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NESTA Making Innovation Flourish

The grey economy

How third age entrepreneurs are contributing to growth

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Executive summary

The population is getting older, with many more people aged 50 and over. Their economic contribution is also increasing. More people are working beyond statutory retirement age. And more of them are running their own businesses. At the same time, particularly during a time of recession, the government has a strong interest in encouraging more people to become self-employed or set up their own company. Particularly where such companies create work for others, they can make a valuable contribution to the recovery.

Whilst previous research suggests that entrepreneurship is a young person's game, this report shows that people over 50 have a significant role to play in growing businesses, particularly when a business is founded by a group of entrepreneurs combining youth and experience.

This report outlines the contribution of high growth 'third age' (entrepreneurs aged over 50) – those that have seen their businesses grow to more than 25 people in a relatively short space of time.

Research on such third age entrepreneurs is limited. What research exists focuses on those pushed into setting up small businesses. Little is known about those who voluntarily set up innovative firms that create significant employment. This research aims to start to fill this gap.

More specifically, this study looked at the number of such innovative start-ups and the sectors in which they are located. We examined the motivation of their founders and how they differ from younger entrepreneurs and founders of smaller new starts. We considered any advantages third age entrepreneurs have in becoming significant employers quickly. And we looked at the barriers they face and how they might be overcome.

Our research involved a combination of a Literature review, analysis of company records and a telephone survey.

Defining high growth

Our survey focuses on companies founded between 2001 and 2005. We define high growth start-ups as those companies formed between 2001 and 2005 that had 25 or more employees in 2008. The 351,300 independent limited companies founded in the UK between 2001 and 2005 and still in business in 2008 had over 1.5 million employees by 2008. But just 3,000 had 25 or more employees, of which 870 included founders aged 50 or over.

The new starts had 487,400 founding directors, a quarter of them aged 50 or over – a substantially greater proportion than might be expected.

A majority of founders – 56 per cent – set up the business as part of a team of two or more. Teams accounted for 37 per cent of all new starts. Teams seem particularly important in our high growth companies – 54 per cent of them are set up by a team. The most successful teams were also those which combined founders of different age groups, bringing together the complementary assets of relative youth and the experience of third age.

In which sectors are third age new firms?

Older founders don't differ greatly from their younger colleagues in the types of businesses they establish. However, they are more likely to create business services firms and less likely to start construction firms. Their presence as sole founders is also disproportionately lower in retailing.

Amongst the high growth companies, third age founders are overrepresented in manufacturing. Perhaps surprisingly, their presence in high tech and the creative industries is broadly in line with the average.

Who are the third age company founders?

Perhaps unsurprisingly, the probability of participating in starting a new company begins to decline during third age. However, it does not decline substantially until age 60. Around 55 per cent of third age founders are 50-55, though just 5 per cent are over 60.

Most of those setting up high growth companies are white British men. Just over 50 per cent have a university degree. Aside from management buyouts, two thirds have previously set up another company earlier in their life. In other words, relatively few of the more successful entrepreneurs are new to enterprise later in life.

Innovation and third age firms

The founders of 45 per cent of new starts say that the new company was based on some form of innovation, typically involving a new product or service or a significant adaptation of an existing one.

Third age founders generally are less likely than others to participate in innovative new starts. Compared to 49 per cent of companies set up by younger founders, just 30 per cent of third age founders say their business was based on an innovation.

High growth companies are the most innovative. Third age high growth entrepreneurs are just as likely to be innovative as younger high growth founders. This is perhaps not surprising given that innovation increases the probability of growth.

Motivations

A comparison of older and younger high growth founders found few substantive differences. Overall they have similar motives, attitudes to risk and time horizons. The most obvious differences were:

- Just over 30 per cent of third age founders were substantially motivated by the opportunity to work beyond the official retirement age. This was clearly not a motivation for younger founders.
- Third age founders were less driven by the desire to be their own boss (although it was still an important factor) and more by the challenge and to give something back to society.
- Third age founders were substantially more driven by the desire to exploit a specific business opportunity (including a management buyout).
- The third age founders have substantially more work experience in all types of organisation, especially as managers in a large company.

Few older high growth founders had already retired, were unemployed or pushed by redundancy. However, the prospect of redundancy can create a specific business or market opportunity, so it is not so easy to distinguish between those who felt drawn to setting up a business and those who felt pushed into it.

What's holding potential growth back?

By comparing all the firms that quickly went on to employ significant numbers and those that didn't, we shed some light on the factors constraining growth.

Founders' attitudes to financial risk were similar. However, in setting up the business, high growth founders felt they were taking on a greater personal financial risk. They were also marginally more willing to wait for a return from their investment. Even so, only 42 per cent of older high growth founders say they took a substantial personal financial risk.

As well as being substantially more likely to set up a new business based on at least one form of innovation, high growth founders were more willing to exploit a specific business or market gap opportunity than other founders. They also had a greater desire to give something back to society and were more excited by the challenge. Those older founders whose employment growth had been limited suffered marginally poorer health when the business was set up.

Does age make a difference?

There are no great differences in management style based on age, nor is there much difference in the extent and nature of protecting intellectual property.

However, rather more systematic and clear-cut differences can be seen when we compare the managerial style and goals of those older founders who achieved substantial employment growth and those who didn't.

- Compared to 58 per cent of high growth founders, just 30 per cent of other founders say the business introduced some form of innovation at start-up.
- More of the high employment companies have introduced further product innovations since start-up.
- Compared to 85 per cent of the high growth founders, just 70 per cent of the others were trying to achieve growth when we surveyed them.
- The founders of high growth companies are much more willing to delegate and less committed to conforming to accepted business practices.
- They also put in marginally more time and effort, though most founders say they frequently sacrifice leisure for work.
- A higher proportion of high growth companies use mechanisms such as patents, trademarks and copyright, though only a minority do so.

Methodology

Our methodology involved five substantive, interdependent components:

- An extensive Literature Review and analysis of the new firms captured in the Small Business Service Small Firms Survey.
- Analysis of the 381,000 new independent limited companies registered between 2001 and 2005 still operating in 2008 on the TBR Economics Database. Following a data cleaning exercise, this gave a UK total of 351,300 such companies.
- From this database, identification of the age of founding directors of all those companies with 25 or more employees in 2008 and a sample of 11,500 smaller new starts.
- A telephone survey of new start founders consisting of 84 third age high growth, 90 younger high growth and 147 founders of non-high growth new starts.
- A series of telephone and internet-based case studies of third age start-ups.

Throughout third age high growth founders and their companies are compared with younger founders (both high and low growth) and low growth older founders.

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Part 1: Introduction

Policy context

This study is about older people who become innovative and successful entrepreneurs. The emergence of more so-called 'third age' entrepreneurs is a sign of demographic shifts – as a greater proportion of the population is aged over 50 – and inter-generational change.

Government is seeking to promote these trends further through its strategies to make the UK an 'Innovation Nation' and the best place in the world to set up and grow a business. While the innovation strategy makes only passing mention of entrepreneurship, new businesses are an important source of radical innovations which large, more established businesses have neither the self-interest nor capability to introduce.

Through the enterprise strategy, the government has increased its emphasis on older entrepreneurs. With an increasing proportion of the population aged over 50, a rising population dependency ratio (fewer working people supporting more non-workers) and problems with pensions, the entrepreneurial potential of the third age population has taken on a new urgency. This trend is exacerbated by the current economic downturn where a growing number of older individuals could be made redundant bringing a premature move into economic inactivity and early retirement.

Research background

Historically, innovation and entrepreneurship, especially in the high tech and creative industries, have been seen as the preserve of youth. The limited research on third age entrepreneurs focuses on those pushed by unemployment and redundancy into self-employment and the creation of small businesses. There has been little research on innovative third age founders, those who achieve rapid growth or those who positively choose to take the risk of setting up in business. This research aims to fill this gap.

The 1980s and early 1990s literature argued that entrepreneurship was a young man's game and that third age entrepreneurs were rare. More recent research suggests that the proportion of older entrepreneurs has increased to 15-20 per cent with most aged 50-55 years. It is assumed that third age founders are underrepresented in sectors such as high tech or the creative industries.

Much of the literature revolves around the inverted U relationship between business formation and founder's age. The probability of setting up a business, and of its survival and growth, initially increases with age before declining after the entrepreneurial prime – aged 30-45 – as individuals enter their third age. It is often assumed this relationship reflects the 'biological' effects of ageing – older people are believed to have less energy, be less ambitious and motivated and perhaps less creative and intellectually active.

On the other hand, the absence of economic incentives may provide an alternative explanation. Older people are argued to be more risk averse and have shorter time horizons – they want more rapid returns than may be available from forming a business. Fewer older people seem to want to set up their own business (in part because many have done so earlier in life), or believe they have the necessary skills to do so. Whether such attitudes develop over an individual's lifetime or whether they are due to intergenerational effects is not clear.

The literature suggests that there may be systematic and substantial differences between businesses set up by older and younger founders. For example, third age businesses achieve less growth, are more likely to be 'lifestyle' businesses and less likely to require a long-term perspective. Given that older people may be less technologically savvy or creative, they are also less likely to be innovative. On the other hand, older founders have experience, exposure to business opportunities and increasing access to resources. While these advantages are useful up to a point, they decline once the individual formally retires and leaves the labour market.

Research questions

In this context, this study aims to address the following questions:

- What evidence is there of innovative and high growth third age business start-ups and what economic contribution do they make?
- In which sectors do older entrepreneurs choose to set up their businesses?
- What motivates third age entrepreneurs and, in particular, what are their positive motivating factors? How do these differ from younger founders?
- What advantages do older entrepreneurs have compared with younger business founders?
- What are the barriers to third age business formation and how do these differ from those facing younger entrepreneurs?
- How can innovative and high growth third age business formation be further encouraged and supported?

At the outset of the research, third age was defined as individuals aged 50 and over. We also use the term 'older' to refer to this age group.

Methodology

Throughout the study, new starts are defined as all new limited companies set up between 2001 and 2005 and still operating in 2008. Those moving into self-employment are excluded. High growth new businesses are defined as those with 25 or more employees in 2008. There is no agreed definition of a high growth new start. The OECD high growth definition, a 20 per cent average growth over three years is inappropriate for new firms. Twenty per cent of nothing at start-up is nothing. However, companies growing to employ 25 or over in their first few years of life have, compared to the average new company, achieved substantial growth.

To address the comparative element of the study, and to identify constraints and barriers more effectively, throughout the analysis high growth third age new starts are compared with high growth new starts set up by younger founders and low growth new starts set up by both age groups.

The research methodology has five substantive interdependent components. A more detailed description of each, along with the methodological limitations, is presented in Appendix A. However, each component can be briefly described as follows:

- Literature Review and analysis of the BIS Small Firms Survey. These were used to help design this study and complement its empirical findings. The outputs (presented in Appendices B and C) are important inputs to the Policy Discussion.
- Analysis of the TBR Economics Database. Following a data cleaning process to remove the large new starts which were not really new, the database provided information on 381,000 new limited companies set up between 2001 and 2005 and still operating in 2008. The data gave the company date of birth, 4 digit SIC and 2008 employment. The figures on the database were subsequently scaled downwards to take into account the results of the telephone survey of new starts (component four). This gave an estimate of 351,000 2001-5 new starts still operating in 2008
- Identification of the age of the founders. Data on the age of company directors and their date of appointment for all high growth new starts identified on the TBR Economics database were purchased from Dun and

Bradstreet. In addition, equivalent data were purchased for a random sample of 11,500 (3 per cent) low growth new starts. This created a database of approaching 15,000 new businesses. This was analysed and 'grossed up' to represent the overall new start population.

- A telephone survey of new starts. Using the database to create three sampling frames, responses were obtained from 84 third age high growth new starts, 90 high growth new starts set up by younger founders and 143 low growth new starts.

- A series of case studies. These were based on available literature, information from the web and telephone interviews. The original idea was to present 'pen picture' case studies to illustrate points throughout the text. However, the case studies tell more informative stories told in their 'entirety'. Consequently, those case studies willing to be identified are presented in Appendix D.

The telephone survey found that a number of firms on the TBR Economics database were not really new. Consequently, the database overestimated the number of new starts, particularly third age high growth new starts. As already noted, the data have been scaled down to allow for this overestimate.

Structure of the report

Following this Introduction, Part Two estimates the number, sectoral distribution, innovation and employment contribution of new businesses and, in particular those set up by third age individuals. Part Three examines the characteristics of founders and the start-up process followed by an analysis, in Part Four, of the factors making for, or constraining, new company growth. Finally, drawing on the findings of this research, the SBS Small Firms Survey and the Literature Review, Part Five discusses the possible implications for policy.

Part 2: Their number and economic contribution

This chapter estimates the number of new businesses examining them from five perspectives: the founders' age, business performance, the number of high growth new starts, their sectoral distribution and their economic contribution (the number of people they employed in 2008). We also estimate the number of innovative new businesses and the contribution of third age founders to innovation.

New firms make an important job creation contribution

There were an estimated 351,300 business operating in 2008 which had been set up as limited companies between 2001 and 2005. In 2008, these businesses had 1.51 million employees accounting for around 5.5 per cent of UK employment. Of the businesses, just 0.85 per cent (nearly 3,000) had 25 or more employees (defined in this study as high growth). Larger new starts or high growth new starts are few and far between. In 2008 they employed 248,800 people or 16 per cent of new company employment.

Third age entrepreneurs make a substantial contribution

Much discussion of new business formation either implicitly or explicitly assumes that they are set up by individual founders. However, an important early finding from our analysis is that 37 per cent of new companies are set up by at least two founders. These were subdivided into third age teams with all the founders aged 50 or over; young teams with all founders aged under 50; and mixed age teams with at least one founder aged 50 or over and one founder under 50.

The number of new businesses and their employment by age of founders is summarised in Table 1. Third age founders set up, or helped set up, 93,500 new companies with 392,000 employees. This contribution consists of:

- 47,400 businesses with 160,300 employees set up by individual older founders. Of these, 47 per cent were set up by a founder aged 50-54.
- 16,500 businesses set up by third age teams employing 62,100, and
- 20,600 businesses set up by mixed age teams. These had 169,100 employees in 2008.

