms. We revisit the internal vs. external growth issue in the next section.

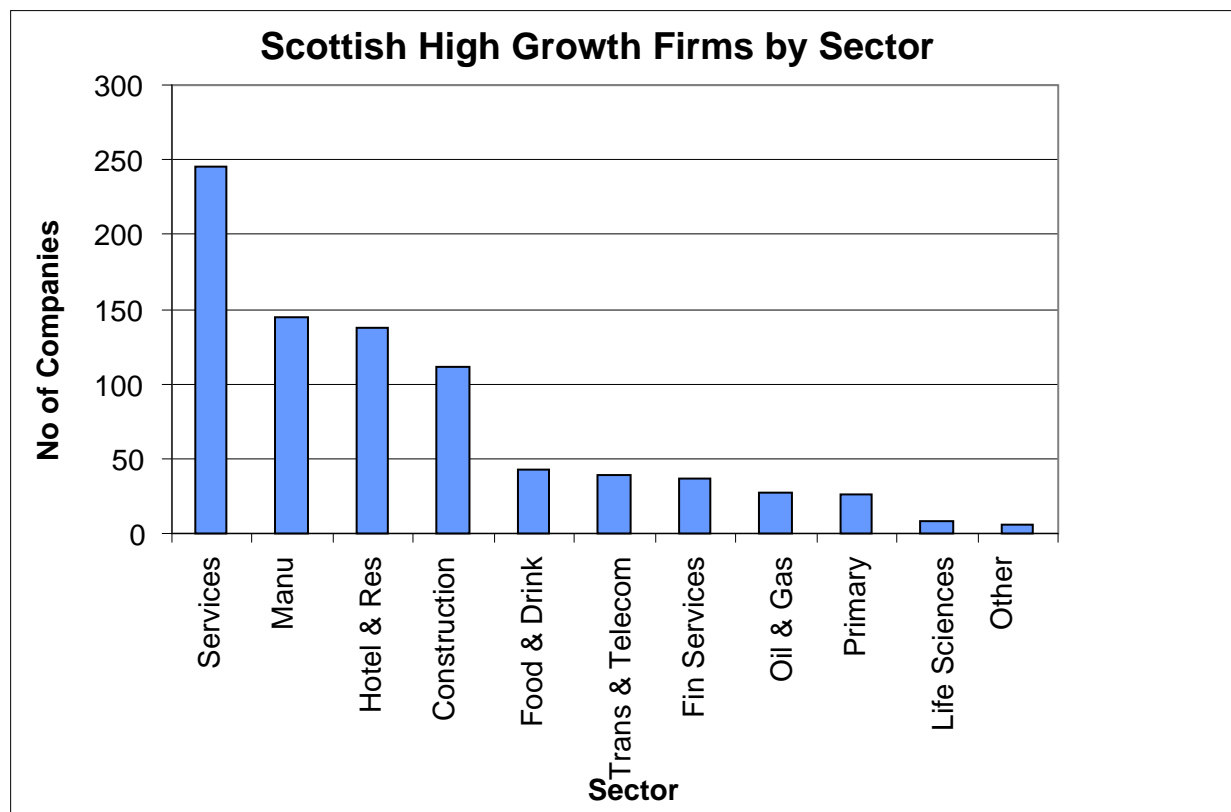
**Figure 3.3: High Growth Firms by Age of Incorporation**

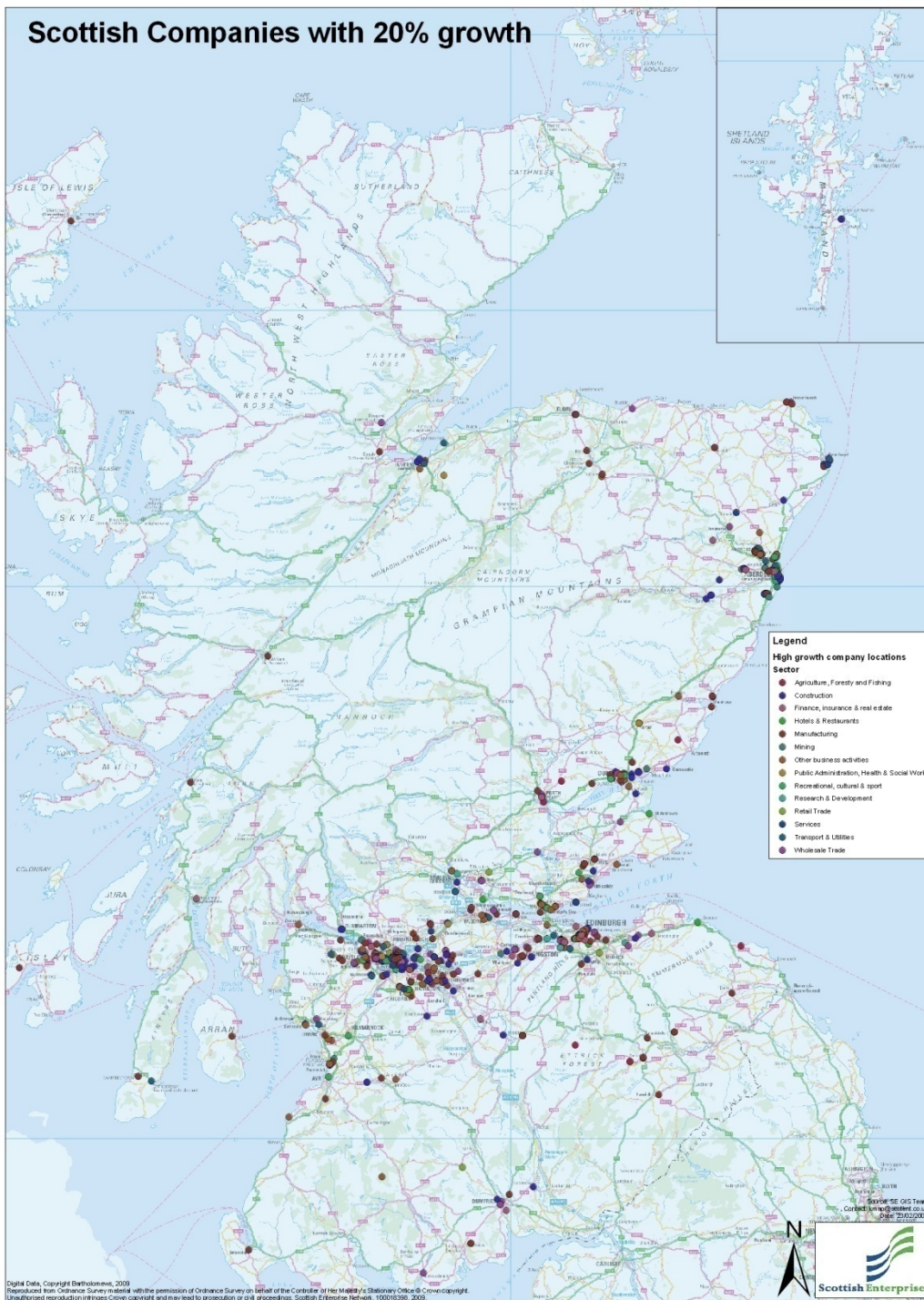


### *Sectoral Composition*

Figure 3.4 illustrates the main sectoral breakdown of Scottish high growth enterprises. The largest single contributor of HGFs in Scotland is services which comprise nearly one-third of the total, a finding which is in line with the vast majority of other studies on rapid growth firms (e.g. Stam, 2005; Henrekson and Johansson, 2010). This is a very diverse and wide ranging grouping of firms including knowledge-intensive business services, consumer services and personal services. Closer inspection reveals that these firms do not fit into neat and precise sectoral or cluster categorisations.

**Figure 3.4: Scottish High Growth Firms by Sector**





### *Geographical Breakdown*

The location of entrepreneurs with high growth ambitions varies between regions and localities within individual countries (Stam, 2005; Acs et al, 2008; Henrekson and Johansson, 2009), but with a strong bias towards major urban centres. As we can see from Figure 3.5, the vast majority of Scottish HGFs are based around Scotland's main urban agglomerations of Glasgow, Edinburgh, Dundee and Aberdeen. Given the large number of knowledge-intensive business service firms in the overall population, and the concentration of such firms in major urban areas (Wood, 2009; Morris, 2010), this geographical bias is to be expected.