Taken together, third age founders participated in 27 per cent of all start-ups with 28 per cent of start-up employment.[1]

Older founders participated in setting up just 870 high growth new starts between 2001 and 2005, or 29 per cent of all such new starts. These businesses employed 66,600, equivalent to 17 per cent of the 392,000 employees in all new companies set up by older founders and 32 per cent of employment in all high growth new starts.[2]

Team start-ups are overrepresented amongst the high growth new starts. Whilst representing just 37 per cent of the smaller businesses, they account for 54 per cent of the larger start-ups.

Of the 870 high growth new starts in which a third age founder participated, 57 per cent

1. These percentages are based on totals excluding those businesses in which there are no remaining founders (and therefore no evidence on their ages). It is assumed that these businesses had founders with ages similar to the businesses which have original founders.
2. These figures are percentages of the totals excluding those firms for which there are no remaining founders. It is assumed that such firms are similar to those in which original founders continue in the company.

Table 1: New firms (2001-5) and their 2008 employment by founders' age

	Total new firms		High growth new firms	
	Number (000s)	Employment	Number	Employment
Individual founder				
Under 50	152.5	615.9	850	99.2
50 – 54	22.2	75.8	123	6.6
55+	25.2	84.5	125	9.2
Teams				
Young	72.2	322.8	695	39.0
Mixed	29.6	169.1	495	44.0
Third age	16.5	62.1	127	6.4
No remaining founder	33.0	179.1	580	43.3
Total	**351.2**	**1509.3**	**2997**	**247.7**

Source: Analysis of TBR Economics data adjusted by the results of the telephone survey.

were set up by a mixed age team, 15 per cent by a third age team and 29 per cent by an individual third age founder.

The nature of new starts

As explained in Appendix A, a broad definition of new starts is adopted including Management Buy Outs (MBOs) and the purchase and resuscitation of bankrupt firms. Table 2 breaks the new starts down into those which were completely new, those which were MBOs and those resuscitated bankrupt firms and compares them by founders' age and employment size. The businesses set up by mixed age teams are allocated to the 'Over 50' age group. Overall 86 per cent of the 351,300 businesses were completely new. Approaching 6 per cent were MBOs and the remaining 8 per cent followed the purchase and resuscitation of a bankrupt business.

The high growth businesses, especially those with older participating founders, are less likely to be completely new businesses. Of the 2,997 high growth new starts 77 per cent were completely new and 14 per cent were MBOs. For those with a third age founder, just 66 per

Table 2: The nature of new starts by founders' age and growth status

	Low growth		High growth		
	Under 50	Over 50	Under 50	Over 50	Total
Completely new business	87	85	82	66	86
Management buy out	6	3	10	25	6
Formerly bankrupt business	6	10	8	6	5

Source: Telephone Survey.
Note: The small 'other' category is excluded from the table.

Table 3: Number of founders by individual, team, age and growth status

	All founders (000s)	High growth founders
Sole founder		
Under 50	152.5	850
50 – 54	22.2	123
55+	25.2	125
Teams		
Young	150.3	1,598
Mixed – under 50	39.0	778
– over 50	33.2	718
Third age	33.5	315
No remaining founder*	33.0	580
Total	**487.4**	**5,087**

Source: TBR Economics data weighted by the results of the telephone survey.
Note: *Given there is no information on the founders of these companies, it is conservatively assumed they were set up by an individual.

cent (i.e. 574) are completely new businesses and 25 per cent are MBOs. Third age high growth founders are much more likely to set up a new firm after a management buyout than younger founders.

The founders

Given that 37 per cent of businesses were set up by a team, the number of founders substantially exceeds the number of new businesses. As shown in Table 3, an estimated 487,400 founders participated in setting up new businesses. The founders are categorised by age, whether or not they were an individual or team founder and the growth status of the business. The majority of founders (56 per cent) were part of a team, and 25 per cent of all founders were over 50 – an estimated 122,300 third age founders. Of these older founders, 47,400 were solo entrepreneurs whilst 66,700 were part of a team. The 2,997 high growth new starts involved almost 5,100 founders. Of the high growth founders, 25 per cent (almost 1,280) were aged 50 or over, with the majority of these (56 per cent) being part of a mixed age team.

Younger founders perform better than third age founders

Table 4 shows three indicators of new start performance. These are: the proportion of new starts achieving high growth, the average number of employees per firm; and the average number of employees in high growth new companies. For businesses set up by individuals, the proportion achieving high growth status declines marginally with founder's age. For example, 0.56 per cent of businesses set up by those under 50 are high growth. This proportion declines to 0.55 per cent for businesses set up by 50-54 year olds and 0.50 per cent for those over 54. There is a similar pattern for average employment per new firm, which declines from four employees for founders under 50 years of age to 3.3 for founders over 54. Finally, the size of the average high growth new start is substantially greater for those set up by younger founders. This is due to a handful of businesses set up by younger individuals which achieved very high growth.

Table 4: Indicators of new firm performance by age of founder

	Per cent employing 25+ in 2008	Average 2008 employment per firm All	High growth
Individual founder			
Under 50	0.56	4.0	116.4
50 – 54	0.55	3.4	53.7
55+	0.50	3.3	73.6
Teams			
Young team	0.96	4.5	56.1
Mixed	1.67	5.7	88.9
Third age	0.77	3.8	50.4
No remaining founder	1.76	5.4	74.1
Total	**0.85**	**4.3**	**82.6**

Source: TBR Economics data

3. In part the superior performance of team start-ups is because they begin life with more founders. The average size of teams is very marginally above two. Allowing for the differing number of founders, the average number of employees is no higher in team start-ups than businesses set up by an individual. The exception is mixed age team start-ups which, on average, employ more than individual start-ups. However, after 'removing' the additional founders, a greater proportion of team start-ups still employ 25 or over. For example, the proportion of mixed age start-ups in the high growth category is 1.59 per cent and for young teams 0.80 per cent (compared to 1.67 per cent and 0.96 per cent without allowing for the larger team at start-up).

However, teams and especially mixed age teams, perform even better

Table 4 shows that start-ups founded by a team perform better than individual start-ups. Both the proportion achieving high growth and their average employment are higher.[3] At the same time, third age teams perform less well than younger teams on all three indicators. For example, while new firms set up by young teams employ an average of 4.5 people, the average employment in firms set up by older teams is 3.8.

But perhaps the most significant finding in Table 4 is the performance of businesses set up by mixed age teams. With 1.67 per cent achieving high growth, their record is better than average. On average, they have 5.7 employees – again, well above average. As an interesting footnote, new starts where none of the original founders are still in the firm perform particularly well.

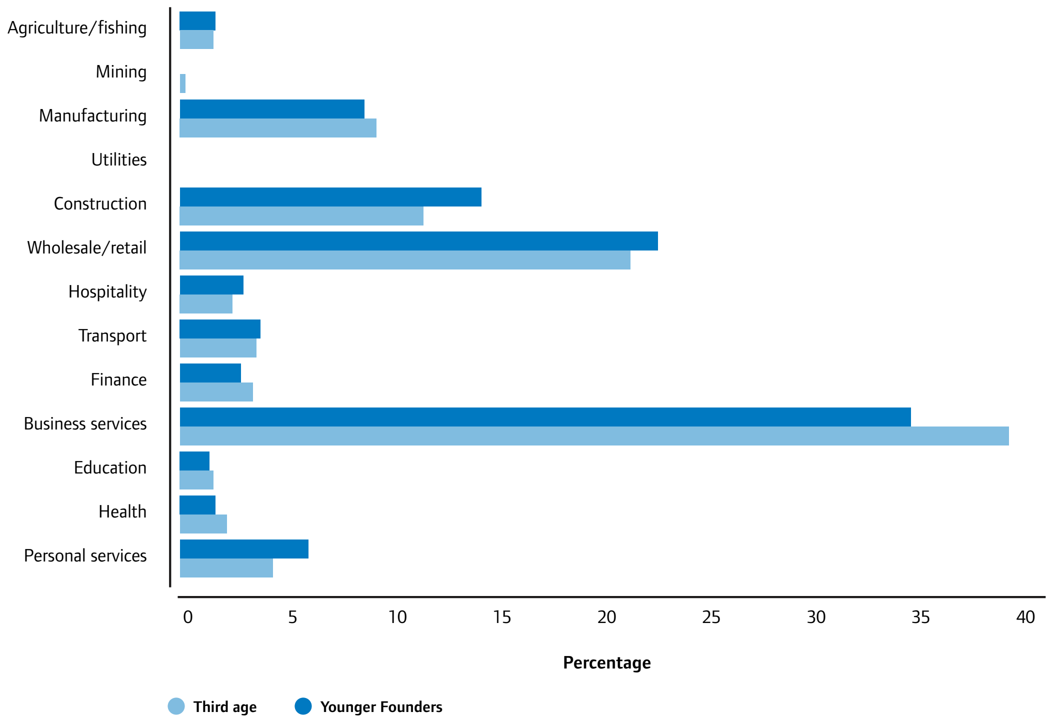
Third age founders are in similar sectors to other founders

There is no substantive difference in the sectoral distribution of new starts set up by younger and older founders. Figure 1 shows the broad sectoral distribution of new starts by age of participating founders. The most marked differences are that third age founders are somewhat more likely to set up in business services and less likely to participate in construction, retail/wholesale and personal services. Indeed, the gap in the wholesale/retail sector would be more substantial if mixed age teams were excluded, since mixed age teams are more likely than the other sub-groups of founders to set up in this sector.

The sectoral distribution of high growth new starts and all new starts is illustrated in Figure 2. The main sectors for high growth are business services, manufacturing, wholesale/retail and construction. However, as a proportion of new sectoral businesses, they are underrepresented in business services and wholesale/retail, whilst they are overrepresented in manufacturing.

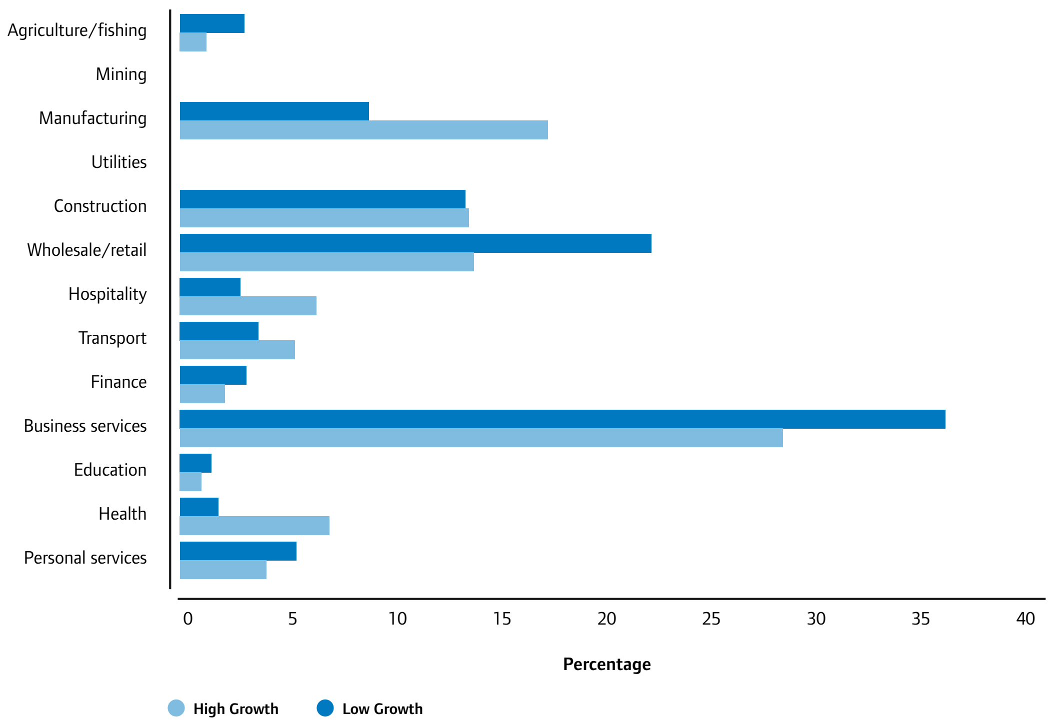
Figure 3 compares the sectoral distribution of third age and younger high growth start-ups. In broad terms, the sectoral distributions are similar. However, third age founders are somewhat more likely to be in manufacturing, which may partly reflect their greater participation in management buyouts.

Figure 1: The sectoral distribution by founders' age: percentage of businesses



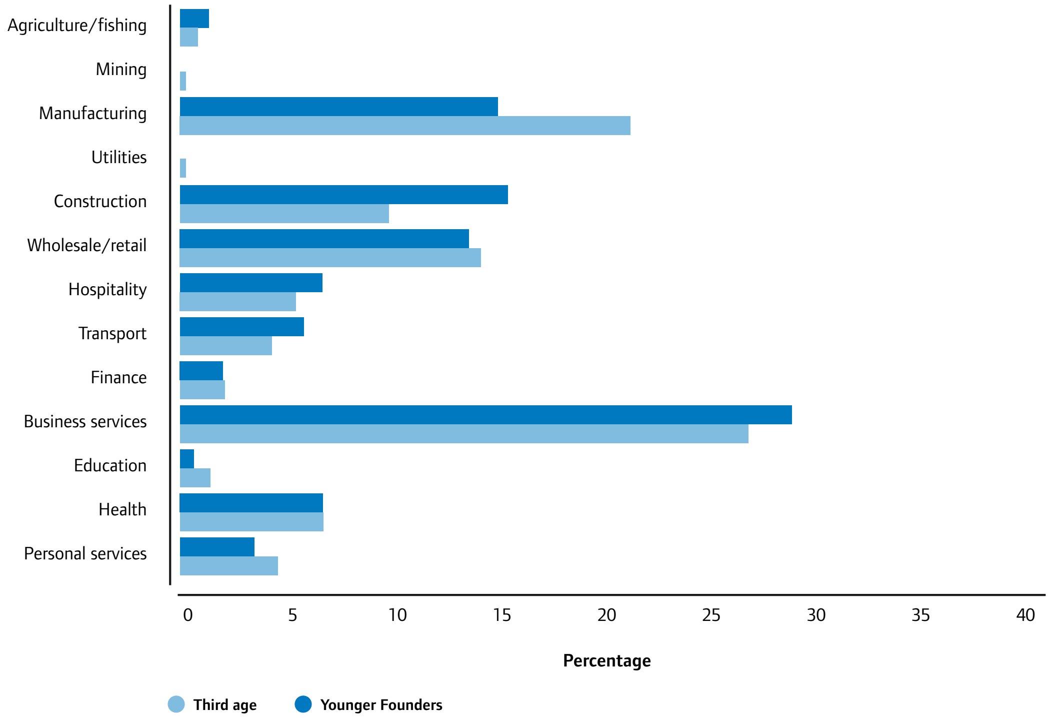
Source: Analysis of adjusted TBR Economics data

Figure 2: Sectoral distribution of high growth and low growth start-ups



Source: Analysis of adjusted TBR Economics data

Figure 3: Sectoral distribution of third age and younger high growth start-ups



Source: Analysis of adjusted TBR Economics data

Again, they are less likely to be involved in construction.

It is sometimes argued that third age founders are underrepresented in the high tech sector. High tech start-ups account for 8.2 per cent of all start-ups and 7.4 per cent of employment in new firms. However, third age founders are only marginally under-represented in the high tech sector: compared with 27 per cent of all new starts, they participated in 24 per cent of high tech start-ups. Post-start performance mirrors that of other sectors. High tech new starts are no more or less likely to grow than the average business start-up. Those set up by mixed age teams outperform both younger and older teams and those set up by individuals. Those involving younger individual founders marginally outperform those set up by older individuals.

The creative industries demonstrate similar patterns. These industries account for 14 per cent of all start-ups and 15 per cent of employment in new firms. Again, third age founders are only marginally underrepresented, participating in 26 per cent of new businesses. Post-start performance again mirrors that of other sectors with teams outperforming individual start-ups, younger individuals marginally outperforming older individuals and mixed age teams having higher average employment per firm than other groups.

New Firms Contribute Substantially to Innovation

As shown in Table 5, the founders of an estimated 45 per cent of new starts say the business was set up with some form of innovation in their product, process or business model. New businesses set up by older founders are somewhat less innovative than younger founders' businesses. For example, compared with 48 per cent of younger founders, just 30 per cent of founders over 50 say their business introduced an innovation when it was set up. Nevertheless, they account for 20 per cent of founders saying the business is based on some form of innovation.

As might be expected, the high growth new starts are more likely to be innovative than those with relatively few employees. Sixty one per cent of high growth new starts, compared with 43 per cent of other new starts, believe they were innovative. And older high growth founders are just as likely to be innovative as

Table 5: New starts and innovation: per cent based on some form of innovation at start-up

	Founders' age		
	All ages	Under 50	Over 50
All business	45	49	30
High growth	61	62	58
Low growth	43	49	30

Note: i) Estimated by weighting the survey results by the population of businesses in the high growth/low growth categories by age of founder. ii) The difference between those under and over 50 in the Low Growth businesses is statistically significant.

their younger counterparts. This illustrates the 'self selective' bias of the data. If third age founders are innovative, their business is just as likely to grow as any other innovative firm.

In contrast, only 30 per cent of older founders of low growth firms say that at start-up the business introduced some form of innovation. This is significantly lower than the 49 per cent of younger founders of low growth firms.

Four important observations can be drawn from this data. First, innovative new firms are more likely to achieve growth. Second, many businesses are set up with some form of innovation and do not achieve high growth status. Given that innovation involves experimentation and risk, many simply do not make it. Third, a substantial number of new businesses achieve growth without innovation. Fourth, older founders are generally less innovative than younger founders.

Their contribution to teams is more than assumed or asserted in the literature

We have seen the importance of team start-ups. Older founders are somewhat more likely to be part of a team than younger founders. The literature tends to argue that third age team members are usually not the lead entrepreneur. Rather they may be brought in by younger more energetic lead founders for their expertise, experience and money.

However, evidence from our survey suggests that older founders are more actively involved. For example, almost 60 per cent of team members over 50 responding to the survey said it was their idea to form a team. This is the same proportion as for younger team members. Rather more (53 per cent versus 40 per cent of younger team members) say they had the original business idea. At around a fifth, a similar proportion of third age and younger team members were brought in by other founders as a source of finance and for their specific skills. So, the contribution of older entrepreneurs to the team appears to have been more substantial than sometimes assumed.

Conclusions

Large numbers of new firms generate large numbers of jobs. Entrepreneurs aged over 50 participated in setting up 27 per cent of the 351,200 new companies established between 2001 and 2005 and still operating in 2008. This is a substantially higher proportion than would be expected from previous research.

Very few (0.85 per cent) of these new starts had 25 or more employees in 2008. These businesses accounted for 16 per cent of the 1.51m jobs in all new starts. Of the almost 3,000 high growth new starts, older founders participated in setting up 29 per cent of them.

Teams were responsible for 54 per cent of high growth new starts compared to 37 per cent of all new starts. Older people are more likely to set up in business as part of a team. With 1.67 per cent of mixed age teams' new companies achieving high growth, mixed age teams perform well above average.

Compared to 43 per cent of lower growth new starts, 61 per cent of high growth new starts introduced an innovation. Younger founders (48 per cent) are more innovative than older founders (30 per cent). Nevertheless, older founders account for 20 per cent of new businesses which introduced some form of innovation. If third age founders innovate, they are just as likely to achieve growth as younger founders.

Part 3: Founders and the start-up process

This chapter describes the characteristics of third age founders. It compares their motives and concerns, their pre-start experience, and, importantly, their attitude to risk and time horizons with those of younger founders.

Third age founders make up 25 per cent of all founders but just 5 per cent are over 60

The age profile of all founders and high growth founders is shown in Table 6. It shows the age at which the founders set up a limited company. As such it excludes those becoming self-employed (including a move into self-employment) or are considering doing so.[4]

4. This is in contrast to similar data from the Global Entrepreneurship Monitor.

The data confirm that business formation can be described as an inverted U pattern with the probability of setting up a business initially increasing with age, before declining after the age of 50. However, that probability remains relatively high until age 60, after which the decline is rapid.

When interpreting these figures, as illustrated in the Literature Review, it should be remembered that a substantial proportion of older people is already self-employed or running a business which they set up earlier in their lives. Consequently, data in Table 6 should not be interpreted as showing that older people lack enterprise.

Table 6: The age profile of founders and high growth founders

Age	All founders		
	Per 1000 pop.	Per cent of total	Per cent of high growth
Under 30	4.3	9.5	5.4
30 – 49	19.3	65.2	65.9
50 – 54	14.5	11.6	13.2
55 – 59	13.4	9.0	9.5
60 – 64	5.8	3.4	3.7
65 – 69	1.9	1.0	1.8
70+	0.3	0.3	0.4
All	10.4	100	100

Source: Analysis of TBR Economics data

When we analyse the age distribution of founders, we find over 65 per cent are in what is generally seen as the prime entrepreneurial group of 30-49 years of age. An estimated 25 per cent of founders are over 50, many in their early third age: those aged 50-54 account for 45 per cent of older founders, whilst just 4.7 per cent of all founders are over 60.

The age distribution of high growth founders shows that those under 30 are less likely to set up a high growth business – they account for barely 5 per cent of all such firms -whereas over 28 per cent of high growth firms have third age founders, making older founders marginally more likely to participate in high growth businesses than in other firms. For example, while those over 60 constitute 4.7 per cent of all founders, they account for 5.9 per cent of high growth founders.

Twenty five per cent of founding directors on the TBR database are women. Compared to men their entrepreneurship activity drops off somewhat earlier in life. Consequently, women account for just 20 per cent of companies set up by those aged over 60.

Third age high growth founders are predominantly well educated white British males

Evidence on founder characteristics from the survey is presented in Table 7. Seventy five per cent of founders are male; 91 per cent are White British and 55 per cent have a degree. With 41 per cent having an entrepreneurial parent, the data confirms the importance of parental influence.

Turning to high growth founders, women are less likely to be high growth founders: just 17 per cent are female. Older high growth founders are typically White British and well educated, with just over 50 per cent having a degree. They are more likely to have an engineering degree than their younger counterparts for whom Business Studies degrees are more usual.

Relatively few older high growth founders have (or had) an entrepreneurial parent. Indeed it might be expected that parental influence declines with age. However, evidence from the other third age founders does not support such a hypothesis.

Relatively few third age high growth founders are novices

Just over 70 per cent of all founders were ‘novices’ in that the business was their first, although nearly 30 per cent had set up at least one business previously. The likelihood of being a serial entrepreneur unsurprisingly increases with age: compared with 21 per cent of those under 50, 55 per cent of the over 50s had previous entrepreneurial experience.

Table 7: Some founder characteristics; percentages

	Low growth		High growth		
	Under 50	Over 50	Under 50	Over 50	All
Male	70	90	86	83	75
Female	30	10	14	17	25
White British	92	90	89	100	91
Other Ethnicity	8	10	11	-	9
Degree/Equivalent	52	63	62	51	55
First Time Founder	79	45	69	53	71
Parent Ran Own Business	40	45	47	26	41

Source: Telephone Survey

Just over 50 per cent of third age high growth founders say the start-up was their first new business (including most of those participating in a management buyout). Excluding MBOs, the majority of such founders had previously set up a new business. This reinforces the conclusion that there are few first time older founders who set up a completely new business that achieves high growth status.

Third age founders are more likely to participate in a team start-up

60 per cent of third age founders' participated as part of a team, whereas the same was true for only 39 per cent of the under 50s. Women were also more likely to have been part of a team. Compared with 51 per cent of men, 72 per cent of women participated in a team. While participation through a team does not appear to be age related for women, it is for men. Their participation in teams rises steadily from 50 per cent for the 30-49 age group to 64 per cent for the 64-69 age group and more dramatically to just over 80 per cent for the small number of founders aged over 70. The majority of older men's entrepreneurial activity is as part of a team.

Few third age high growth founders were out of work before setting up the business

Table 8 considers the situation of founders immediately before they set up their business and whether or not they left employment voluntarily. This shows that most founders were either employed or already running their own business before setting up the new firm. Very few founders had been unemployed or formally retired. Enterprise is much less likely after retirement.

Sixty four per cent of older high growth founders were in employment and a further 23 per cent were already running their own business immediately before setting up the new business. Just 10 per cent were unemployed or had retired and the proportion was smaller among the firms with low growth rates. There is little evidence here that large numbers of older founders of limited companies were pushed into the choice by unemployment or redundancy. A surprisingly high proportion of third agers were already running their own company before this latest venture. This emphasises the importance of entrepreneurial experience for older founders earlier in life.

Table 8: Percentage of founders immediately prior to business formation

	Low growth		High growth		
	Under 50	Over 50	Under 50	Over 50	All
In Employment	70	43	72	64	64
Running Own Business	20	40	20	23	25
Unemployed/Retired	6	4	4	10	5
Reasons For Leaving Last Job					
Made Redundant	16	10	11	11	14
Left Job Voluntarily to Set Up	73	60	65	53	70
Other	3	12	6	5	5
Retired (normal/early)	3	8	-	6	4
No Response	5	10	18	25	6

Source: Telephone Survey

Turning to the reasons why founders left their previous job, 70 per cent left voluntarily to set up this business. A further 14 per cent had been made redundant, a figure representing a fifth of those who were previously in employment. There is no evidence that a greater proportion of older than younger founders had been made redundant immediately prior to setting up their business. Nor is there a differential pattern amongst high and low growth founders. However, since a smaller proportion of older founders were previously in employment, a somewhat higher proportion of those in employment were made redundant than of their younger counterparts.

Just 6 per cent of all founders had retired immediately before setting up the business. These were not confined to the over-50s. For example, 3 per cent of younger founders say they had already retired when they set up the business.

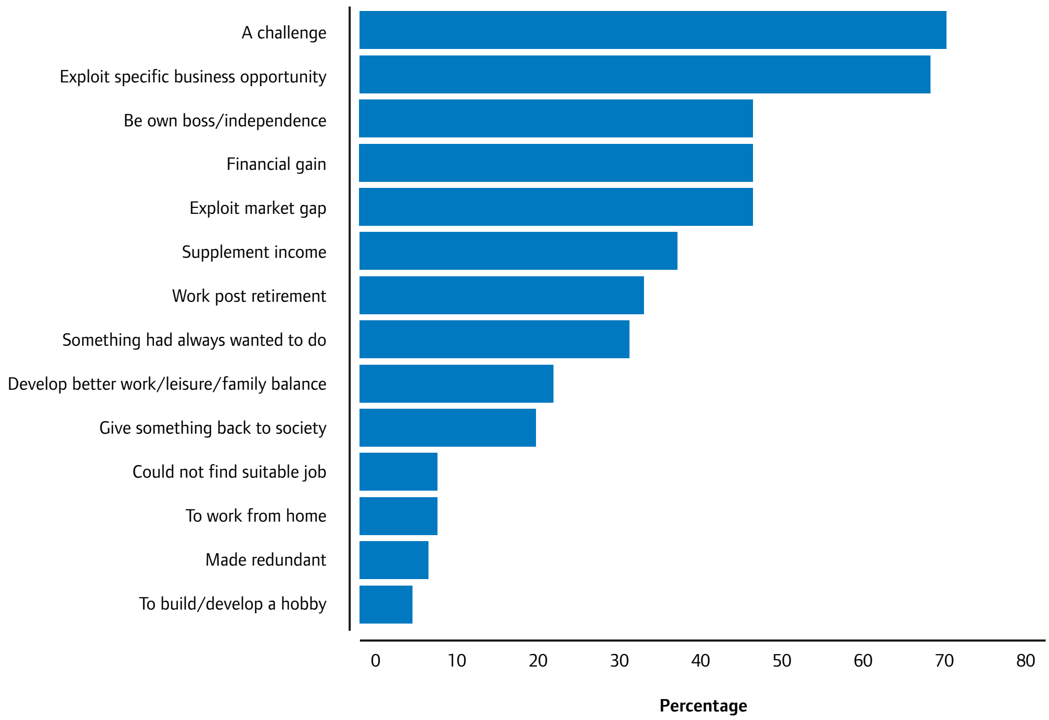
Interestingly, 10 per cent of older founders (compared with 5 per cent of younger founders) would not respond to this question. This is a non-response rate much higher than other questions. This appeared to be a particularly significant issue to the high growth founders.

They are more driven by a specific business opportunity than other founders

Figure 4 shows the factors deemed important by high growth third age founders in setting up the business. The most widely cited reasons are that it was an interesting challenge and to exploit a specific business opportunity. Beyond these, a wide range of factors came into play. The independence of being one's own boss and financial gain were very important motives for just under half the older high growth founders. Few felt pushed into becoming entrepreneurs: only 8 per cent say that redundancy was a very important motive, with a similar proportion noting the difficulty of finding suitable employment. Very few were motivated by the desire to work from home or to develop a hobby.