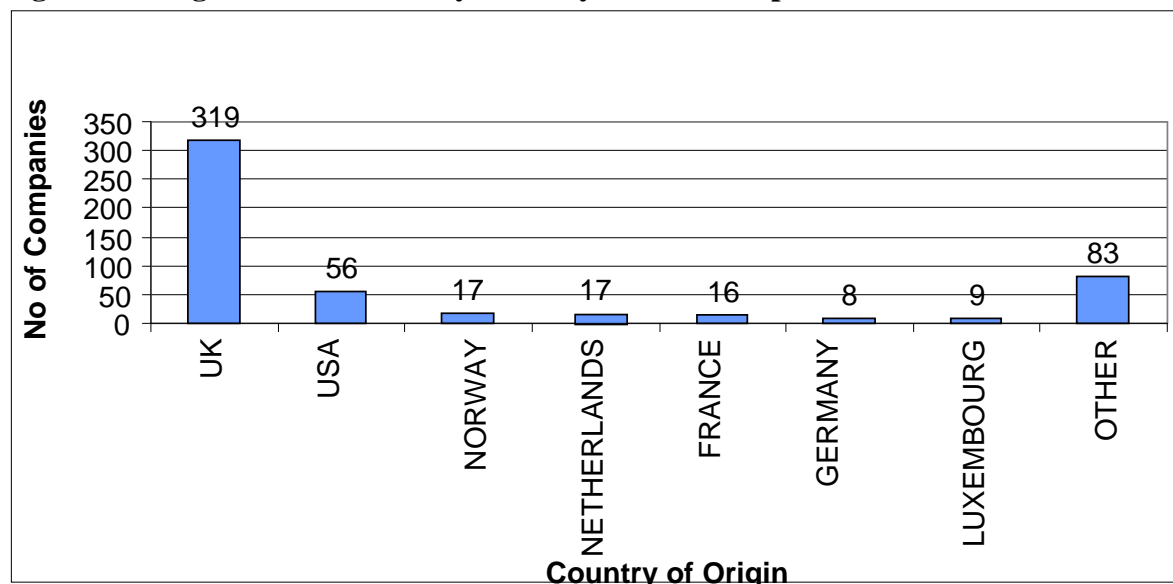
However, existing clusters also play a role in determining the spatial distribution of HGFs. For example, the spatial concentration of HGFs in the north east of Scotland is linked to the role of the energy industry in that region (Cumbers et al, 2008).

HGFs are typically under-represented in remote rural areas (Stam, 2005). In Scotland the HGFs in rural areas are mainly based around the processing of raw materials, such as food and drink (Figure 3.5).

#### *Country of Ownership*

The FAME data only includes businesses with a separate legal status and which are incorporated in the UK. Foreign-owned ‘branch plant’ and ‘branch office’ operations are therefore not considered here because they are typically not established as legally separate businesses. Ownership data was only available for around two-thirds of HGFs in Scotland (i.e 525). However, there is no reason to think that these firms do not reflect the HGF population as a whole. Moreover, FAME does not separately identify Scottish from UK companies.

**Figure 3.6. High Growth Firms by Country of Ownership**

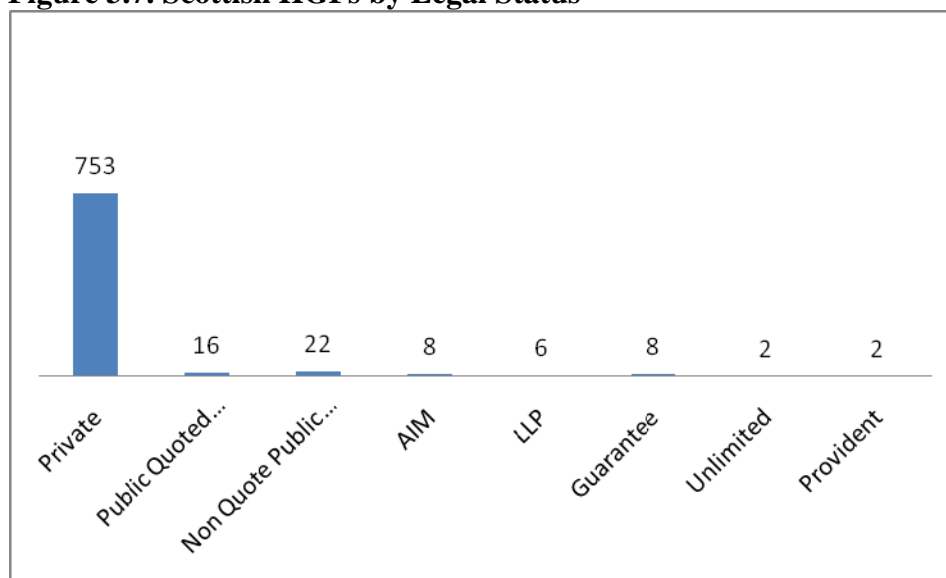


The vast majority of HGFs (61%) are UK-owned. Nonetheless, this leaves a substantial proportion of HGFs are foreign-owned (39%). By far the single largest overseas country of ownership of HGFs in Scotland is the US (10%). A number of Scottish HGFs are also owned by companies based in European countries, notably the larger economies of France and Germany, but also The Netherlands and Norway (Figure 3.6). The high level of Norwegian-owned HGFs is most probably linked to the role played by Norwegian oil and gas enterprises in North Sea oil and gas exploration. In addition, a number of Norwegian salmon farming businesses have acquired Scottish producers in recent years (Brown, forthcoming). Although precise figures are unknown, acquired businesses would seem to account for a sizeable proportion of all foreign-owned HGFs. This issue is revisited in the next section

### *Type of Firm*

There is a fundamental difference between privately-owned and public companies in terms of their governance, external scrutiny and access to resources. Public companies comprise those that are listed on the London Stock Exchange (LSE) and whose shares are traded on either its main list or the Alternative Investment Market (AIM). At some point in the past these firms will have undertaken an Initial Public Offerings (IPOs), either to raise further capital to fund their expansion plans, or to enable existing shareholders (e.g. private equity investors) to sell their shares, or to provide existing shareholders with liquidity for their shares (e.g. family firms where ownership is widely dispersed). Our analysis indicates that the vast majority of HGFs – 92% in total - are privately-owned firms (Figure 3.7). This finding is a somewhat unexpected because it might be assumed that HGFs would need to raise significant amounts of external capital than is possible through other methods (e.g. private equity or debt finance). This might suggest that the role of external finance in firm growth is exaggerated, with companies able to grow on the basis of internally generated sources of funds or have been able to attract sufficient investment to fund their growth from sources of debt or equity funding such business angels and venture capital funding sources. Nevertheless, Scottish HGFs comprise a sizeable proportion of all Scottish public firms and so would appear to have benefited from the access to the market. In fact, eight HGFs are on AIM which comprises almost one-third of all Scottish companies on this stock market.

**Figure 3.7. Scottish HGFs by Legal Status**



### *Relationship to Scottish Enterprise*

The review of the literature in section 2 revealed that research was largely ambiguous regarding the relationship between public sector agencies and HGFs. While many acknowledge that HGFs will be resource-intensive on account of their rapid expansion plans, no previous studies have explicitly examined the relationship between high growth enterprises and public sector business development intervention. Our analysis revealed that approximately 20% of the HGF population (some 167 firms) were account managed by Scottish Enterprise. There are a number of factors which possibly explain the low level of HGFs which are account managed by Scottish Enterprise. First, many HGFs are well



established, medium and larger sized enterprises and do not require ongoing assistance from public sector bodies such as Scottish Enterprise. Second, many of these growing firms are in sectors which Scottish Enterprise does not traditionally work with (e.g. retail, construction) and therefore falls outwith its corporate segmentation model (Scottish Enterprise, 2009). Third, a number of these firms will have had a relationship with Scottish Enterprise in the past but are no longer involved in terms of direct account management support. It must also be emphasized that both account-managed firms and other firms will have received other types of assistance from Scottish Enterprise *vis-a-via* support services such as Scottish Development International (SDI), Scottish Manufacturing Advisory Service (SMAS) and innovation support programmes such as SMART and other Innovation Grants. Indeed, the qualitative part of our research discovered that a large number of HGFs have received support through various initiatives operated by Scottish Enterprise such as SDI (see Section 4).

### 3.5. Conclusions

It is important to stress a number of important ‘health warnings’ in terms of the data used in this section to profile HGFs in Scotland. Due to reporting arrangements undertaken by firms, FAME data suffers from various problems, including ‘double counting’ (i.e. limited and holding companies) and time-lags in reflecting both ownership change as a result of acquisition and businesses that have closed. The aggregate data reported in this section should therefore be seen as broadly indicative of the numbers and composition of HGFs in Scotland.

These caveats aside, the FAME business database was found to be a very rich source of data on HGFs. Not only does it enable us to identify the overall size of the population of HGFs in Scotland, but it also enables us to portray the main features of Scotland’s rapidly growing firms, with the single most striking observation being the heterogeneous nature of HGFs.

Some of the key findings were as follows:

- 825 (or **4.1%** of Scottish companies employing more than 10 employees) meet the high growth criteria.
- While this figure is less than that found in other studies (see Anyadike-Danes et al, 2009) it is broadly in line with other smaller European economies;
- Medium and larger-sized enterprises dominate the composition of the Scottish population of HGFs;
- The majority of Scottish HGFs are less than 25 years old, but only a small proportion are genuine gazelles (less than five years old);
- Services are the single largest source of Scottish HGFs. High tech sectors are weakly represented;
- The vast majority of Scottish HGFs are based around Scotland’s main urban agglomerations of Glasgow, Edinburgh, Dundee and Aberdeen;
- A substantial proportion of HGFs are foreign-owned (39%);
- Vast majority of all Scottish HGFs are privately-owned firms; &
- A minority (20%) of Scottish HGFs are account managed by Scottish Enterprise.

## 4. Firm Interviews

### 4.1 Introduction

The analysis of the FAME database in section 3 provides an indication of the quantitative significance of fast growth companies in Scotland and an overview of their characteristics in terms of size, age, sector, ownership and location. Our intention in this section is to provide insights into a range of qualitative aspects of HGFs, including their origins, activities, key growth mechanisms and links to the business environment.

### 4.2 Methodology and Sample Characteristics

Firms were randomly selected from those identified from the FAME data base as meeting the OECD definition of high growth<sup>3</sup> and was Scottish-owned. Each firm that was selected was subject to desk research which took the form of a review of their web site and any relevant documents that were available from this source (e.g. annual and half year reports of publicly listed companies), review of press coverage using NEXUS and a Google search for any other information. Achieving successfully completed interviews proved much harder than we had anticipated. We selected 95 firms – all of which were the subject of desk research – from which 22 interviews were completed, mostly face-to-face. Partial information was obtained on an additional firm.<sup>4</sup> This prevented us from adopting a stratified sampling approach based on the age and size of companies.

The low proportion of completed interviews arose for two main reasons – both unexpected (Table 4.1). The first problem was that a significant proportion of the companies selected did not meet our criteria of being Scottish-owned and headquartered<sup>5</sup>. There were several reasons for this. First, some companies retain an independent legal identity and file separate accounts even though they are owned by another business. In many cases their ultimate ownership was not disclosed on their web sites and was only revealed by desk research. Second, FAME is based on accounts registered with Companies House. Because of the time-lags involved in companies filing their annual reports to Companies House the information on the database can be quite dated. The consequence was that several companies that were selected for interview were ineligible because they had recently been acquired. Third, some of the companies that met the high growth criteria were restructured businesses that had emerged out of corporate recovery situations. These reasons account for the ‘loss’ of over one-third of the firms initially selected for interview. A further 6% had either closed or could not be traced (e.g. no web site) and so were presumed closed.

Having established from the desk research that the firm appeared to meet our criteria we then sent a letter to the Managing Director (or equivalent) outlining the research, requesting an interview and indicating the scope of the discussion. The letter concluded that it would be followed-up with a phone call.<sup>6</sup> This was where the second unanticipated problem

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<sup>3</sup> Following Scottish Enterprise’s survey ethics procedure, we did not contact firms that participated in a Scottish Enterprise survey within the preceding six months.

<sup>4</sup> We obtained some relevant information on Robert Wiseman Dairies Ltd from a presentation by Robert Wiseman to The Entrepreneurial Exchange on 3<sup>rd</sup> December 2009 which covered more than half of the material that would have been discussed in an interview.

<sup>5</sup> The Japanese HGF firm Vascutek was interviewed but was excluded from our analysis owing to it being foreign-owned.

<sup>6</sup> Personal emails for the Managing Directors were generally not available (e.g. on the web site). We also took the view that a letter was more likely than an email to be noticed and less likely to be treated as junk. In some of



emerged. In many cases it proved impossible to establish telephone contact with the Managing Director, despite several phone calls over a period of time. The number of people who actually refused to participate in an interview was extremely low at just 4 (4.2%). In a handful of cases where we did make telephone contact with the Managing Director the conversation threw up information had not emerged from the desk research which made the company ineligible.

Finally, it should be noted that only firms located in those parts of Scotland in which Scottish Enterprise operates were included. Thus, firms that were selected and found to be located in the Highlands and Island region were excluded (three firms).

Table 4.1 Sampling Outcomes

	number	%
<b>Met criteria</b>		
Interviewed	21	
Unable to arrange interview	28	
Refused	4	
Sub-total	53	55.8
<b>Did not meet criteria</b>		
In Highlands and Islands region	3	
HQ in England	2	
Subsidiary/division	12	
Recently acquired	11	
Other reasons	7	
Sub-total	36	37.9
<b>No longer trading</b>		
Confirmed closed	1	
No information available (e.g. no web site, no recent press coverage)	5	
Sub-total	6	6.3
Total firms selected for interview	95	100

Most of the companies that we interviewed are account managed by Scottish Enterprise so we also conducted interviews with several Account Managers<sup>7</sup>. Interviews were conducted with account managers from roughly a third of the sample of firms (8). This information, along with the desk research undertaken on each company prior to the interview, provided a means of triangulating the information gathered at the interviews.

Confirming the picture that emerged from the quantitative analysis, there is considerable diversity in the sample of firms in terms of their size. Turnover ranges from less than £10m to £6bn (FirstGroup plc). Four firms had sales of less than £10m, a further 10 firms had sales of £10m-£49m, six had sales of between £50m and £99m. Finally there were two large outliers (FirstGroup and Wiseman) with turnovers of £6bn and £886mn respectively.

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our follow-up phone calls we were given the personal email address of the Managing Director and so followed-up our request for an interview electronically.

<sup>7</sup> Account managers are people employed by Scottish Enterprise to deal directly with companies located in Scotland with growth potential. Account managed companies receive regular contact from Scottish Enterprise from their account managers, often resulting in the provision of additional support services, such as innovation support, export support and so on.

Employment in the interviewed firms exhibited a similar skewed distribution, ranging from less than 50 (4 firms) to over 1000 (2 firms). Twelve of the firms had between 100 and 499 employees.

### 4.3 AGE, ORIGINS AND GROWTH

#### *Origins*

Both the literature review and the analysis in the two previous sections has highlighted that fast growth firms are mainly larger, established businesses rather than rapidly growing young companies(gazelles. The firm interviews reinforced this point that ‘gazelles’ (in the Birch definition of the term) comprise only minority of the population of Scottish HGFs.

First, in terms of their age profile, only five firms are less than 10 years old. Most were founded in the 1970s (4), 1980s (3) or 1990s (5). At the other extreme, the two oldest firms were founded before World War One. Clearly, fast growing firms are not confined to recent starts and tend to be fairly well-established.

Second, the ownership structure is varied. Six are family businesses and one is an employee-owned business. Amongst the remainder, five are publicly listed (three on the Main Market and two on AIM)<sup>8</sup> and four have a majority external shareholder (two of which are private equity firms).

Third, it is inaccurate to view all fast growth firms as being *de novo* starts which conform to the entrepreneurial model of a business that is started from scratch by an entrepreneur, or entrepreneurial team, to exploit an opportunity that they have identified, and then gather the necessary resources to exploit the opportunity. At best, nine firms (41%) could be described as conforming to this model – and in five of these cases the founding entrepreneur is no longer running the company.

The majority of the sample have therefore been ‘pre-incubated’ in the sense of previously being part of other organizations (Table 4.2). This has taken a variety of forms. Many firms have complex histories and ownership arrangements. The biggest category are management buyouts and buy-ins (8). This group of firms is itself extremely diverse. It comprises two MBOs from corporate owners; one buyout and one buy-in by their original founding owners; one buyout and one buy-in to provide the entrepreneurs with start-up vehicles and a buyout of a local authority owned business. A second category is a new free-standing business established in a new industry by long-established family owned company. The third category comprises an employee-buyout of a previous management buyout of the commercial interests of a not-for-profit organisation. The final category comprises three long-established businesses. One is a company that was created in the 1960s through the coming together of four West of Scotland family owned businesses in the same industry. The others are family-owned businesses, one in its second generation and the other in its 4<sup>th</sup> generation. In all cases the buyouts were funded by venture capital or bank debt or a combination of the two. There were other cases of ‘pre-incubated’ firms in the wider sample of eligible firms that were not interviewed, particularly firms that had undergone a MBO.

This theme - that many fast growth companies have emerged from existing businesses – is reinforced in two further respects. The first is that entrepreneurs who had left the businesses that they worked for to start their own businesses – in the ‘classic’ pattern of new business

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<sup>8</sup> Optos, Prostrakan and FirstGroup are on the Main List and Goals Soccer Centres and Craneware are on AIM.

formation - had gained significant experiential learning in their previous employment. The second is the prevalence of serial entrepreneurship in the sample. Five entrepreneurs – four involved in *de novo* starts and one in a MBO-based start-up - were serial entrepreneurs and so had prior entrepreneurial experience. In two cases the entrepreneurs had been successful, selling their businesses and using this financial resources and their experience to start a new business in the same industry. In two other cases – and providing conformation of Ronstadt's 'corridor principle', the entrepreneurs were running other businesses when they identified a new opportunity<sup>9</sup>. In both cases their existing business activity was responsible for the identification of the opportunity. Both of the entrepreneurs decided that this new business opportunity had more potential than their existing business, so they ran down their existing business and started new businesses to exploit this new opportunity. In the final case the new business was incubated within the entrepreneur's existing business, with the existing business providing the resources needed to develop the product that formed the basis of the new business. One of the MBOs also benefited from using some of the resources of its parent.