Perhaps the most interesting observation on motivation is that a third of respondents set

Figure 4: Third age high growth founder motives; percentage seeing motive as very important



Source: Telephone survey

up the business with a view to working beyond retirement age. As discussed subsequently, many plan a relatively late retirement. A similar proportion also say they set up the business as a way of giving something back to society, while a fifth wished to achieve a better work/family/leisure balance.

A comparison of older high and low growth founders found just two substantive differences. These were:

- The high growth founders were more motivated to exploit a specific business opportunity (often the chance of a buyout) and to fill a market gap.

- They were somewhat more driven by the challenge and the desire to give something back to society.

However, in other respects the motives of the two groups are very similar, although marginally more of the low growth founders may have been pushed by redundancy.

A comparison of the motives of older high growth founders with those of younger founders (high growth and low growth) found the following:

- The desire to be one's own boss is particularly important for those under 50. This is the most frequently quoted motive. While important to older founders, it is not the most frequently quoted motive. Also, high growth founders are somewhat less driven by this motive.

- The desire to work post-retirement is a driving factor for both high growth and low growth founders over 50. Only a small proportion of those under 50 are driven by this factor.

- The desire to exploit a specific business opportunity differentiates high growth third age founders from the rest. This probably reflects their involvement in management buyouts.

- The desire to give something back to society appears to be a motivating factor for only older high growth founders.

- Perhaps surprisingly, rather more high growth founders (32 per cent) under-50 say that achieving a better work/leisure/family balance was a very important motive. This aim is far from limited to older founders.

The desire for financial gain and additional income are no more important amongst older than younger founders.

Third age founders are no more risk averse than younger founders

Evidence from the Literature Review suggests older people may be somewhat more risk averse than younger people. This could both reduce the probability of their setting up in business and influence the nature of any businesses they do set up. For example, older people could be less willing to invest the resources (either their own or borrowed) necessary to create a growth-oriented business.

However, Table 9 shows that the survey found no evidence that third age founders are more risk averse than other founders. Indeed, if anything, they took rather greater risks in setting up the business.

The majority of all founders believe that starting a company involves great personal risk. Presumably this view has been influenced by experience. However, the risk clearly did not prevent them from starting a business. This suggests that perceived risks are outweighed by other factors. The majority say they enjoy the challenge of situations many would see as highly risky. Founders in both age groups see themselves as risk takers and this is particularly true of high growth founders.

If third age entrepreneurs are more risk averse than other founders, we might assume that few would take a substantial personal financial risk when setting up the business. However, just over 40 per cent of older high growth founders say they took a substantial personal financial risk. Indeed, founders aged over 50 appear to have taken a greater financial risk than those under 50. It also appears there is a link between taking personal financial risk and growth. More high than low growth founders (of all ages) took a substantial financial risk.

Similarly, if third age founders are more risk averse, one might expect them to have a substantially greater degree of certainty about the likely success of their business. If they were not reasonably certain of success, they would not have set up the business. However, this is not the case for high growth founders: they were less certain of success than younger high growth founders. However, for low growth businesses, those over 50 were more certain of

Table 9: Founders attitudes to risk; percentage of founders by age and growth categories

	Low growth		High growth	
	Under 50	Over 50	Under 50	Over 50
Agree starting a business involves great personal risk	67	73	76	78
Agree they enjoy the challenge of situations many would see as risky	74	71	94	85
Took a substantial personal financial risk when set up	23	28	36	42
More or less certain business would be successful	58	70	68	58
Preferred guaranteed £80k over 25 per cent chance of £400k	59	57	59	60

Source: Telephone Survey

success. It may be that this group is more risk averse than their younger counterparts.

Finally, when asked to trade off a guaranteed £80,000 for a 25 per cent chance of obtaining £400,000, around 40 per cent of all founders (regardless of age or whether or not they are high growth), chose to take the risk to get the £400,000. There is no evidence that the inherent willingness to take a financial risk (or gamble) varies either between the age groups or whether or not the business achieves high growth.

Nor do they have shorter time horizons

Linked to the argument that older people are more risk averse is the hypothesis that they also have a shorter time horizon. They are thought to be less willing to forgo current income and invest both finance and time/effort for future returns (the essence of setting up and growing a business). After all, their life expectancy is shorter.

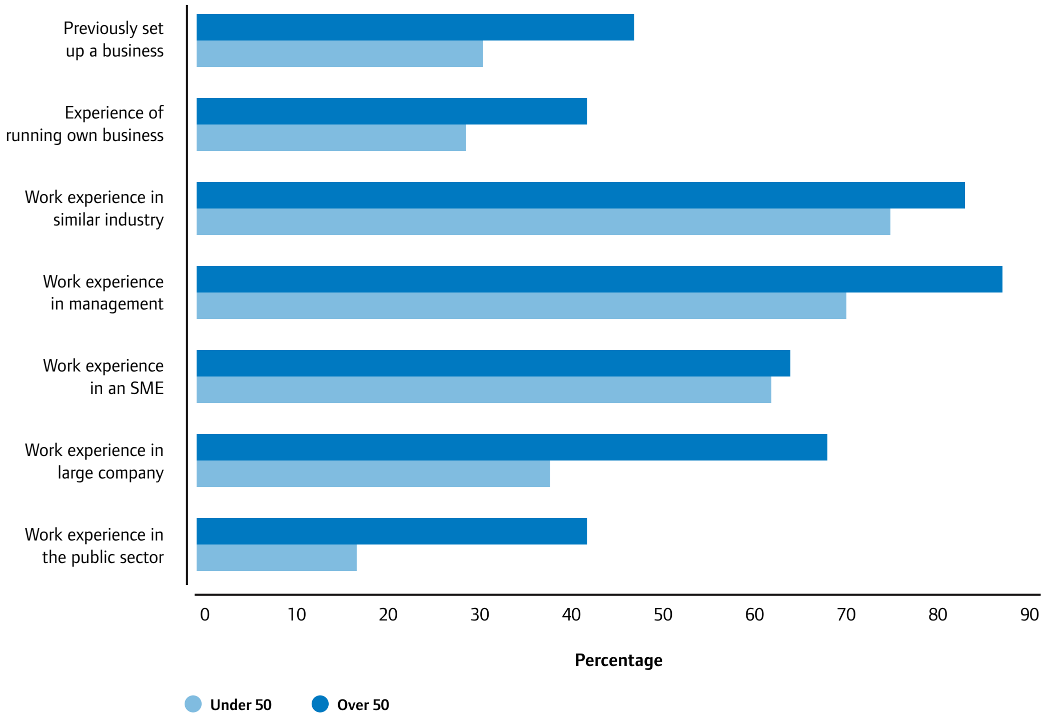
However, the evidence presented in Table 10 implies that all entrepreneurs, regardless of age, have relatively short time horizons. Somewhat more third age founders thought it would take four years or more for the business to achieve profitability. This does not suggest

Table 10: Founder time horizons by age and growth status; percentages

	Low growth		High growth	
	Under 50	Over 50	Under 50	Over 50
Expected profitability to take 4 years or over	10	13	10	18
Expected reasonable personal income within 3 years	85	78	69	69

Source: Telephone Survey

Figure 5: The experience of third age and younger high growth founders; percentage of founders



Source: Telephone survey

5. However, there could be a relationship between large company experience and MBOs. Consequently, before concluding that large company experience is a key influence on the achievement of high growth, the influence of this relationship should be examined.

that older founders have shorter time horizons than younger founders.

A similar conclusion is reached by an analysis of how quickly founders expected to make a reasonable personal income from the business. The majority of all founders expect this to be achieved within three years. Fewer of those involved in a high growth business expect this to be achieved though 69 per cent still expect a reasonably quick income. Indeed, those under 50 are more likely to expect a reasonable income to be generated within three years than those over 50.

Third age high growth founders have important advantages: experience, money and fewer concerns

The most obvious potential advantage of older founders is their greater experience. This is illustrated in Figure 5 which compares the experience of third age high growth founders with the experience of younger high growth founders. The older founders systematically have more experience. Substantially more have previous entrepreneurial experience or have worked in large private sector companies or the public sector. With little difference, the one exception is experience in the small firm sector.

Similar comparisons between all older and all younger founders and between lower growth older and younger founders support two important conclusions:

- While third age founders have more entrepreneurial experience, such experience does not differentiate between high growth and low growth businesses. In other words, previous entrepreneurial experience does not appear to be associated with additional growth.
- High growth founders have substantially more experience of large private sector companies and management than low growth founders regardless of age.[5] The data suggests that it is these elements of experience which contribute to high growth.

Other aspects of experience, such as working in a small or medium-sized firm, do not influence the levels of growth achieved by the business. Such experience may, however, influence whether or not a business is set up in the first place.

A second advantage of third age founders is that they have fewer concerns about setting up in business. Again, comparing older and younger high growth founders, in Table 11, we see that older founders were less likely to worry about risks, experience or family life than younger founders. For example, significantly fewer were concerned about the lack of security on leaving regular employment, the attitude of family and friends should the business fail or that their house would be repossessed should the business fail.

A comparison with younger and third age lower growth founders found that these factors differentiate between age and not between a firm's level of growth. Whilst such concerns may influence decisions about whether to start up in the first place, they do not affect subsequent growth status.

Nevertheless, there are still some substantial barriers for a minority. It is perhaps not surprising that those who set up in business had relatively few concerns about doing so. However, a small minority had major concerns. As illustrated in Table 11, 30 per cent saw the effects of starting a business on family life as a major concern and 25 per cent saw the lack of security of leaving regular employment as major concerns. As in the pervious analysis there are no differences between high and low growth founders.

On some of these issues, older founders may be more polarised than younger ones. While a greater proportion say all these issues were not at all a concern, marginally more saw the lack of security on leaving employment and taking on additional responsibilities as a major concern. This illustrates the heterogeneity of third age entrepreneurs. Whilst the majority were not at all concerned about the loss of security on leaving regular employment, one quarter were very concerned.

The one issue on which older founders had a distinct advantage relates to the possibility of the house being repossessed should the business fail. For the vast majority (74 per cent) it was not at all a concern. This compares with 60 per cent of younger founders. It was a major concern for just 11 per cent of older founders compared with 20 per cent of younger founders.

A third advantage is that rather more third age founders have an alternative source of income. Almost 40 per cent of all third age founders say they have an income from outside the business compared with less than 30 per cent of younger founders.

Table 11: High growth founders' start-up concerns

	Percentage saying concern not at all important		Percentage saying a major concern	
	Under 50	Over 50	Under 50	Over 50
Lack of security on leaving regular employment	49	58	19	25
Difficulty of finding another job should business fail	70	74	6	9
Effects on family life (e.g. via workload, etc.)	39	43	26	30
House being repossessed should business fail	60	74	20	11
Taking on new responsibilities (e.g. people management, accounting)	50	57	17	15
Did not have the necessary skills	64	81	4	8
Attitudes of friends/associates should the business fail	66	85	9	4

Source: Telephone Survey

Table 12: The health of founders by age and growth status; percentage of respondents in good health

Under 50; low growth	96	
Over 50; low growth	83	
Under 50; high growth	90	
Over 50; high growth	94	
All founders	93	

For third age founders, not surprisingly, their main alternative income source is a pension (23 per cent). Approximately 10 per cent have a second job or income from property or investments and 5 per cent have income from other directorships. These proportions are similar between firms with different growth levels. As indicated in the Literature Review in Appendix B, access to an alternative income source may influence the decision as to whether or not to set up a business, but it does not influence whether or not the business achieves growth.

Health is probably a substantive barrier for many non-founders

The vast majority of founders say they were in good health when they set up the business. Table 12 shows this is particularly true for high growth third age founders and younger founders. In contrast, a smaller proportion (but still a high 83 per cent) of third age low growth founders say they were in good health.

Good health appears to be almost a pre-requisite for setting up a new business, particularly one achieving rapid growth. Given what is involved in business formation, this should not be surprising; those in poor health rarely set up a business.

As noted in the Literature Review, the proportion of the population saying they are not in good health increases from 40 per cent in the 50-54 age group to 51 per cent for the 60-64s. Those not in good health are, not surprisingly, unlikely to set up in business. Consequently, biology is self-evidently an important barrier to third age entrepreneurship. Furthermore, this fear of failing health and the attractiveness of retirement are substantive additional barriers.

Conclusions

The majority of older high growth founders are well educated, white, British males, with women significantly underrepresented. The probability of an individual setting up a business declines with age after 50. However, it remains relatively high until the age of 60, when it declines much more rapidly.

Relatively few third age founders are motivated by unemployment and redundancy. Older high growth founders are more driven by the exploitation of a specific business opportunity, the challenge, the desire to give something back to society, or a wish to continue working beyond retirement age. They are no more risk averse than other founders, nor do they have shorter time horizons. This is because all founders expect relatively quick returns.

Most third age founders have fewer concerns about the new business than younger founders: they are less likely to worry that their house will be repossessed should the business fail, and many have an alternative source of income. Nevertheless, a substantial minority had major concerns relating to loss of security on leaving regular employment, the effects on their family life and taking on additional responsibilities when they set up in business.

Not surprisingly, older founders have a wider range of experience than younger entrepreneurs. Rather more have previous start-up experience. However, this does not appear to bring about greater growth. Experience of management and working in a large private sector business differentiates high growth from low growth founders.

Part 4: The new start growth process

This chapter examines the nature of third age high growth businesses and identifies what, if anything, differentiates them from high growth businesses set up by younger founders. As a means of identifying potential constraints, it also compares them with low growth businesses.

However, 30 per cent of older founders of smaller firms say they are definitely not seeking to grow the business. This is rather more than the 21 per cent of their younger counterparts expressing the same view. There is an indication here that a minority of third agers are engaged in 'lifestyle' businesses.

Third age high growth founders have ambitions for further growth

Table 13 shows the proportion of founders saying they are actively trying to grow the business over the next two or three years. The majority of founders are actively trying to grow the company. This is true for both those which currently have 25 or more employees and for the smaller businesses. However, rather more of the high growth founders are actually seeking to grow the business. There is little difference between older and younger high growth founders.

Compared with low growth founders, third age high growth founders are more innovative

The contribution of new firms and, in particular, older founders to innovation was outlined in Part Two. Table 14 presents a description of the nature of innovation by age of the founder and whether or not the business achieved high growth status.