Table 4.2. Company origins

Type of start-up	No.	Companies
De novo start	9	Optos <sup>1 2</sup> , Prostrakan <sup>1 2</sup> , Level Four Software, Star Refrigeration <sup>1</sup> , Craneware, BIP <sup>2</sup> , Barrhead Travel <sup>1</sup> , Redeem <sup>2</sup> , Red Spider <sup>1</sup>
Pre-incubated	13	
Management buyout	6	CPRM, Stirling Fibre, FirstGroup, Airchannel, Hydrasun, Wood MacKenzie
Management buy-in	2	Goals Soccer Centres <sup>2</sup> , Barr + Wray
Corporate start-up	1	Ogilvie Communications
Employee-buyout	1	Scottish Woodlands,
Family businesses	3	James Frew, Scottish Leather Group, Robert Wiseman Dairies

<sup>1</sup> founding entrepreneur(s) no longer the MD/CEO

<sup>2</sup> serial entrepreneur

The analysis highlights that HGFs are not restricted to *de novo* start-ups. The reality is that high growth businesses are often incubated in one form or another in existing businesses, often for a considerable amount of time, and so emerge as fully-formed businesses. As a consequence, these businesses avoided the 'liability of newness' (Stinchcombe, 1965). However, it is critical to emphasise that in all cases growth only occurred after these businesses had become independent, and required new ownership and management and financial resources to exploit their growth potential. Adding serial entrepreneurs and new corporate businesses into the mix further emphasises the role of the existing business base as a source of high growth companies. This conclusion supports, reinforces and extends the work of Rosa and Scott (1999a; 1999b; Rosa, 1998) (also based on research funded by Scottish Enterprise) which also observed that "new firms, particularly larger, more profitable firms, emerge not only from the ranks of novice entrepreneurs with limited capital

<sup>9</sup> The corridor principle states that the mere act of starting a venture enables entrepreneurs to see other venture opportunities they could neither see nor take advantage of until they had started their initial venture (Ronstadt, 1988).

and experience” but also from within established businesses groups. These companies – which generally represent a process of growth through diversification by the group - will typically be led by experienced entrepreneurial managers with access to the financial and other resources of the group and thus are well able to exploit new business opportunities.

### *Growth*

In terms of sources of growth, the majority of the sample of companies (15) had grown exclusively through organic expansion. Some had the fortune of ‘being in the right place at the right time’ in sense that they were in expanding sectors of the economy – although that in itself reflects the entrepreneur’s skill in seeing the initial opportunity. In other cases the success lay in the company growing the market themselves. The growth of five companies had been driven by acquisitions, while in the remaining cases growth had been through a combination of organic expansion and some smaller acquisitions.

However, it is important not to see growth as a virtue in its own right (Achtenhagen et al, 2010). As noted earlier, growth and profitability are not always linked. Growth at all costs is not a sensible business strategy. Indeed this is a frequent reason why fast growth companies fail. Two MDs commented that their companies could have grown faster in recent years if they had been willing to take on low margin business.

Table 4.3. Pattern of growth

Pattern of growth*	
‘hockey stick’ – explosive growth	5
‘incremental’ – steady, stepped growth	9
‘erratic’ – decline then growth; growth then decline, then further growth; growth then decline	5
‘plateau’ – growth which has now leveled out	2

\*

Source: Blackburn and Brush (2009)

Previous authors have noted that even amongst high growth firms the pattern of growth rarely conforms to the classic ‘reverse hockey stick’. Blackburn and Brush (2009) note that growth is often episodic while Garnsey and Heffernan (2005) have highlighted growth setbacks in HGFs. This was also reflected here, with just five interviewees describing the growth of their firm as taking a reverse hockey stick pattern (Table 4.3). Nine interviewees described their growth as being ‘incremental’. A further five described their growth as erratic. Finally, two firms described their growth as reaching a plateau. Indeed, as a result of the combination of the time lags associated with the FAME data and the recessionary economic conditions at the time of the interviews (August-December 2009) sales in around one-quarter of the firms had either stabilised or declined in their most recent or current financial year. Several of these interviewee companies would therefore have not met the high growth definition had the study been a year later, underlining the often short-lived or episodic nature of firm growth (Garnsey et al, 2006).<sup>10</sup>

<sup>10</sup> In-house research by Scottish Enterprise which updated the FAME analysis reported in chapter 3 but for three years to May 2010 reveals a 28% drop in the number of HGFs compared with the three years to April 2009 to 594.

### *Barriers to Growth*

Companies reported a variety of barriers that they had to overcome in order to grow. However, no single barrier dominated. The most frequently cited barrier (10 firms) was the recruitment of staff. This covered both skilled staff and senior management. Raising finance – which might have been thought to dominate – was, in fact, only cited by four firms – but this included three of the four technology businesses in the sample. Other barriers cited by more than one firm were competition (four firms), notably the willingness of competitors to take business regardless of price, problems associated with growth (managing growth, absorbing new staff, increased organisational complexity) (three firms), getting customers and obtaining planning permission (both two firms).

## **4.4. BUSINESS ACTIVITIES**

### *Industries and markets*

As demonstrated in section 3, fast growth companies are not clustered in a particular set of industries and are extremely heterogeneous. In line with other studies the HGFs interviewed were in a diverse range of industries. Indeed, what was particularly striking is where fast growth firms were scarce or absent.

First, few fast growth firms interviewed were engaged in manufacturing<sup>11</sup>. Just one firm (Scottish Leather Group) was exclusively engaged in manufacturing, while three other firms described themselves as total systems providers, engaged in manufacturing along with design and customer support (Star Refrigeration, Red Spider and Hydrasun). Three other product based firms (Optos, Barr + Wray, Airchannel) outsourced most or all of their manufacturing or bought it in and focused on design, installation, maintenance and support. Finally, Prostrakan, a pharmaceutical company, was primarily engaged in research and sales. Indeed, it was striking that the vast majority of the manufacturing firms had a significant service component as part of their offering. These examples underline how service industries now assume a much more pivotal position in the production process. As Daniels and Bryson (2002: 978) have noted: the “profitability [of manufacturing firms] increasingly depends not just on the manufacturing part of the production process, but on the knowledge aspects and service functions within which the products are embedded.” One important implication of this change is to undermine traditional thinking of the economy in terms of ‘manufacturing’ and ‘services’. Indeed these firms could be described as service companies that just happened to manufacture [some of] their products.

Although it was not always possible to determine this with accuracy from the desk research, manufacturing firms appear to be more significant in the overall population of HGFs. Moreover, the manufacturing firms in the overall population of HGFs are predominantly general engineering firms, food-related, oil and gas-related and timber mills.

Second, and following on from the previous point, few HGFs were technology-based. Indeed, just six companies – Optos (retinal imaging devices), Prostrakan (drugs), Level Four Software (ATM software), Craneware (medical billing software) Red Spider and Hydrasun (both oil and gas related) – would be classified as being technology-based. This feature is

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<sup>11</sup> It must be stressed that this may be a result of the random sample identified, although the reduction of manufacturing in the rest of the economy seems to broadly in line with this finding.

confirmed in the wider sample<sup>12</sup> (n=54) where less than 20% of firms are technology-based. That said, several service sector companies could be classified as knowledge-based (e.g. Scottish Woodland, CPRM, Ogilvie Communications, BiP Solutions, Wood MacKenzie), with several claiming to have developed innovative products (e.g. Goals Soccer Centres, CPRM). Moreover, all four manufacturing firms (Scottish Leather, Red Spider, Hydrasun, Star Refrigeration) were continually developing innovative products, and the other product-based firms were selling their knowledge as part of their overall business package. This confirms the previous work by others of the nature of rapid growth within manufacturing firms as being highly ‘solutions and customer-oriented’ (O’Regan et al, 2006). Several had developed innovative business models (e.g. Optos, Prostrakan, Stirling Fibre, Redeem). Overall, around two-thirds of the sample could be described as being innovative – opening new markets, bringing new products and services to market, or developing new business models. In other words, innovativeness rather than technology per se was the key driver for propelling firms towards rapid growth.

Third, our sample of HGFs are predominantly engaged in selling to other businesses. Fast growth firms engaged in selling into consumer markets are rare. In our study, 18 of the 21 firms are engaged in B2B. Only three firms – Goals Soccer Centres, Barrhead Travel and FirstGroup – sell directly to the general public. We speculate that this may reflect the greater number of market niches in the B2B sector which smaller firms are able to occupy and dominate and which offer platforms from which they can expand.

Fourth, the majority of the sample of high growth companies are oriented to UK and global markets and most have a physical presence beyond Scotland. Only five companies, including two Aberdeen-based companies in the oil and gas sector, actually undertake the majority or all of their business in Scotland. At the other extreme 14 companies have the majority (over 75%) or all of their sales outside of Scotland. Indeed, some would fit the ‘born global’ description having no sales in Scotland at all (e.g. Craneware). This orientation towards non-Scottish markets is reflected in the corporate geographies of the interviewed companies. Ten have a physical presence in one or more other countries (mainly US and Dubai), typically for sales and field support, and four have locations across the UK, again mainly for customer support. Just five companies are based entirely in Scotland. Thus, there is a strong association between Scottish HGFs and levels of internationalization. There are two other aspects of the activities of HGFs that are significant because of their recurring nature in the sample.

First, the activities of many of the firms are based around ongoing relationships with their customers as opposed to one-off transactions. In many cases this takes the form of a ‘recurring revenue’ business model. Probably the best example is Optos which designs, develops, manufactures and markets retinal imaging devices to detect and diagnose eye problems. But instead of simply selling these machines (which cost £150,000 each) to ophthalmic professionals, they rent them on the basis of a fee per patient examination, and provide ongoing diagnostic, technical and marketing support as a means of retaining customers ‘for life’ (see Figure 4.1). Five other firms also derive much or all of their income from lengthy contracts with customers – CPRM, Craneware, Wood MacKenzie, FirstGroup, Scottish Woodlands. Several other firms have a business model based around technical advice, design, supply/ installation, business support (including training services) and maintenance contracts which includes a significant component of recurring income (e.g.