Just over 60 per cent of high growth founders say their business was formed on the basis of at least one innovation. There is little difference

Table 13: Growth ambitions; percentage of founders

Younger founders	Low growth	79
	High growth	88
Older founders	Low growth	70
	High growth	85
All founders		77

Source: Telephone Survey

between older and younger high growth businesses. However, there is a clear difference between high and low growth businesses. The former are significantly more likely to be innovative.

While age is not a differentiator within high growth new starts, older low growth founders are less innovative than their younger counterparts. Only 30 per cent say their business introduced an innovation compared with 49 per cent of younger founders.

The most widespread form of innovation amongst new companies is the introduction of new or significantly improved products. As with other forms of innovation, high growth businesses are somewhat more likely to be based on this form of innovation. Third age high growth businesses may be somewhat more product innovative. Some 15 per cent of new business believe they introduced a radical innovation (i.e. new to the world or the UK) when they were set up. However, radical product innovation does not seem to differentiate between high growth and low growth. Older founders are just as likely to be involved in radical innovation as younger founders.

Nearly 30 per cent of high growth businesses say they have introduced further product innovation since the start-up. Again there is no evidence that third age founders are less involved in this form of innovation. High growth businesses are more likely to have made such innovations.

Rather fewer founders (12 per cent) say the business was based on new processes or distribution systems. However, a third of growth businesses say the start-up was based on a new business model. Again, within high growth businesses there is no significant difference between older and younger founders. However, there is a significant difference between high and low growth businesses with the latter less likely to introduce a new of improved business model. Within low growth business there is a substantial difference between older and younger founders. Very few of the former say the businesses adopted an innovative business model.

Table 14: The nature of innovation by age of founder and growth status; percentage of businesses

	Low growth		High growth		
	Under 50	Over 50	Under 50	Over 50	All
Product innovation	33	30	40	49	32
New to world/UK	14	15	16	13	14
New to region/market /industry	19	15	24	36	18
Subsequent product innovation	15	17	26	32	16
Process innovation	12	10	18	15	12
New to world/UK	8	5	7	6	7
New to region/market /industry	4	5	11	11	4
Business model innovation	22	5	37	32	18
At least one innovation	49	30	62	58	45

Source: Telephone Survey

Management style and effort are probably influential growth factors

Figure 6 compares the management style and 'work ethic' of the founders of high growth and other firms led by third age entrepreneurs. Each category of firm is characterised by a very different management style: high growth founders are significantly less conformist and much more ready to delegate.

Older high growth founders also make somewhat different leisure/work trade-offs than other founders. Rather more say they frequently sacrifice their leisure time for work and somewhat fewer believe the business could grow more if they were willing to put in more time and effort. Commitment and hard work appear to influence growth. Even so, the majority of older lower growth founders say they frequently sacrifice leisure for work and only 40 per cent believe that more growth could be achieved if they were willing to work harder.

A comparison between older and younger high growth entrepreneurs found no significant differences in their management style or work ethic. If anything, the third agers are marginally less conformist. They are equally likely to sacrifice leisure time for work and do not believe more growth could be achieved if they could put in more time and effort.

A comparison of older and younger low growth businesses found:

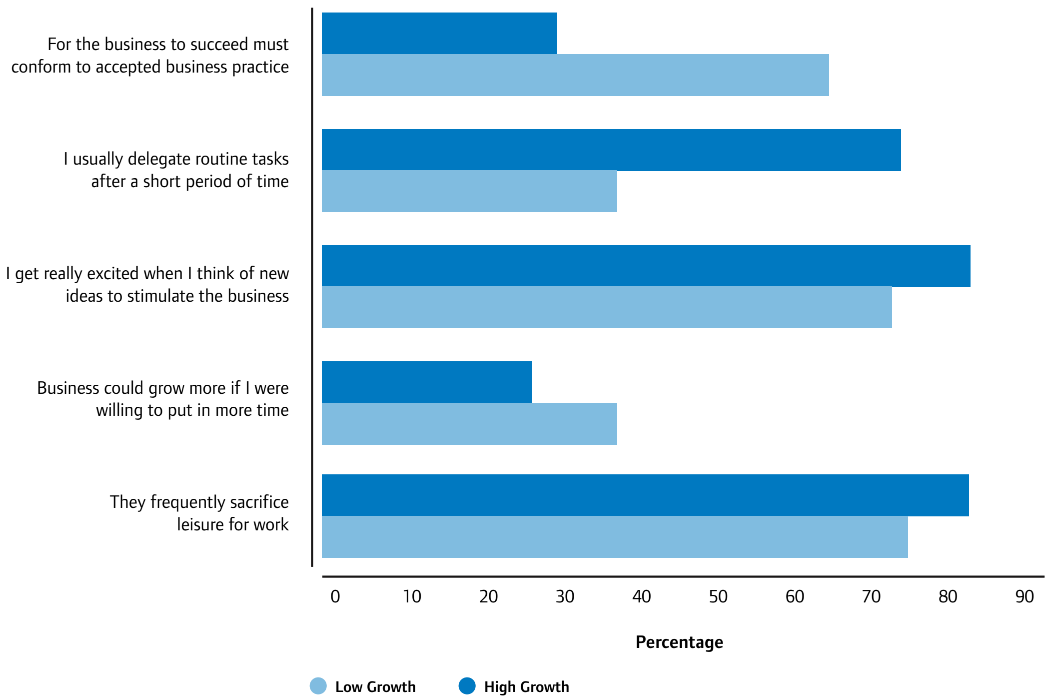
- Third age founders were significantly more conformist. Compared with 44 per cent of younger founders, 65 per cent of older founders agreed that to succeed in business it is necessary to conform to accepted business practices.
- They are also less ready to delegate. Just 38 per cent of older founders would delegate routine tasks after only a short period of time, compared with 57 per cent of younger founders.

These findings are again consistent with the hypothesis that a greater proportion of low growth businesses set up by older founders are, in some sense, 'lifestyle businesses'.

Competitive advantage

The sources of competitive advantage enjoyed by the businesses of older high growth

Figure 6: A comparison of founder attitudes in third age high growth and low growth start-ups: percentage agreeing with…



Source: Telephone survey

founders are shown in Figure 7. The vast majority believe their own personal effort and expertise are very important to the business' success. Factors most likely to lead to success include having a unique or highly differentiated product, low costs due to high productivity/ efficiency and the application of IT. Relatively few see low wages and the production or distribution systems as very important.

Over and above these sources of competitive advantage, approximately 60 per cent said other factors were also very important. These varied, though they most frequently related to training, staff quality and commitment.

A comparison with younger high growth founders and low growth founders (both age groups) shows remarkably few differences. An almost identical proportion believes these sources of competitive advantage are very important. The main differences are:

- A somewhat greater proportion of older founders (high and low growth) say that a unique or highly differentiated product is a very important source of competitive advantage.
- Rather fewer high growth founders (in both age groups) say low wage costs are a very important source of competitive advantage.

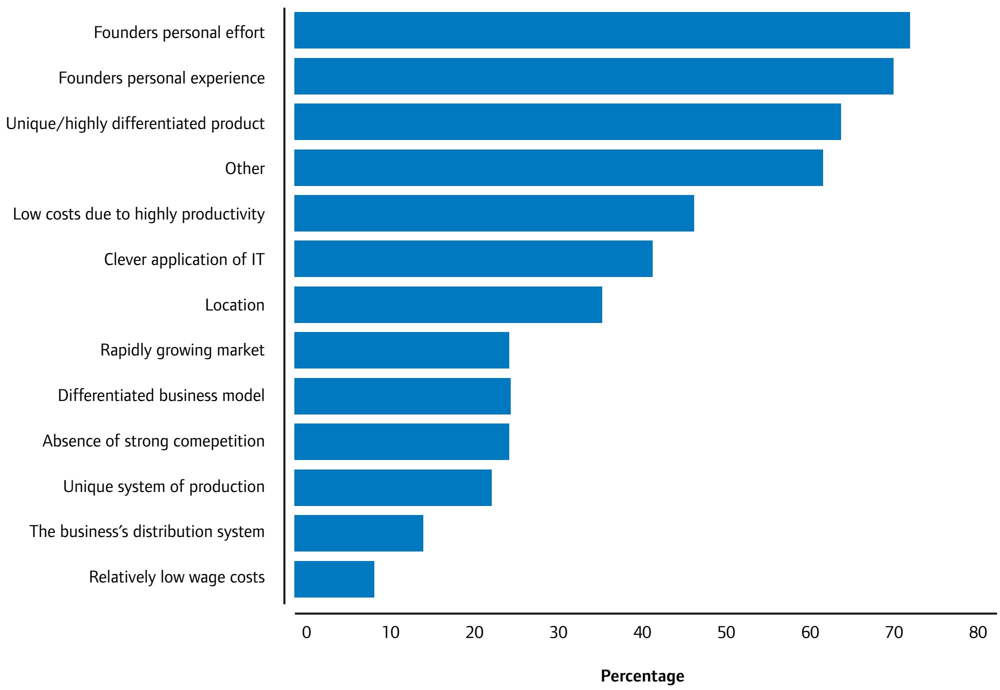
Beyond this it may be that a somewhat greater proportion of high growth businesses (regardless of founder age) derive competitive advantage from their production system. However, the differences are small.

High growth founders are somewhat more concerned to protect their IP

Figure 8 compares how third age high growth and third age low growth founders protect intellectual property. The high growth founders see all the mechanisms as more important. The most widely used mechanisms by older high growth founders are confidentiality agreements, secrecy and lead time advantage.

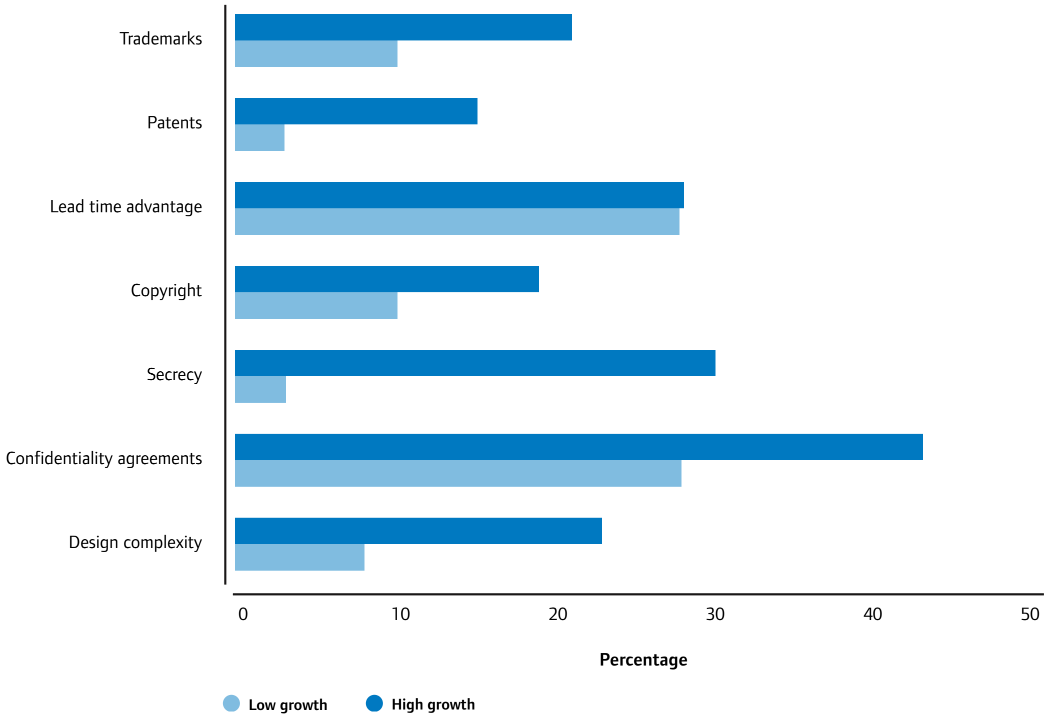
However, each individual mechanism is very important to only a small proportion of companies. For example, only 15 per cent of high growth and 3 per cent of low growth companies see patents as very important.

Figure 7: Third age high growth sources of competitive advantage: percentage of founders seeing factor as very important



Source: Telephone survey

Figure 8: A comparison of high growth and low growth founders mechanisms for protecting IP; percentage of businesses



Source: Telephone survey

A comparison between older and younger high growth businesses shows:

- The ranking of methods is the same with very similar percentages.
- There is no evidence that older founders make less use of any of the IP mechanisms.
- There is some evidence that older founders make more use of secrecy.

Table 15: Growth constraints: percentage of founders identifying factor*

	Low growth		High growth	
	Under 50	Over 50	Under 50	Over 50
Not seeking to grow*	21	30	11	14
State of the market	51	60	63	51
Raising investment finance	10	11	19	18
Recruiting labour	11	3	13	11
Strength of competition	6	-	10	-
Recruiting management	2	-	8	4

Source: Telephone survey
Note: *Apart from 'not seeking to grow', per cent are of those seeking to grow the business.

A comparison between older and younger low growth founders found no substantive (or statistically significant) differences.

The protection of IP differentiates between high and low growth businesses regardless of the founders' age. There is no evidence that third age and younger founders make differential use of available IP protection mechanisms (though older high growth founders may rely somewhat more on secrecy).

The constraints on the growth of high growth businesses are the same regardless of age

The constraints on business growth identified by the founders are shown in Table 15. The main differentiating factor is whether or not the founder is seeking to grow the business. A greater proportion of younger founders are seeking to grow the business. More of the founders of the larger businesses are also seeking to grow the business.

The main constraint identified by those trying to grow the business is the state of the market. This is true regardless of age and the growth status of the business.

No systematic differences by founders' age were identified. The high growth founders tended to identify more constraints. For example, 19 per cent of high growth founders identified raising investment finance compared to 10 per cent of low growth founders. Similarly 8 per cent identified the difficulty of recruiting additional management compared to 2 per cent of low growth businesses.

The proportion of low growth firms quoting these constraints can be taken as an indication of how many new firms these constraints affect. Hence, essentially 7 per cent of all new firms say raising the necessary investment finance is a growth constraint with a similar percentage identifying labour recruitment. Many other specific factors such as cash flow, management time and technical problems were identified by a handful of founders of all ages. There were no differences by age.

When those not seeking to grow were asked why they were not seeking to grow, the most comment responses were simply 'they did not wish to grow' and the 'state of demand.'