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<sup>12</sup> This is the so-called ‘desk research sample’ which comprises all firms from the original sample of 95 that met the survey criteria, including both firms that were interviewed and those which were not (see Table 4.1).

Scottish Woodlands, Level Four Software, Barr + Wray, Star Refrigeration, Oglivie Communication, Airchannel, Hydrasun).

The second common feature is that partnering is at the core of the business model of many of these firms. In all, partnering is a critical feature of 11 firms. As it takes a variety of different forms it is best illustrated by examples. Goals Soccer Centres provides schools with access their five-a-side soccer pitches as a means of securing appropriate sites from Local Authorities. It has also designed its state of the art artificial pitches in collaboration with the manufacturers. Prostrakan has developed an alternative to the biotech and big pharma drug discovery business model by reformulating drugs developed by big pharmaceutical companies to improve their delivery to patients. As well as having their own sales force the company also partners with big drug companies to access their sales teams.

### **Figure 4.1 The Optos Business Model**

Our principal business model is a pay-per-patient ('PPP') model. We install our optomap devices with clinicians in their practices and our customers typically enter into a fixed-term contract (usually for a 36 month term) during which they pay a fixed monthly payment that allows them a minimum monthly number of optomap exams. The customer pays the fixed minimum monthly payment ('MMP') plus a per-optomap fee for each exam conducted over the contractual minimum. These contracts provide a high degree of predictable recurring revenue from the MMPs over the contract term. Each device installed in the field records the actual number of daily exams performed and reports this back real-time to the Company enabling accurate billing for the additional optomaps above minimum levels. The contract generally allows the customer to receive service, replacement parts and software upgrades free of charge. This business model provides security and visibility of future revenues.

With this business model, ownership of the device does not pass to the customer. In some circumstances, however, the Company raises debt finance based around the security of the guaranteed revenue streams offered by these fixed term contracts with third party finance houses advancing cash to the Company in return for the right to receive the fixed monthly payments. This finance is arranged on a contract by contract basis, with the finance house taking ownership of the underlying device for the period of the loan as further security. This debt finance has allowed the Company to build what is a heavily capital-intensive business without calling on shareholders' for additional finance and without putting shareholders' equity at risk through onerous covenants or recourse. Should a customer default the only risk to Optos is that the financed device is sold to another party who might not deliver such a high return to the Company when the contract expires.

Where appropriate, we are also selling our devices outright. In this model the customer secures service, repair, and maintenance and software upgrades through separate financial agreements.

Source: Optos plc Annual Report and Accounts 2009

Having broadened their focus from being water filtration engineers, Barr + Wray have developed partnerships with other companies to offering turnkey services to design, sell and install swimming pools and spa systems. Stirling Fibre has moved to strategic partnering with companies engaged in other stages of the recycling process which complements its core business of processing paper and plastic waste (e.g. collection). It has also developed joint ventures to diversify into other areas of recycling (e.g. plastics, waste into energy). Barrhead Travel has shifted from selling holidays to being a travel provider, partnering with holiday providers to provide their own packages. Recently they have used their call centre facilities to partner with internet travel companies. As a final example, Redeem, which recycles and re-sells print cartridges, mobile phones and other consumer electronic gadgets

has supply partnerships with a variety of companies to source products for recycling. In all the illustrations above, these partnerships and connections with other firms and institutions enable firms to offer a more comprehensive or customized products and services.

### *Core competences*

The 21 firms collectively identified 87 different core competences. Five core competences dominated this list. The first is various attributes associated with the quality of the company's staff – skills, experience, commitment and loyalty (10 firms). Second, reflecting the discussion in the previous section, is innovative products and services (8 firms). Other product-related competences mentioned were the quality of the product and the overall product offering (8 firms). The third competence is technological knowledge and expertise (7 firms). The fourth is their close relationships with customers (7 firms). The fifth is their understanding of the business, market and customer needs (6 firms). These two competences - close relationships with customers and understanding of the business, market and customer needs are clearly interrelated. Moreover, the causality runs in both directions. On the one hand, close relationships with customers gives firms a deep knowledge of their markets. One company which has strong relationships with its customers commented that listening to those customers talk about their problems enabled them to identify new market opportunities for which they could develop solutions, often in conjunction with these customers, which could then be offered more widely across the market. On the other hand, deep knowledge of the industry and market provides the firm with an understanding of their customers' needs and wants, and the ability to anticipate their future needs. One company described its approach as "mine-sweeping", involving a very rigorous and interactive form of market research to enable them to get close to their customers. Another described its market research as taking the form of "sitting down with the market", an exercise which enabled them to understand the needs of customers and build relationships.

The frequency with which the workforce was mentioned as a core competence is reflected in emphasis which growth businesses give to their HRM practices. Only four companies were accredited under Investors in People. However, in discussing their HRM policies and practices, several common themes emerged: emphasis on hiring the 'right' people, with several interviewees commenting that attitude was more important than formal qualifications; the high level of investment in training; culture of openness and information sharing; and profit sharing.<sup>13</sup>

### *Management*

The role of the board of directors is a critical but frequently overlooked aspect of company building. Independent directors can bring connections to external constituencies and resources, provide both specific expertise and general advice, counsel top management, add credibility and bring knowledge of company building 'technology' that they have observed in other businesses (Fiegener et al, 2000). It is therefore interesting to observe that 12 of the interviewed companies had appointed non-executives to their board, in some cases quite recently, and a further three companies had a non-executive chair of the board. Just six companies had a board comprised exclusively of internal members. This included public companies and companies with institutional investors (e.g. venture capital firms). In all

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<sup>13</sup> Employees in the companies that floated on the Stock Market had the opportunity to buy shares prior to the IPO and therefore had the opportunity to make a financial return at the floatation.



these cases companies had appointed non-executive board members as *a preparatory* step to raising external finance, rather than being required to do so by external investors. Typically non-executive board members were people with hands-on experience. This took several forms: experience in the industry or market in which the business operated; experience of managing fast-growth entrepreneurial businesses; and PLC experience. It hardly needs adding that their networks of contacts was also highly valued. More importantly, as the CEO of one publicly listed company commented, the non-execs should be “inspirational and aspirational”. Interestingly, most of the non executive board members were based in England or abroad rather than in Scotland. This is not necessarily a matter of concern since there is no requirement for non-executive directors to be physically present on a regular basis. However, the limited number of Scottish based companies that have achieved rapid growth and significant scale means that the pool of Scottish based non executive directors with experience of managing fast growth companies may be fairly shallow.

#### 4.5 FINANCING GROWTH

For many HGFs the ability to raise equity finance has been critical. Eleven of our sample had raised venture capital, in nine cases from venture capital funds and in two cases from corporate investors. These primarily comprised the younger firms in the sample and also some companies that went through MBOs or MBIs. In four cases the investment funded the buy-out/buy-in. In the other seven cases the start-up was self-funded with venture capital raised to finance expansion. In one case (Optos) business angels played a particularly important role in funding the company all the way from start-up to IPO, with VCs only investing a couple of years prior to the IPO. As noted earlier five of these companies are now listed on the London Stock Market.

It is important to understand that the investment model of venture capitalists is based around short-term investing and that within three to seven years they will be seeking an exit either through a trade sale or an IPO. The reasons why these companies sought a stock market listing was in the first instance to provide their investors with liquidity and thereby retain their own independence. However, because major shareholders are often ‘locked-in’ after an IPO and unable to sell their shares for a fixed period of time, venture capital firms generally prefer, in our analysis, to exit through a trade sale involving an outright sale of the company (URS et al, 2010). In two cases the VCs were reluctant and sceptical about the flotation route and had to be won over. Other motivations for looking to the stock market were to raise new capital and, in one case in particular, to facilitate acquisitions. Had these firms not been able to gain a stock market listing then it is likely that their VC investors would have forced the sale of the companies to a trade buyer with their subsequent loss of independence.

Seven firms – one-third of the sample – were internally financed. Half were long-established family firms. Their self-funding approach largely reflected the strong desire of the owners to retain their independence. However, it is interesting to note that this group includes three of the five firms that were awarded Regional Selective Assistance (RSA) grants whereas only one VC-backed firm had been awarded RSA<sup>14</sup>. This prompts the speculation, consistent with the ‘pecking order’ hypothesis of financing preferences, that public sector grants may, in some cases, be substituting for external funding sources in

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<sup>14</sup> RSA is a discretionary grant providing assistance towards projects with fixed capital expenditure that will create or safeguard employment in certain eligible geographic areas in the UK.

situations where the owner-managers deliberately forego external finance to retain independence of ownership and operation.

It is also interesting to note two firms – Goals Soccer Centres and ProStrakan – were initially self-funded by their founding teams from the wealth that they had created by selling their previous businesses. This illustrates the process of entrepreneurial recycling (Mason and Harrison, 2006) which may occur following the sale of an entrepreneur's previous business.

## **4.6 BUSINESS ENVIRONMENT**

### *Embeddedness in Scotland*

Very few of the HGFs interviewed needed to be based in Scotland. As noted earlier, only a small number derive the majority of their revenue in Scotland – in fact, most derive the majority of their sales outside of Scotland and in many cases outside the UK. As a result many of the interviewed companies have a physical presence – often a significant one – elsewhere in the UK and in foreign markets.

With just one exception, these businesses are located in Scotland because that is where the founders were living and working at the time that the company was started.. It is also appropriate to highlight the case of the two founders of Craneware, both Scots who had been working abroad, who returned home with the specific intention of starting a business in Scotland. Eleven CEOs commented that they “could be based anywhere”. They remained in Scotland because that is where they wanted to live. In addition, as the companies have grown so they have become embedded in their local economy, particularly through their labour market ties, and in some cases relationships with their bank and professional adviser. Companies selling into the USA in particular also observed that ‘brand Scotland’ was an asset. Three respondents – a financial services company in Edinburgh and two oil and gas related companies in Aberdeen – emphasised that the ‘place’ brand (i.e. their respective cities of Edinburgh, for financial services, and Aberdeen, for oil and gas) was more important than ‘brand Scotland’.

Two implications follow from the above finding. First, the direct Scottish ‘footprint’ of many of these companies is quite small, often limited to headquarters functions, with the majority of the jobs located elsewhere in the UK and abroad. This reflects a combination of the service-oriented nature of the majority of the businesses which requires a physical presence close to customers and the need for sales and support staff in export markets. Indeed, for such companies there is almost an inevitability that growth – involving penetration of new geographical markets – especially if it is achieved through acquisitions, will reduce the Scottish footprint, at least in relative terms. Table 4.4 illustrates this with the case of Wood MacKenzie, the mining, metals and energy research and consultancy company, showing how it has become less Edinburgh-centric as it has expanded since its MBO in 2001. Indeed, the company in the sample with one of the biggest Scottish footprint in terms of the proportion of its activity located in Scotland is The Scottish Leather Group Ltd, a traditional manufacturing business. Although not interviewed, other Scottish manufacturing HGFs are also thought to have considerable local supply chains, such as Alexander Dennis Limited (ADL) the Scottish-owned bus company.

One implication might therefore be that fast growth businesses in small, geographically peripheral economies such as Scotland may actually make a relatively minor direct economic impact. On the other hand, the jobs that they create locally in their head offices are of high quality (skills, salaries). For example, Craneware employ 140 people in their Scottish operation many of which are highly paid software engineers. Some companies –

but by no means all - will create additional indirect jobs through their supply chains. On account of their culture and knowledge, entrepreneurial companies are noted as being an important source of new businesses as employees leave to start their own businesses (Mason, 2008). For example, four employees of Optos have left over the years to start medical related companies and two companies have spun out from ProStrakan. Finally, Scottish headquartered fast growth companies send out important positive signals about the Scottish business environment.

Table 4.4. Employment in Wood MacKenzie

year	Total employment	Edinburgh employment	Edinburgh employment as % of total
2009	640	265	41
2008	280	580	48
2005	200	354	57
2003	190	250	76
2001	180	140	78

Source: Newspapers and interview

The second implication concerns the possible vulnerability of the HQ. Typically this is likely to arise in a merger or takeover situation. Three of the companies interviewed had gone through mergers with non-Scottish companies which resulted in a decision which location to choose as the HQ for the enlarged group. Indeed in one case the company decided on a joint head office. The Scottish HQ might also be vulnerable in the event that any of the companies with a small Scottish footprint and limited embeddedness are acquired. Although the majority of companies in the sample are privately owned, those that are publicly listed could be the subject of a takeover bid.<sup>15</sup> More importantly, companies that have raised finance from private equity funds, either to grow the business or to finance a management buyout, are vulnerable to being sold because of the short-term investment horizon of such investors. The attractions of such companies to a trade buyer are their physical and intangible assets. Immediately at risk is their head office, whose functions are likely to duplicate those of the acquiring business. One company with a private equity investor on board acknowledged that if the investor's exit involved the sale of the company then it would inevitably lead to a downgrade in its head office. In similar vein, the CEO of another company whose Scottish presence is limited to a head office acknowledged that he was "certain" that if they were acquired "the first thing an acquirer would do is to close this building down. They would not need it." However, he added that this would prompt senior management to leave and start their own companies. Indeed, acquisition can be a stimulus to business start-up. Three of the companies interviewed were started by people who had left their previous employment because of their dissatisfaction following the company's takeover. This 'churn' confirms the importance of disequilibria (i.e. creative destruction) for aiding business growth and economic development (Schumpeter, 1942).

<sup>15</sup> Robert Wiseman emphasised in his talk to the Entrepreneurial Exchange that his family's 35% ownership of the Group, which is listed on the Main Market, was sufficient to prevent hostile takeover bids and therefore maintain its independence.

### *Links to Universities*

One specific example of the lack of embeddedness of the firms in Scotland is their lack of links with Scottish universities. None of the interviewed companies and only one in the wider sample was a university spin-off. Only four companies had any research links and these were all *ad hoc* and extremely minor. None of the companies had any formal research links and most links were *ad hoc* and intermittent. A similar number looked to Scottish universities for recruitment, but some had found them unresponsive. Three companies had stronger links with overseas universities than with their counterparts in Scotland. It might be argued that this is not unexpected in the light of the limited number of technology-based companies in the sample and the absence of university spin-outs. However, both the very limited interaction with local universities and the limited number of university spin-outs in the population of HGFs would suggest that it might be appropriate to reconsider the current emphasis given by policy-makers to the impact of universities on economic development.

### *Impacts of Government*

Fifteen of the 21 companies interviewed had received at least one form of financial support. These have been for a variety of purposes. Three aspects of this support are significant. First, much of the support has been small-scale. Only five companies have been awarded RSA.. Second, in the case of the *de novo* start-ups, much of this small-scale support was received at an early stage in their development and in at least one case (a small equity investment by a LEC) the company might not progressed from a home-based start to a serious, full-time business without this support. Third, the most valued – and presumably most effective - form of assistance has been schemes operated by Scottish Development International (SDI) that supported overseas market entry by early stage companies. This confirms recent work by BIS (2010) concerning the value of Government support to assist innovative and high growth SMEs to internationalise, as these firms would not be able to fulfil their potential contribution to the economy without being able to exploit overseas opportunities effectively.

Scottish Enterprise delivers assistance to growth companies through Account Managers whose role is to help raise the growth performance of their client companies. 11 of the companies interviewed are account managed. Of the others, a few are probably deemed to be too small for this type of support and a handful are undoubtedly too large to be supported in this way. The majority of the companies that are account managed were positive about the support that they receive. However, the companies that had no direct contacts with Scottish Enterprise and had not received public support – typically long-established and family-businesses – held to the (arguably outdated) view that support went to inward investors and that established indigenous companies were ignored by government.

Government also has various indirect impacts on business. In particular, what is striking is the number of HGFs – nearly half - that benefit from government (Table 4.5). The most obvious impact is where the public sector is a customer: four firms had government in its various forms as a major customer. A less obvious situation is where companies have benefited from legislative changes which have created or expanded markets by introducing new obligations on business. So, for example, CPRM – which provides actuarial and administrative services to small final salary pension schemes – has benefitted from pensions

legislation which continually changes the obligations on companies. As the MD observed, “every legislative change is a burden for our clients and a benefit to us”. The formation of BIP Solutions was based on the opportunity to provide a comprehensive source of information on public sector tenders, and the subsequent introduction of compulsory competitive tendering in UK and EU Public Procurement directives, and other changes to the public procurement market, have grown the market.

Table 4.5. Positive impact of Government on Businesses

	Major	Minor
Public sector as customer	Barr + Wray; Stirling Fibre; Frew	Star Refrigeration; Ogilvie; Wood Mackenzie
Legislation creating or growing the market	CPRM; BiP Solutions; Star Refrigeration; Craneware	
Environmental policy	Scottish Woodlands Ltd, Stirling Fibre; Airchannel; Redeem;	
Privatisation/deregulation	FirstGroup; Wiseman	
Accreditation	Stirling Fibre; Airchannel; Scottish Leather Group	
Partnering with public sector	FirstGroup; Goals Soccer Centres	

Environmental legislation and initiatives to reduce climate change have been even more significant in creating market opportunities. Scottish Woodland Ltd has benefitted from the policy of the Scottish Government to expand the area under woodland. Stirling Fibre, which recycles waste paper, works with local authorities which are under pressure to reduce landfill and have to meet recycling targets. Redeem, which recycles printer cartridges, mobile phones and other electronic equipment, have benefitted from both the landfill tax and EU directives requiring companies to reuse, recycle and safely dispose of electronic waste. Star Refrigeration benefits from regulations on refrigerants which damage the ozone (CFCs and HCFCs) which has created opportunities for consultancy, servicing of equipment and system replacement. Climate change concerns are also a key driver for Airchannel which supplies, installs and services air compressors. Their customers can obtain grants from the Carbon Trust to purchase more efficient systems.

The final impact has been privatisation and de-regulation. FirstGroup’s formation and growth was only possible because of the privatisation of local authority bus services and, subsequently, the rail network. The growth of Wiseman Dairies was based on the removal on price controls on milk which the company correctly foresaw would lead to a switch in demand from doorstep delivery to supermarket purchase. Finally, three businesses emphasised the importance of accreditation schemes for selling to ‘blue chip’ companies.