Many third age founders intend to work post retirement age

As already indicated, the desire to continue working past retirement is a very important motive for 30 per cent of third age founders. This is reflected in retirement plans. Just over 50 per cent say they intend to retire after age 65 with a further 22 per cent saying their retirement will depend on their health. Of the older high growth founders, rather fewer (30 per cent) intend to retire after the age of 65. In contrast, fewer (19 per cent) younger founders intend to retire so late in life.

What impact does this have on longer term plans for the business? Here there is a distinct difference between younger and older founders.

- Almost 70 per cent of younger founders, compared with less than 50 per cent of older founders, believe the business will continue over the next ten years as an independent concern. There is no difference between high and low growth firms.

- A greater proportion of third age founders (25 per cent compared with 18 per cent) expect their business to be sold as a going concern. Those with a high growth business are marginally more likely to believe this.

- Slightly less than 10 per cent of founders plan to leave the business to a family member. There is no difference between age groups or whether or not the business is high or low growth.

- Third age founders are more likely to say the business will be closed within 10 years. While this applies to 13 per cent of older founders, just 2 per cent of younger founders believe the business will close in the next 10 years.

However, very few high growth older founders say the business will close. It is the older low growth founders who expect to close the business.

Low growth third age founders are different

As already indicated, there are few substantive differences between older and younger high growth business founders. They are equally innovative, have similar growth ambitions

Table 16: Comparison of low growth older and younger founders; percentages

	Over 50	Under 50
Not trying to grow business	40	21
No innovation	70	51
Agreeing that to succeed must confirm to accepted business practice	65	43
Do not delegate routine tasks after short period of time	62	43
Not in good health when set up business	17	4
Large company work experience	35	48
More or less certain business would be successful	70	58
Business will be closed in next 10 years	13	2

Source: Telephone survey

and share attitudes to work, effort and management style.

In contrast, Table 16 brings together data on a theme which emerges throughout the analysis. It shows significant differences between older and younger founders of low growth businesses. Substantially more third age founders are not seeking to grow the business. They are also less likely to have innovated and more likely to believe they must conform to existing business practice to succeed. They are both less ready to delegate and more likely to expect their business to be closed within ten years.

Given these findings, it is perhaps not surprising that businesses set up by third age founders are generally less likely to grow than those set up by younger founders.

Third age growth constraints

The preceding paragraphs illustrate some of the factors which constrain the growth of third age new starts. Many are simply not seeking to grow. They are not innovative and may have a less than effective management style. A rather different way of analysing the growth constraints is to compare the third age high and low growth new starts. This essentially holds the age variable constant. The comparisons are shown in Table 17. These comparisons reinforce many of the previous findings.

Nevertheless, it perhaps illustrates more clearly some of the factors constraining growth amongst third age entrepreneurs. Some of the constraints are probably built in at the company's formation. For example:

- Those setting up the business to exploit a specific opportunity or fill a market gap are more likely to grow.[6]
- Those setting up to work from home or achieve a better family/work/leisure balance are somewhat less likely to grow.
- Those seeing entrepreneurship as a challenge or wishing to give something back to society are more likely to grow.
- The founder's previous experience has an impact. For example, experience of management or of having worked in a large company appears to have a positive growth effect.
- Businesses based on some form of innovation at start-up are more likely to grow.

However, whether or not the founder is an inherent risk taker, has an alternative income source or had financial gain as a start-up motive appear to have no effect. Similarly, pervious entrepreneurial experience seems to make no difference.

Perhaps surprisingly, no differences emerged between the two groups in their companies' sources of competitive advantage. However,

6. However, given that the specific business opportunity is often an MBO, it may be that some of these businesses began life relatively large.

Table 17: Comparison of third age high growth and low growth new starts; percentage of founders

	High growth	Low growth
Not in good health when set up	6	17
Start-up motives very important		
To work from home	9	18
Better family/leisure/work balance	23	30
Exploit business opportunities	68	48
Fill a market gap	47	35
Give something back	21	10
An interesting challenge	70	53
Experience		
Ran own business	42	50
Management	87	65
Large company	64	35
A professional job	68	57
A risk taker	60	57
Has alternative income source	36	40
No innovation	42	70
Not seeking to grow business	17	30
Took substantial personal financial risk	42	28
More or less certain business would succeed	58	70
Could grow more quickly if put in more time and effort	27	38
To succeed must conform with established business practices	30	65
Delegate routine tasks quickly	74	38
Get excited when i think of new ideas to stimulate the business	83	73
Agree sacrifice leisure for work	83	75
Agree enjoys challenges many see as risky	85	71

ambition and management style do come into play.

- A greater proportion of the low growth businesses have a founder not currently aiming to grow the business. Even so, the majority of the low growth founders are trying to grow their businesses.
- The founders of high growth businesses appear a little more excited by coming up with new ideas, they are more willing to delegate and believe less in established conventions and practices.
- There is some evidence that the founders of high growth businesses are a little more willing to work hard to achieve growth.

Other differences which emerge (e.g. high growth businesses make some more use of formal IP protection) may be as much an effect as a cause of growth, or may simply reflect the nature of the business – they may have an innovation to protect.

An interesting finding is the relationship between risk taking and growth. Those taking a substantial personal financial risk are more likely to achieve growth. Their start-ups were more risky in that they were less certain the business would be a success. However, financial risk takers (or those willing to gamble) are no more likely to set up a high growth business than non-gamblers. Similarly, differences in time horizons appear to have no effect on whether or not the founder set up a high growth company. Finally, while those taking a considerable financial risk are more likely to set up a high growth company, the majority of those setting up high growth companies took limited financial risk.

Conclusions

The results show that older founders of high growth start ups (and the businesses they found) are remarkably similar to their younger counterparts.

There are bigger differences between third age high growth and low growth founders and their businesses than between older and younger founders of low growth businesses. These differences illustrate the factors constraining growth amongst third age start-ups. These include:

- Less desire or motivation to grow the business with a somewhat greater orientation to lifestyle businesses.
- A lower level of innovation, especially in terms of innovative business models.
- A more conformist approach to business with less willingness to delegate.

However, it should be emphasised that some growth constraints are the product of the entrepreneur's life history (his/her experience) and others are built in at the start-up stage (the start-up motives).

Part 5: Discussion

This final chapter discusses implications of the research for policy and third age start-ups. Realistic policy conclusions rarely follow from a single piece of research. They should take into account all available evidence. Consequently, in addition to the research presented in this report, this discussion draws on the analysis of the Small Firms Survey, Literature Review and Case Studies included as Appendices B, C and D. However, first we would like to touch on an important methodological 'problem' which affects the interpretation of the research presented in the preceding chapters.

The 'self selection' sample problem

The research is about new businesses set up by those aged over 50 – in their third age – which have achieved 'high growth' status through employing 25 or more staff after 3-6 years of operation. In most respects there are relatively few differences between these businesses and high growth new starts set up by younger founders. This is not surprising. Similar characteristics, motives, business strategies and other factors determining business success are required regardless of the age of the founders. In other words, the third age high growth businesses in the sample are 'self-selecting' on the basis of their success. As such, third age high growth businesses and their founders is a biased sample.

This limits the conclusions which can be drawn from the research. For example, it is not possible to identify the factors which are barriers to third age start-ups or constraints on their subsequent growth by examining only those who have 'made it' (and survived). It is also necessary to study those who have not set up in business to identify start-up barriers and determine how third age entrepreneurship might be increased. Similarly, to identify growth constraints, it is necessary to study those not achieving growth (since they may have experienced constraints) rather than simply those achieving it (who obviously did not experience insurmountable constraints).

The role of risk aversion illustrates the point. The research shows that older founders are no more risk averse than younger founders. Consequently, it could be concluded that risk aversion is no more of a constraint on third age entrepreneurship than on entrepreneurship amongst the young. However, older individuals who are highly risk averse simply may not set up in business and would not appear in a 'self selecting' sample. Risk aversion may be more widespread amongst the third age population and so could be a constraint on third age business formation.

To overcome this difficulty it is necessary to examine the attitude to risk of the wider population. As illustrated in the Literature Review (Appendix B), available evidence suggests that the third age population is more risk averse than younger age groups and that this may constrain business formation. From the evidence presented in this report, this cannot be identified simply by examining those who have set up in business.

To illustrate further, a key question is whether health is a constraint on third age entrepreneurship. The research found that almost all older founders say they were in good health when they set up their business. This could lead to the conclusion that health is not a barrier to third age entrepreneurship and not an issue for business support services.

However, a substantial minority of over-50s is not in good health. These individuals do not set up in business. Health is a constraint which cannot be identified by examining only those who have successfully set up in business. This illustrates the 'dangers' of seeking to draw out implications or recommendations from single studies and the need to draw on the wider evidence reported in the Literature Review.

Entrepreneurship and innovation

Before discussing issues relating to third age entrepreneurship, it is worth considering the relationship between entrepreneurship and innovation. Approximately 45 per cent of all surviving new firms say they introduced some form of innovation when they were set up. Indeed, 14 per cent say they introduced a product innovation which they believe to be new to the UK or the world. New firms make an important contribution to the innovation process. Entrepreneurship and start-ups need to be an integral component of innovation strategies.

However, strategies should recognise that there is only a loose relationship between innovation and high growth new starts. Innovative new starts are more likely to achieve growth. Nevertheless, many new starts achieve growth without any innovation (at least as perceived by the founder), while many introduce innovations but do not achieve large scale success or growth. Other small new firms make important contributions to innovation but will never achieve substantial growth. Strategies for high growth new starts are not the same as strategies for innovative or high tech new starts. They overlap, but are not identical.

Older people make an important contribution to both innovation and entrepreneurship. For example, they participate in the founding of 27 per cent of all new limited companies and 29 per cent of those expanding to employ 25 or more staff. Third age entrepreneurs are responsible for around 20 per cent of all new innovative start-ups. They are well represented in sectors such as high tech and the creative industries. Their contribution to entrepreneurship is considerably greater than perhaps previously recognised and has probably increased considerably during the recent past.

Third age founders setting up high growth new starts are little different to their younger counterparts. Their businesses obtain their competitive advantage from the same factors. They are no more risk averse or short term in their outlook. They demonstrate clearly that they 'can do it'. Nothing emerges from the research which justifies discriminating against entrepreneurs simply on the basis of age.

Nevertheless

Businesses set up by older founders perform marginally less well than those set up by younger founders. A smaller proportion achieves high growth and average employment per new firm is marginally lower. A rather smaller proportion is innovative; conversely, there appears to be a relatively larger pool of third age 'lifestyle' new starts than amongst younger founders. As with all new starts, there are relatively few third age high growth start-ups.

But mixed age teams perform well

Key conclusions from the research concern the role of teams in the start-up process, their importance to third age founders and the superior average performance of team start-ups. Approximately 37 per cent of all new limited companies are set up by a team rather than an individual entrepreneur, 56 per cent of founders participate as part of a team and 69 per cent of third age founders are part of a team.

On average, a slightly above average proportion of businesses set up by teams achieve a scale of at least 25 employees. They also have a slightly above average number of jobs per firm. Businesses set up by mixed age teams perform better than businesses set up by individual founders, teams made up of all younger founders and especially teams consisting of only third age founders.

The research did not examine why mixed age team start-ups have above average growth performance. However, it can be hypothesised that mixed age teams are more likely to bring together complementary skills and experience. The enthusiasm of youth complements the experience and knowhow of age. The research does demonstrate that older team members are not simply 'passengers' or brought in by younger founders to provide credibility or advice. Compared with younger team members they are just as likely to be the source of the business idea and to have initiated the start-up.

Dealing with third age

There are at least two ways in which third age founders overcome the effects of ageing. The first is to set up and run the business as part of a team, especially a mixed age team. The second is to work in partnership with another business, and essentially subcontract the 'hard slog' of building a business. This strategy can work well into third age by subcontracting the necessary travel, involved in, for example, raising venture capital and marketing while the older entrepreneur concentrates on his or her interests perhaps in laboratory-based innovation.

Third age as a priority market segment

Inclusion, economic development and/or innovation

As noted in Part One, third age business founders and formation have been given greater policy profile and priority in recent years. This reflects both short term and longer term socio-economic changes. In the short term, it is expected that the current recession will disproportionately affect older workers in terms of redundancy and unemployment. This could push those made redundant into early retirement and withdrawal from the labour market.

Some of these individuals have the necessary skills, experience and resources to continue to contribute through self-employment and business formation. The research suggests this is unlikely to happen once the individual leaves the labour market. Contacts and networks may disappear. Ideally, entrepreneurial encouragement and support are required before the individual is forced out of the labour market.

Given the recessionary environment, there could be an increased number of involuntary entrepreneurs. This could reduce the average performance of the third age businesses. However, it is important to stress that new starts which remain small make a significant economic contribution and that some reluctant founders 'make it big'.

The longer term pressures arise from changing demographic characteristics. Amongst the many implications are the rising population dependency ratio and the 'pension problem'. Self-employment and business formation are two ways of enabling third age individuals to continue working after the official retirement age. The ability to work beyond the official retirement age is an important motive for a substantial minority (just over 30 per cent) of third age business founders. This is a motive which clearly differentiates them from younger founders who expect to retire earlier. Encouraging and enabling more third age entrepreneurs may make a small contribution to mitigating problems arising from the increasing population dependency ratio and the pensions problem.

The proportion of new businesses set up by third age founders will increase in the future. This will be brought about not only by changing demographics but also by an increase in the entrepreneurial potential of older people. This could reflect longer life expectancy, improved health and inter-generational change with an increasing number of the over-50s having been exposed to the option.

However, in assessing priorities it is necessary to put third age business formation into a wider context:

- The likely returns from focusing on, for example, young people compared with older people should be more systematically assessed. Young people's attitudes and abilities may be more malleable and such a focus could have greater long term returns.

- The potential for further increasing the proportion of over-50s who set up in business may be limited. As illustrated in the Literature Review (Appendix B), a large proportion of older people have little interest in the entrepreneurship option, are not in good health or are already self-employed or running their own business.

- There are relatively few novice third age founders, and many already have previous entrepreneurial experience. To increase third age entrepreneurship, the best bet may be to stimulate entrepreneurship earlier in life. Increasing the entrepreneurial interest and potential of those aged between 40 and 50 would increase third age entrepreneurship in the next decade.

This requires a long term perspective. Beyond short term recessionary issues, such an approach could mitigate the problems arising from long term changes in the UK's demographics.

From the perspective of innovation and economic development, nothing emerges from the research which justifies discriminating against third age individuals. They self-evidently can – and do – set up high growth new starts and can be just as innovative. On the other hand, there is little to justify treating third age as a priority market segment. The number of high growth new starts is small. Even with very successful policies, it will remain so. This raises the question of whether specifically designed policies or services could be cost effective.

Furthermore, nothing emerges from this research which suggests that, as a market segment, older entrepreneurs have distinctive requirements. The main issue may be to ensure they do not suffer from discrimination purely on the basis of their age.

However, one issue may warrant a more explicit third age dimension. Many social needs will be driven by an ageing population. These needs will require much product innovation. Older entrepreneurs may be in a better position to understand such needs and may be more driven to meet them than younger founders. This could be an important market and innovation opportunity.

Third age as a regional development priority
Third age entrepreneurship is being given greater national policy priority. This is feeding down into, for example, the strategies of Regional Development Agencies. However, some care is required especially in the UK's more peripheral regions.

Taking North East England as an example, Table 18 shows the number of founders per 1000 population in North East England and the UK. The probability of an individual being a business founder is below the national average in all age groups. Assuming the North East per capita number of founders were to match the UK average in each age group, Table 18 shows the region would have 7,600 – or 55 per cent – more founders. However, just 21 per cent of this shortfall consists of founders over 50. The overwhelming majority are from with the prime entrepreneurial age group (30-49 year olds).

The North East has a problem across all age groups. An undue emphasis on third age start-ups would not overcome the region's shortage of business founders. Increasing the number of start-ups from within the prime entrepreneurial age group may contribute more to the Region's economic development. Such a strategy contrasts with what often appears to be start-

Table 18: North East founder shortfall

	Founders per 1000 pop.		
	North East	UK	North East's shortfall
Under 30	3.3	4.3	550
30 – 49	11.9	19.3	5510
50 – 54	11.7	14.5	450
55 – 59	8.9	13.4	640
60 – 64	3.5	5.8	300
65 – 69	0.5	1.9	170
70+	0.2	0.3	50
Total	**6.8**	**10.4**	**7,610**

Source: Analysis of TBR Economics data
Note: Calculated as the difference between the actual number of founders in the North East by age group and the number which would exist if the Region had the UK proportion of founders by age group.

up intervention driven by social inclusion and a focus on entrepreneurial minorities.

Furthermore, in the long term increasing entrepreneurial interest and capacity amongst those in the prime entrepreneurial age group may offer the best way of increasing future third age start-ups.

Age discrimination as an issue

It is sometimes suggested that age discrimination within the financial system and business support agencies is a substantive constraint on third age business formation and growth. The survey did not ask about age discrimination. However, the issue was discussed in the case studies.

An early conclusion from this study was that many older entrepreneurs resent discussion of their age and were reluctant to answer questions on the subject; hence its exclusion from the questionnaire. This reluctance to discuss age may reflect the fact that few people like being reminded that they are growing older (and this is something policymakers should take into account in defining third age as a market segment) or it could reflect concerns over potential age discrimination.

The second conclusion is that the majority of the case study founders did not perceive their age as having been an issue and were not aware of any age discrimination. However, they tend to be aged 50-55, and it is difficult to see why they should experience age discrimination. Furthermore the majority did not raise external finance or use business support agencies. Consequently, discrimination had less opportunity to occur. Should a greater number of third age founders require finance in the future, rather more could experience some discrimination.

For example, one or two of the case study founders believe or suspect they were discriminated against on the basis of their 'grey hairs' by the venture capital industry. Individuals with such views tend to be well into their third age. Similarly, one or two believe age was an issue in the IT sector. This reflects the view that IT perceives itself as a young man's sector. However, much more explicit and substantive research is required to corroborate such a conclusion and assess the extent of any problem. In the meantime, the overall conclusion is that most of those willing to discuss the issue do not believe they have experienced age discrimination.

Encouraging more third age start-ups

By studying those who have set up in business, the methodology was not designed to identify how to stimulate third age start-ups directly. For this, it is necessary to examine the over-50s who have not set up in business to identify constraints or potential stimuli satisfactorily. Consequently, it is necessary to draw on the Literature Review as a means of addressing this question.

This shows the main factors constraining third age entrepreneurship are:

- The low level of interest amongst the third age population not already self-employed or running their own business.
- A large number believing they could not, even if they wished to, set up their own business.
- The substantial proportion saying they are in poor health (plus a concern that their health may deteriorate).
- The attractiveness of the retirement option for those with a satisfactory income.
- For those without such an income, issues relating to access to finance.
- A somewhat higher aversion to risk amongst the older population

Perhaps not surprisingly, older people are also currently less responsive to entrepreneurial stimuli (whether push or pull) than the younger population.

Increasing the proportion of the over-50s starting a business requires an increase in entrepreneurial interest and self-belief that they could do so. This is unlikely to be achieved by 'traditional' start-up support services which assist those who have recently decided to 'have a go' rather than increasing the numbers deciding to have a go.

To encourage greater interest and demonstrate that more could set up their own business, marketing messages could usefully:

- Provide role models demonstrating that older people can do it (including innovative and high growth businesses).

- Emphasise the advantages that many older people have which enable them to be successful. For example, this research demonstrates their advantages from experience.

- Demonstrate that setting up in business is not necessarily high risk.

- Emphasise that, for those who wish to do so, it is an effective means of continuing to work beyond the official retirement age.

However, a key requirement is to expose more people to the entrepreneurial option and the necessary skills before they reach 50.

Stimulating third age growth

Many of the growth constraints may be built in at the outset. Consequently, these are probably best dealt with as part of encouraging more start-ups. For example, demonstrating that older founders can set up high growth new starts and encouraging them to think about this possibility might reduce the number of older founders not trying to grow the business. However, lifestyle business should not in the process be portrayed as unimportant or unacceptable.

Beyond this, the experience of those who have set up a business studied in this research does not suggest any age-related issues. For example, the same constraints (access to investment finance, the state of the market) are quoted by both older and younger business founders. Perhaps the only substantive recommendation is for the business support system to ensure it understands the issues arising from increasing third age entrepreneurship and the business strategies which enable older founders to exploit their advantages.

The business support system

Potential issues
The number of new businesses set up by third age founders will increase in the future. It is not clear if business support services have thought through the implications: this study was not concerned with this question. However, amongst the issues which could take on greater importance are questions of succession and the means of ensuring the future of the business. Similarly, business support services may need to give greater attention to how older founders deal with health related problems and the development of appropriate third age business strategies. For example, the case studies illustrate strategies which enable older founders to exploit their innovative potential while recognising their age-related limitations. Perhaps another key issue is how the system deals with team start-ups.

Enabling and supporting teams is important
It is generally assumed business formation is an individual phenomenon. A key finding from this research is that many businesses, especially high growth ones, are set up by teams. Consequently, it is worth considering whether business support services are adequately geared up to deal with teams and whether more could or should be done to enable the formation of start-up teams.

For older business founders, participation in a mixed age team may help overcome some of their limitations and concerns. For example, as illustrated in the case studies, their ideas may be more effectively taken to market and implemented by younger team members. A mixed age team may help overcome the effects or fear of failing health.

Ways to encourage mixed age teams require further consideration. However, their importance highlights the limitations of business support services based explicitly on age segmentation. For example, networking events should at least recognise the potential benefits of mixed age teams rather than focusing exclusively on the young.

Similarly, there may be lessons to be learned from the SCORE programme,[7] which delivers advice to small firms in the United States. The Small Business Administration's business advisory services are delivered through self-organising local chapters by retired executives. Many of these are over 50. This enables them to use their experience in an advisory capacity and brings them into contact with many younger founders. Being unpaid and outside the public sector, it could be that these contacts develop into the creation of mixed age start-up teams. At the very least, it is a relatively cheap way of providing start-up advisory services and utilising the skills and experience of third age individuals. The

7. See www.score.org

Table 19: Variation by founder age; percentages

	Age			
	Under 50	50-55	55-59	60+
Start-up via MBO	8	15	10	27
Start-up via team	62	50	57	67
In good health	93	92	90	80
Motives – Work from home	8	9	10	27
– Give something back	9	10	17	33

Source: Telephone survey

nature, role and contribution of the US SCORE programme is worthy of further examination.

Defining third age

Defining third age as starting at age 50 is becoming something of an accepted policy convention. Presumably this arises from a belief that entrepreneurial activity drops off substantially after individuals reach 50 or that entrepreneurs over 50 face different problems and require different support from 30-50 year olds.

Perhaps no precise definition is required. However, the question of whether 50 is an appropriate starting age is worth considering. After all, the probability of setting up a business does not decline substantially until age 55 or later. This observation is further strengthened by the fact that many older people are already running a business set up earlier in life, which reduces the probability of a new business start up in later life.

In many respects the prime entrepreneurial age group is incorporating the 50-55 year olds (at least for males). While sample sizes are small, Table 19 shows that substantive differences between founders and their businesses do not become apparent until 55 or even 60; 50-55 year old founders are little different from younger founders. It is only post 60 that major differences in motives (e.g. the desire to work from home or to give something back to society) or the mode of start-up such as Management Buy Outs become apparent. Similarly, it is only after 60 that we see founders with health issues.

There is no correct definition. Nor does the evidence point to a clear cut single point after which the level and nature of entrepreneurship changes. Nevertheless, if a starting age is required, 55 rather than 50 may be more appropriate.

Appendix A: Project methodology

This Appendix outlines in some detail the study methodology and data sources. While emphasising the methodological and data limitations, the research is based on a unique and large sample of new businesses.

Research questions

The questions posed for the research are as follows:

- What evidence is there of innovative and high growth third age business start-ups and what economic contribution do they make?
- In which sectors do older entrepreneurs choose to set up their businesses?
- What motivates third age entrepreneurs and, in particular, what are their positive motivating factors? How do these differ from younger founders?
- What advantages do older entrepreneurs have compared to younger business founders?
- What are the barriers to third age business formation and how do these differ from those facing younger entrepreneurs?
- How can innovative and high growth third age business formation be further encouraged and supported?

Definitions and overall approach

There is no readily available means of identifying innovative third age entrepreneurs and their businesses nor is there an easy way to estimate their economic contribution. However, it is possible to identify high growth new starts. On the assumption that there should be some relationship between business growth and innovation, this study began by using high growth as a proxy for innovative new starts. Individuals aged 50 and over were defined as third age.

To put high growth third age entrepreneurs and their contribution into perspective and to establish how the issues they face differ from other founders, they are systematically compared with third age low growth, younger high growth and younger low growth entrepreneurs and their businesses. These comparisons help identify constraints and barriers to success.

The new starts examined are independent limited companies set up between 2001 and 2005 and still operating in 2008. As such the study excludes the self-employed, new subsidiaries with corporate ownership (such as new inward investors), 'new' companies formed via corporate restructuring or organisational change (for example, due to mergers or a stock market floatation) and new starts which closed before 2008. The data is a comprehensive record of companies registering at Companies House excluding those which are not active such as shell companies created for administrative reasons, etc.[8]

The OECD's standard definition of high growth, 20 per cent per annum growth over three years, is inappropriate for start-ups. It would

8. The data is taken from the Dun and Bradstreet (D&B) marketing file. Before including them on the file, D&B check whether or not the company is active.

include, for example, a business starting with two employees which grows to employ four after three years. Consequently, a pragmatic definition is necessary. High growth is taken as a company which was set up between 2001 and 2005 and employed 25 or more in 2008.

Study components and data sources

The study has five main interdependent components. These are as follows:

i) Literature Review and Analysis of the Small Business Service Small Firm Survey (2005). The outputs are presented in Appendices B and C. The Literature Review was used to help design this study. The SBS survey provided data on 1,028 new businesses. Both complement the empirical findings of this research. They have also been used extensively to inform the Policy Discussion in Part Five.

ii) Analysis of TBR Economics Database. This is a unique database derived from the Dun and Bradstreet marketing file which enabled identification of all UK limited companies set up over the period 2001-2005 and still operating in 2008. However, it includes 'new' companies which are not in reality new and a number of non-commercial companies. Consequently, all the businesses with over 100 employees were checked to establish whether they were 'new' or set up through processes such as mergers and corporate restructuring. Such 'new' companies were removed from the dataset. Public sector organisations such as housing associations, health trusts and development agencies were also removed. This 'cleaned' database had 381,000 surviving independent new limited companies set up over the relevant period. Of these, 3.356 were in the high growth category. However, as discussed below it was still possible that the 'cleaned' database contained some companies which formed as a result of, mergers, restructuring and name changes or were set up prior to 2001.

iii) Identification of the Founders' Age. To establish which businesses were set up by third age founders, data on the age of directors and when they joined the business were purchased from Dun and Bradstreet for a large sample of the new companies on the TBR Economics database. Directors simply identified as company secretary were excluded from the analysis. By comparing the directors' date of birth, the businesses' date of birth and when they were appointed as directors, it was possible to establish the age of founding directors when they set up the business. In some cases, no founding director remained in the company; many directors were unsurprisingly non-founding directors; and many businesses had more than one founding director. Data were obtained for all the high growth new starts and a 3 per cent random sample (around 11,400) of low growth new start companies.

This established an initial database of around 15,000 new businesses with information on the age and number of founding directors, current employment, location and the company's 4 digit Standard Industrial Classification (SIC). This database was then further cleaned on the basis of results from the fourth study component, a telephone survey. Subsequently the database was analysed to estimate the contribution of new starts by founder age. This involved 'grossing up' the data for low growth starts to represent the population as a whole (as measured by the 'cleaned' TBR Economics database). For high growth new starts, the analysis is essentially based on population data.

iv) A telephone survey of new starts. Three distinct samples were drawn from the dataset of 15,000 companies. These were for third age high growth, younger high growth and low growth businesses. The low growth businesses were then subsequently subdivided into third age and younger founders. The survey results were used to further 'clean' the population new firm dataset. An implication of the approach to sampling is that it is not a random sample. It is a random sample within each sub-group. Consequently, to represent new firms as a whole, the survey results have been weighted by the population data (from the cleaned TBR Economics database).