Government also has negative effects on business, but these were fairly muted. Red tape, compliance costs and employment legislation were raised by two companies. Two companies also highlighted the difficulty of obtaining planning permission. Other issues raised, in each case by just one company, was the failure of the NHS to support local technology companies by purchasing their products, personal rates of taxation, regulations on the travel industry and environmental regulations on industry.

## 4.7 SUMMARY

Having established the numerical significance of HGFs in the Scottish economy in the previous section, we have sought in this section to contribute some empirical insights into the characteristics of these firms, their origins and growth, activities and contribution to the Scottish economy. As section two noted, the literature on HGFs is biased towards quantitative studies and there are surprisingly few studies that have examined the businesses themselves. By providing a range of qualitative evidence, including evidence on themes not previously addressed, this study is able to claim that it represents a significant contribution to literature on HGFs. However, the relatively small sample, comprising in-depth information on 22 firms and secondary information on a further 32 means that generalizations should be made with appropriate caveats.

Our main key findings are as follows:

- HGFs are heterogeneous, notably in terms of their age, size, ownership and industry sector. This provides a warning against prejudging where HGFs will emerge.
- HGFs have varied origins. They are by no means all *de novo* start-ups. Many have been ‘pre-incubated’ in established organisations. Several are MBOs of businesses that were previously part of larger organisations.
- Serial entrepreneurs are also significant as founders of HGFs and, in one very significant case, as business angels.
- HGFs that exhibit a ‘reverse hockey stick’ growth profile are the rare exception. Growth is typically ‘incremental’, particularly where it is achieved by acquisition.
- Acquisition is an important mechanism for high growth.
- HGFs are predominantly non-manufacturing.
- Few HGFs are technology-based, but most are knowledge-based and extremely innovative
- Most HGFs sell to other businesses, not to consumers
- Scottish HGFs are UK and globally-oriented: only a minority sell exclusively within the Scottish market
- Many HGFs have business models which are based around building long-term relationships with customers which generate recurring revenue rather than one-off transactions and their business proposition is as much based around selling knowledge as it is selling tangible products and services
- Partnering is at the core of the business model of many of HGFs and takes a variety of different forms
- HGFs have a variety of core competences but the most common ones are associated with the quality of their employees, innovative products and services and technical, market and customer knowledge
- Many HGFs have raised external finance, either to fund growth or to facilitate ownership change.
- HGFs are located in Scotland because this is where their founders live. However, most are weakly embedded in Scotland with few business ties and because of their UK or global market orientation their Scottish footprint is often limited to their HQ.
- Their limited embeddedness in Scotland is illustrated by the lack of research and recruitment links to local universities.

- A majority of HGFs have had had financial support from government. Early stage financial support and support for overseas market entry have been the most significant.
- Government also has had important, often critical, indirect effects on HGFs, creating markets (through privatisation and deregulation) and expanding markets (regulation, public sector tendering and climate change policy).

## **Appendix 4.1: A List of High Growth Firms Interviewed**

Airchannel  
Barrhead Travel  
Barr & Wray  
BiP Solutions  
CPRM  
Craneware  
First Group  
Frews  
Goals Soccer Centres  
Hydrasun  
LevelFour Software  
Ogilvie  
Optos  
ProStrakan  
Red Spider  
Redeem  
Scottish Leather Group  
Scottish Woodlands Ltd  
Star Refrigeration  
Stirling Fibre  
Wood Mackenzie  
Vascutek



## 5. Conclusions and Policy Implications

### 5.1 Main Conclusions

This has been the first detailed empirical analysis of high growth entrepreneurship ever undertaken in Scotland. The key findings are as follows.

First, HGFs comprise a small proportion of the overall business stock in Scotland employing more than 10 employees (4.1%). However, because of the lack of comparable studies we cannot say exactly how this compares with other parts of the UK or other countries. Moreover, the small size of this cohort of businesses should not detract from the fact that they undoubtedly make a disproportionate contribution to economic development and are critical to the growth of the Scottish economy.

Second, the growth of these firms is not a uniform or linear process. Rather, growth tends to be sporadic and uneven, a finding the majority of other studies on HGFs have discovered (Parker et al, 2010) and is often achieved through acquisition. Indeed, many of HGFs identified would no longer be classified as being high growth if this analysis had been taken a year later. The population of HGFs is therefore constantly changing: as some emerge others will stop growing and others will cease to exist. Therefore, disequilibria and flux is the norm for this dynamic collection of firms.

Third, HGFs are a highly diverse collection of enterprises. HGFs are found in different sectors, different sizes, ownership structures, country of origin and different age groups. Overall ‘pervasive heterogeneity’ is the main feature of HGFs in Scotland (Coad, 2009, p. 5). One of the central conclusions from this is the inherent difficulty of pre-judging where HGFs will emerge from. Notwithstanding this, the study highlighted a number of features of rapidly growing Scottish firms which either have not been identified in other studies or differ from those reported in the literature review in Section 2. The Appendix to this chapter provides a quick overview of some of these key differences. Of particular note is the fact that Scottish HGFs tend to be somewhat older and larger than the archetypal HGF, a finding in common with a recent study in the US of high impact firms (Acs et al, 2008), and that a large proportion have been pre-incubated in existing businesses. Existing businesses, rather than new start-ups, are therefore an essential source of new HGFs.

Finally, one of the most notable features of this group of businesses was their very strong customer focus and innovative behaviour. Although many of these firms are in traditional rather than high tech industries almost all the firms were extremely innovative. This had certain various inter-related dimensions. One of the most noticeable features was their strong engagement with customers and end-users to help ‘co-create’ new knowledge. This helps firms to ‘piggyback’ on customers ensuring that they are extremely knowledgeable about the types of products, services and ‘solutions’ required by their customers. Another key benefit from this close end-user engagement is the ability to form partnerships with customers. Due to this, HGFs were able to undertake innovative business models which often entail ‘recurring’ and multiple income streams which are extremely effective for enabling business growth (Mason and Brown, forthcoming).

## **5. 2 Policy Implications**

This study is based on the argument that HGFs, despite being small in numerical terms, have a disproportionate economic impact in terms of both job creation and value-added. We present evidence in the form of prior research which substantiates this point (see Section 2). This, in turn, leads to the argument that a key aim of policy should be to increase the number of HGFs. Supporting HGFs has been a core policy of Scottish Enterprise, and the findings provide a better understanding of the drivers of high growth that can be used to further develop approaches to supporting HGFs. A better understanding of HGFs, based on good quality information and analysis, is needed to ensure that current policies remain relevant and appropriate and to base future policy decisions. Qualitative evidence is particularly useful in providing us with a nuanced perspective on how best to shape future policy interventions.

In the academic entrepreneurship literature, support for enterprise promotion and support for high growth businesses are often viewed as alternative approaches towards promoting economic development (Shane, 2009). We believe this to be a wholly false dichotomy however. Without new business start-ups and early stage firms there would pipeline of future high growth companies. Therefore, it is vital that policy makers ensure that enterprise promotion activities encourage the formation of new businesses with high growth potential. Plus, to get to the stage of being a HGF, firms often have to navigate difficult earlier phases where business survival is often more important than growth. Therefore, business assistance for early-stage, low growth companies is also important to help provide a conduit between this phase and later stages in the company's growth and development.

From our assessment, there is clearly a role for government to directly support emerging HGFs. Indeed, the majority of HGFs in this study had received direct financial support. The key issues are what form this support should take and at what point(s) in company development is it most effective. We came away with two clear impressions from our research. First, in some cases the critical support occurred when the companies were still very young and hence vulnerable to certain growing pains, such as limited cash-flow and limited market knowledge. Second, the most effective forms of support appeared to be schemes which provided international sales and marketing support, followed by training grants. In neither case were the amounts of finance involved particularly large. One of the key findings from the research was the importance of having an ongoing relationship with business support organisations such as Scottish Enterprise. This kind of ongoing relationship enables account managers to strategically critique and challenge the firm's growth capabilities. Although only a minority of Scottish HGFs are account managed, those firms which received such support were very positive about its benefits. While firms valued the account manager relationship in terms of its pecuniary benefits in the form of the access to various 'products' for business support offered by Scottish Enterprise (e.g. RSA, SMART, etc) they also placed as much, if not more, value on the strategic relationship with Scottish Enterprise. In other words a 'relational' rather than a purely 'transactional' relationship is viewed extremely positively by HGFs.

Similarly, it was striking how many companies had actually benefited from government actions which had created or expanded the markets that they operate in. Climate change policies have been particularly important, creating market opportunities for recycling and more fuel efficient machinery for example. However, there is no guarantee that Scottish entrepreneurs will be the ones who recognise such market opportunities or that Scottish companies will benefit.

Turning to specific policy implications, the first arises from our evidence which highlights the heterogeneity of HGFs. They can be found across the age and size spectrum, in various sectors, and are not confined to any particular form of business ownership. The clear implication for policy-makers is not to prejudge where HGFs might emerge and to keep eligibility rules for support as flexible as possible. Specifically, we have indicated that the distinction between manufacturing and services is extremely problematic on both definitional and conceptual grounds. Services are increasingly embedded within products and play an increasingly pivotal role in the competitiveness of firms. Thus, targeting support at the manufacturing sector alone may not be appropriate.

Our findings also challenge the implicit assumption that HGFs are *de novo* start-ups and that they develop in a linear way. A significant proportion were, in fact, pre-incubated in other organisations and so were already established businesses when they emerged as new Scottish owned businesses. Quite often changes in ownership act as important ‘trigger points’ which often foster rapid growth in firms. The most obvious example of this is management buy-outs (MBOs) where the management team of a business that is part of a bigger organisation raise the finance to buy ‘their’ business and operate it as an independent concern. There is a large body of research which shows that businesses that undergo an MBO achieve significant growth and investment under their new owner-managers (Wright et al, 2009). Some companies have gone through the process of being sold, subsequently bought back with private equity backing, sold again to provide the investor with an exit route and then become the subject of another MBO either by the same or a new generation of managers. MBOs are also a means of achieving ownership change in family businesses. In other cases, a management buy-in (MBI) can be the means of rejuvenating an established business whose existing owner managers have lost their way or are looking to retire. Creating corporate spin-offs is another way in which HGFs emerge from existing businesses. In other cases ‘new’ companies have been created through splicing and amalgamating parts of the business activities of existing businesses. Finally, ‘new’ businesses can emerge out failing businesses that are either in receivership or are undergoing restructuring.

Policy makers therefore need to recognise that there are many models of ‘company progression’. Specifically, they need to recognise that there are potential HGFs that are ‘imprisoned’ in large organisations and would flourish if they were ‘released’. Thus, there is a need for mechanisms to support such situations in which the organisation is new even though the business is not, possibly even to the extent of playing the role of “business midwife” in some situations. Specifically ex-corporate managers who are now MDs of independent businesses may be less aware of what enterprise support is available than the typical start-up entrepreneur, and the types of support available are likely to be geared to start-ups rather than MBOs/MBIs and other corporate transformations. One key action for policy-makers is to assess the availability for finance for MBOs and MBIs. Here again, present financial intervention tends to be focused at the start-up and early growth phases but, for the same reasons that there is market failure in the supply of small amounts of venture capital, there may also be a shortage of funds to make small MBOs and MBIs. Support for business angel networks could also extend to supporting groups that focus on investing in MBOs and MBIs.<sup>16</sup>

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<sup>16</sup> A recent report in *Young Company Finance* (May 2010) of an MBO being funded by an angel syndicate in conjunction with the Scottish Co-Investment Fund indicates that such deals do occur. However, in many cases

Policy-makers should also see existing entrepreneurs as a key resource. Our research has highlighted HGFs that have been started by successful entrepreneurs who have built up and sold previous businesses. These serial entrepreneurs are able to bring resources and knowledge to their new business and their track record makes it easier for them to attract external funding. Cashed-out entrepreneurs need to be encouraged to 'do it again'. Developing linkages between serial entrepreneurs and embryonic businesses may be one method of harnessing this entrepreneurial resource base. Entrepreneurs who are already running a business and start another one – portfolio entrepreneurs – are also important. We noted how their existing business can incubate a new business by providing resources and providing overhead support. Existing entrepreneurs can also act as an important source of advice and 'peer support' for other firms. This is particularly important because we found that HGFs favour support and advice from their peers much more than advice from consultants, lawyers, the public sector and business angels.

Most HGFs are innovative but relatively few are university spin-outs. It has been previously noted, both in Scotland and elsewhere, that few university spin-offs achieve significant growth (Targeting Innovation, 2008; Harrison and Leitch, forthcoming). Also, few HGFs are in technology sectors, for example only 10 in Scotland are in life sciences. Although there is no direct or linear relationship between the prevalence of high growth firms and industry growth (Stam, et al 2009), the limited number of HGFs may at least partially explain the relatively modest growth performance life science has witnessed over the last ten years. Technology will only contribute to economic development if it is linked to a market need but arguably many technologies – at least in their early stage – are solutions in search of a problem. It is therefore not surprising that high growth technology firms are more likely to have been started by people leaving existing businesses and thus with greater commercial engagement and awareness of opportunities.

Most of the HGFs in the study are innovative – but few of these innovations are an outcome of their own R&D efforts. Even fewer are at the frontiers of science. We therefore need to see innovation as an activity that is often independent of R&D. In a series of reports NESTA (2006; 2007) has emphasised that most of the spending that promotes innovation does not take place in science laboratories (and are not reflected in traditional indicators such as R&D spending or patents). These 'hidden' innovations include innovations in organisational forms and business models and innovations created from the novel combination of existing technologies and processes. As highlighted in the conclusions, in many cases these innovations have arisen through the 'co-creation' of knowledge with customers and end-users in the marketplace. Moreover, as they arise from opportunity recognition that derives from market engagement they are more likely to be commercially successful.

Policy-makers therefore need to understand that support for innovation is not the same as support for R&D (Kay, 2009). Thus, there may be a case for shifting support from technology (with its emphasis on R&D expenditures) to innovation support focusing on closer end-user engagement. This is very much in line with those who advocate that 'open' sources of innovation are likely to be much more important in the future (Chesborough, 2003). In this environment, innovation is driven less by R&D and more from factors associated with 'connect and development' (C&D) where companies collaborate with end-

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the size of the funding required may exceed both the capacity of any angel syndicate and also the upper funding limit of public investment vehicles.

users, suppliers and others to help them innovate more effectively (Malecki, 2010). In this environment, newer forms of public support could include subsidised placements for SMEs and their customers and funding joint innovation projects between firms and their customers.

The desk research highlighted the significant number of Scottish HGFs that have been acquired and are now subsidiaries of large, often foreign-owned, businesses. It remains a matter of debate whether this is beneficial for the companies concerned and hence for the economy. The key benefit for the acquired company is access to financial, managerial and marketing resources to enable further growth. Another benefit occurs if the shareholders reinvest their financial gains and knowledge by becoming serial entrepreneurs, business angels and non-executive directors. However, the process is detrimental if the acquisition leads to a run down or closure of the company and transfer of its intellectual assets elsewhere. The interviews have suggested that the head offices of HGFs are vulnerable in the event of mergers and takeovers, and for a significant proportion of companies this is their major, or only, Scottish footprint. Companies that are particularly vulnerable are those with private equity and venture capital investors because of their need for an exit route. Given the importance of foreign ownership in shaping the developmental trajectory of many HGFs, there is arguably a need for more pro-active policies towards mitigating the negative consequences of foreign acquisition in some economies. One suggestion is to extend inward investment aftercare policies undertaken by regional development agencies, to indigenous firms which are acquired by foreign-owned MNEs (Brown, forthcoming). Certainly, more needs to be known about the role in which acquisition of local HGFs affects the entrepreneurial dynamism of a local economy.

Some companies in the sample have been able to provide their investors with an exit route without putting their independence at risk by floating on the Stock Market. It was suggested to us in some interviews that the Scottish professional business advisory community do not promote the Stock Market listing option sufficiently to their clients. A Stock Market listing though is a way in which some HGFs, if appropriate, can continue to grow without having to sell out to a bigger company – it provides liquidity for investors, access to further capital and, perhaps most significantly, its shares are a currency with which to make acquisitions. However, currently only 30 Scottish based companies are currently listed on AIM which is just 2% of all UK-based companies listed. While this funding route will not be appropriate for all kinds of businesses, the Stock Market could potentially be promoted much more vigorously by corporate advisers.

## Appendix 5.1: Key Characteristics of High Growth Firms in Scotland

Characteristics	Traditional HGFs	Scottish HGFs
Gender of Founder	Mostly male	Mostly male
Human Capital of Founder	High levels of human capital are common	Graduate and post-graduate qualifications common
Founding Circumstances	HGFs conventionally are assumed to be <i>de novo</i> start ups	Many Scottish HGFs are ‘pre-incubated’ in existing businesses.
Nature of Management Team	HGFs are conventionally established by individuals, mainly serial entrepreneurs	Team based rather than solo entrepreneurs dominate. Prior experience of team members is critical. Serial entrepreneurship important.
Firm Age	HGFs are typically young organisations	The majority of Scottish HGFs are less than 25 years old but none are genuine gazelle, less than five years old)
Firm Size	HGFs are predominantly small organisations	Majority of Scottish HGFs are medium and large enterprises
Funding Architecture	Funding for firms comes from a wide variety of sources (e.g. bootstrapping, debt financing, venture capital). IPOs seen as an important longer-term objective.	Over half of our sample of Scottish HGFs obtained venture capital funding and one-quarter are publicly listed.
Business Strategy	Market positioning is important and HGFs are active in managing their products and markets	Scottish HGFs are extremely focused on focusing their products on the needs of their customer requirements. Market orientation, end-user interaction and partnering with customers are common strategies
Markets/End Users	Most HGFs are mostly in business to business (B2B) markets rather than consumer-based businesses	Over two thirds of Scottish HGFs are B2B
Business Sector	HGFs are found in all sectors especially KIBS. High tech sectors are not over-represented	Services are the single largest source of HGFs. High tech sectors are weakly represented, especially some of SE key sectors (e.g. life sciences, energy)
Innovation	Firm-based innovation is crucial for rapidly growing firms	Most HGFs are innovative, although they are not heavily engaged in R&D. Scottish HGFs have weak links to HE bodies
Links to Government	Weak links to government bodies but public policy and regulatory environment are important	20% are account managed by SE. They are heavily influenced by public policies and government legislation

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