Information on the survey and response rates is summarised in Table 20. All high growth businesses with a founding director still in the business were telephoned. This was necessary to achieve a reasonable number of responses. As can be seen this involved telephoning all 844 high growth businesses with founder aged over 50. Table 20 shows it was not possible to make effective contact with 55 per cent (485) of these. These include those with a 'permanent' answering machine, when it was not possible to interview the actual founder and those taking the call unable to answer the screening questions (about when and how the business was set up). Of the companies

Table 20: The telephone survey

	Third age high growth	Younger high growth	Low growth
Companies telephoned	844*	1374*	1600
No effective contact	465	1118	1254
Companies answering	379	256	346
Refusal/person away, etc.	227	147	176
Not new (merger, pre-2001)	68	19	27
Interview completed	84	90	143
Per cent adjustment for not new business	17.9	7.4	7.8

Note: i) All new business with telephone contact details and a founder still in the business

answering, almost 60 per cent refused to be interviewed.

For the third age high growth businesses, the survey achieved 84 responses. Table 20 shows that it was equally difficult to make contact with the actual founder for younger high growth and low growth businesses. Eventually interviews were completed with 90 younger high growth and 143 low growth founders. In total responses were obtained from 317 founders.

As already indicated, it was possible that not all firms in the sample were really new. To identify these, a series of screening questions was used. These found that 7.6 per cent of firms on the 'cleaned' database were not new, mainly because they were set up prior to 2001 but had registered as a new company after then. Previously, the founders had had operated as self-employed (with or without employees). Hence, the database overestimates the number and economic contribution of new firms. Rather more (almost 18 per cent) high growth third age new firms fell into this category. Consequently, estimates based on the TBR database were adjusted downwards to take into account these overestimates.

v) Case Studies. To add flavour to the data analysis, 15 case studies of third age founders were completed. These were based on a combination of information which is publicly available (for example from the web) and telephone interviews. For those happy to have the case study published (and those using only publicly available information), they are presented in Appendix D.

Implications and caveats

Four points should be emphasised to avoid misinterpretation of the analysis.

The first relates to the definition of high growth. Most of the businesses classified as high growth will have grown since their start-up to have over 24 employees in 2008. However, this does not apply to all the firms. Some may have begun life with over 24 employees and have experienced no subsequent growth. Indeed, some may even have started somewhat larger and contracted. Perhaps this may apply most frequently to the Management Buy Outs identified via the telephone survey.

Second, the definition of new businesses is broad. While it excludes the many self-employment businesses, it includes management buyouts and new businesses created by, for example, a founder buying and resuscitating a failed or bankrupt business. These are not new firms. The extent of this form of business start-up is explicitly analysed in the survey.

Third, it is assumed that the survey respondents are essentially a random sample within the three sub-populations. However, given the number of companies it proved impossible to contact, this is not necessarily the case. Also the samples represent each sub-population. To represent the overall population of new starts, the samples are weighted by the population data in the cleaned TBR database (which is itself a very large sample of new starts). Consequently, the figures quoted throughout the report should be interpreted as 'ball park' estimates.

Fourth, and finally, much of the analysis is based on a more fundamentally biased sample. It includes only those founders and their businesses which have 'made it' and survived. Consequently, for example, the empirical research says little about start-up constraints. Such constraints are most obvious within the third age population which has not 'made it' and set up a business. These individuals have not been surveyed. It is in this context that the Literature Review, which has a wider perspective than the empirical research, is an important in put to the discussion of the policy implications.

Appendix B: Literature review

Introduction

This Literature Review covers available research and data on third age, particularly high growth entrepreneurs or business founders. The literature has no standard or agreed definition of third age, entrepreneurs or high growth. Consequently, a few comments on definitions are appropriate at the outset.

For some, third age entrepreneurs include not only those who set up their business or become self-employed during their third age (however defined) but also older self-employed people and owner-managers. As will become apparent subsequently, many self-employed people and owner-managers are in their third age. However, many of these set up their business before reaching their third age. The issues involved in running an established business and setting up a new business are very different. Consequently, entrepreneurs are defined as those who set up a new business (i.e. business founders). This is taken to include those who become self-employed as well as those setting up a new limited company when in their third age.

The literature generally takes third age to be those over 50 years of age. Such business founders are often compared with the prime entrepreneurial age group (i.e. 30/35 to 45/50). To some extent, these categories are based on the availability of data. It is assumed that there are important differences between prime and third age entrepreneurs in terms of, for example, their motives, the barriers they face, the stimuli they respond to and their growth prospects. However, whether there are fundamental differences between business founders aged 45 or, say, 55, is unknown. This poses the question of the appropriate age categories to be used in any analysis or policy.

Following much of the literature, the starting point in this review is to define third age as over 50 years of age. However, because different studies and data sources use different definitions and age categories, a flexible approach has to be taken. This may help identify an appropriate definition of third age.

Finally, there is no agreed definition of a high growth start-up. The OECD defines high growth as 20 per cent annual growth over a three year period for firms that have more than 10 employees at the beginning of the period. This is relevant to established businesses. However, it has little meaning for new starts. Twenty per cent of nothing is zero. Consequently, here we review the evidence on the survival and growth performance of new starts with no a priori definition of high growth.

There is relatively little research on third age high growth entrepreneurs per se. Most of the available evidence is contained in more general analyses of business start-ups and growth. Consequently, it is necessary to review the literature on entrepreneurship to establish what it has to say about third age entrepreneurs. In doing so, the review is structured around the business life cycle. It begins with evidence on the number and nature of businesses set up by third age entrepreneurs followed by evidence relating to their survival and growth. In addition to empirical evidence on the number and nature of third age business founders it reviews evidence on possible explanations for the observed empirical patterns.

In addition to the literature, a number of available data sources are examined. These include the Global Entrepreneurship Monitor (GEM), the Small Business Service Household Entrepreneurship Surveys and surveys undertaken as input to Scotland's Business Birth Rate Strategy in the mid-1990s. Finally, the review includes some limited international comparisons.

Age and business owner-managers

A substantial proportion of the self employed and business owner-managers are in their third age.[9] There are no comprehensive data on business owners, though self-employment is sometimes used as a proxy. Table 21 presents data from the Annual Population Survey. This shows that the proportion of the population which is self employed rises with age, particularly among men, where the proportion reaches 17.1 per cent for the 50-65 year age group. For women it rises to 6.7 per cent for the 50-60 year age group. Third age self-employment is substantial.

9. Weber, P. and Schaper, M. (2004) Understanding the Grey Entrepreneur. 'Journal of Enterprising Culture.' Vol. 12, No 2, pp.147-164.

After the retirement age, the proportion falls dramatically to just 4.2 per cent for men and 1.9 per cent for women. However, as a proportion of the economically active, it continues to rise. For example, over 40 per cent of economically active men over 65 are self-employed. Given this excludes those running their own company as a director, categorised as employees, it is likely that the majority of such males are self-employed or running their own business. This highlights the extent to which business founders and the self-employed continue to work beyond the official retirement age.

The Small Business Service Household Survey of Entrepreneurship provides an alternative data source. Its data include both the self-employed and those running their own company. This confirms that a substantial proportion of 55-64 year olds are self-employed or running their own business (Table 22). This applies to 15 per cent of the age group. Table 22 also shows that 20 per cent of all those who are self-employed or running their own business are aged 55-64.

However, many of these individuals set up their business well before the age of 50. The survey shows that almost 55 per cent of the businesses run by 55-64 year-olds are over ten years old. In other words, the majority were set up before the individual reached their third age. It is important not to confuse those setting up a business during their third age and those running a business they set up earlier in their lives.

Third age business formation

Number and proportion of new starts

There is relatively little evidence about the number and proportion of the UK's new businesses set up by third age founders. Most early studies quote the average age of founders but provide little evidence on their age distribution.

Table 21: Self-employment by age: UK 2007

Age	Male		Female	
	Percentage of pop	Percentage of economically active	Percentage of pop	Percentage economically active
16-24	3.6	5.2	1.0	1.5
25-34	11.0	11.9	4.4	5.9
35-49	16.9	18.5	6.7	8.5
50-retirement *	17.1	22.8	6.7	9.4
Post retirement *	4.2	42.0	1.9	15.4

Source: UK Annual Population Survey 2007.
Note: *For men the age groups are 50-64 and 65+. For women, 50-59 and 60+.

Table 22: Self-employment and owner-managers by age: UK 2003

Age group	Percentage of total business owners	Percentage of age group
16-18	2	5
19-24	4	6
25-34	18	11
35-44	28	16
45-54	28	18
55-64	20	15
Total	**100**	**13**

Source: Small Business Service (2004), Household Entrepreneurship Survey 2003, DTI, London.

However, based on international data, the conventional wisdom is that business formation is the preserve of youth or middle age. Commenting on US Household Survey data for the early 1990s, Reynolds and White note: "Nascent entrepreneurs are virtually non-existent amongst those 55 and over."[10] Similarly, finding that just 8 per cent of new manufacturing company founders in the Republic of Ireland in the 1980s were over 45, O'Farrell concludes that: "New firm formation in manufacturing is a phenomenon of relative youth."[11]

However, the equivalent figure in the UK was found to be higher at 19 per cent in Merseyside, 11 per cent in Manchester and 32 per cent in South Hampshire.[12] More recently, without providing the evidence or a reference to the original source, it has been claimed that founders over 50 account for 15 per cent of all new starts in the UK compared with 10 per cent in 1991.[13] However, on their own, such percentage figures are difficult to interpret. For example, it is not clear whether the UK percentage is higher because older founders are more entrepreneurially active or because younger founders are less active.

While not a measure of business formation, the most systematic UK data available are from the Global Entrepreneurship Monitor's (GEM) Total Entrepreneurial Activity (TEA) index. This measures the proportion of the population who have set up a business in the past 42 months or who are currently in the process of trying to do so.

Table 23 shows the 2006 UK index by age. It rises from 3.8 per cent of the population for the 18-24 year olds to 7.3 per cent for the 35-44 year olds before declining to 3.8 per cent for

10. Reynolds, P.D. and White, S.B. (1997) 'The Entrepreneurial Process: Economic Growth, Men, Women and Minorities.' London: Quorum Books. p.54.
11. O'Farrell, P. (1988) 'Entrepreneurs and Industrial Change.' Dublin: Irish Management Institute. p.174.
12. Lloyd, P. and Mason, C. (1984) Spatial Variations in New Firm Formation in the United Kingdom: Comparative Evidence from Merseyside, Greater Manchester and South Hampshire. 'Regional Studies.' Vol. 18, pp.207-209.
13. Barclays Economic Reports (2001) 'Third Age Entrepreneurs – Profiting From Experience.' London: Barclays plc.

Table 23: Entrepreneurial activity and business formation by age (2006)

Age group	Total entrepreneurial activity	Proportion of business formation
16-24	3.8	9.9
25-34	7.9	25.4
35-44	7.3	31.4
45-54	5.7	20.8
55-64	3.8	12.6

Source: The TEA Index is taken from Global Entrepreneurship Monitor (2007) United Kingdom Report 2006.

Table 24: TEA and business formation by gender and age

Age group	TEA		Per cent of business formation	
	Male	Female	Male	Female
18-24	5.6	1.9	10.9	7.7
24-34	9.6	4.3	25.5	25.0
35-44	9.7	5.0	50.0	34.4
45-54	7.5	4.4	19.8	23.3
55-64	5.9	1.8	14.0	9.6

Source: Global Entrepreneurship Monitor (2007) United Kingdom 2006 Report.

the 55-64 year olds. Unfortunately, it does not report the figure for the post-65 age groups. This suggests that relatively few third age individuals are likely to be business founders.

The number and proportion of businesses set up by third age individuals depends both upon the TEA index and the size of the age group. GEM does not generally report the proportion of businesses set up by each age group. Consequently we have estimated the number of business founders by age by applying the GEM probabilities (i.e. TEA) to the population of Britain by age group. The results are presented in Table 23. This suggests that approaching 13 per cent of those who have set up a business in the past 42 months – or who are trying to set one up – are in the 55-64 year old age group.

The TEA index illustrates the inverted U relationship. Entrepreneurial activity initially increases with age before declining with further increases (after 44 years of age).

Age and gender

Table 24 presents a more detailed analysis of the TEA index by age and gender. The female rate is below the male rate for all age groups and is substantially lower among 55-64 year olds. While female entrepreneurial activity is 52 per cent of the male rate for the 35-44 age group, it is just 30 per cent among 55-64 year olds. While women live longer, their entrepreneurial activity declines earlier.

Table 24 also shows the proportion of businesses set up by older male and female founders. 14 per cent of male founders are aged between 55 and 64, but only 10 per cent of female founders are in this age group. In absolute terms, this equates to 207,000 third age males and 65,000 females setting up or trying to set up in business over the preceding 42 months. (It is not known how many actually succeeded.)

Inter-regional variations

Third age entrepreneurial activity varies substantially across the UK.[14] For males, GEM shows it varying from under 3 per cent in the North East and Yorkshire and Humberside to over 7 per cent in the South East and South West. These variations largely reflect variations in the total business birth rate as measured by VAT data. For women it varies from under 0.5 per cent in the Eastern and South East Regions to highs of around 3 per cent in Wales, West Midlands and the South West. Entrepreneurship among older women is less related to the level of regional activity than might have been expected and suggests factors other than the state of the regional economy are in play.

International comparisons

Table 25 shows the activity rate for a selection of countries for the entire working age population and the 55-64 age groups. It also shows the proportion of businesses set up by those in the 55-64 age group. The highest level of entrepreneurial activity both within the adult population and the 55-64 age group is the United States. For all 18-64 year olds the US index is 9.6 per cent compared with the UK figure of 5.5 per cent. For 55-64 year olds the equivalent figures are 5.8 per cent in the US and just 3.2 per cent in the UK. The indices for the Republic of Ireland are also higher than for the UK. This perhaps suggests that an increase in the UK rate should be possible.

14. Hart, M., Anyadike-Danes, M. and Blackburn, R. (2004) 'Spatial Differences in Entrepreneurship: A Comparison of Prime Age and Third Age Cohorts.' Belfast: ERINI.

Table 25: Entrepreneurial interest by age and country

Country	TEA 18-64 year olds	TEA 55-64 year olds	55-64 percentage of all TEA
UK	5.5	3.2	11
Ireland	8.2	3.4	7
US	9.6	5.8	10
Japan	4.3	4.8	26
Sweden	4.2	2.6	13
EU average	5.4	2.7	9

Source: GEM Ireland 2007, Tables 2.30, 2.27 and 2.26.

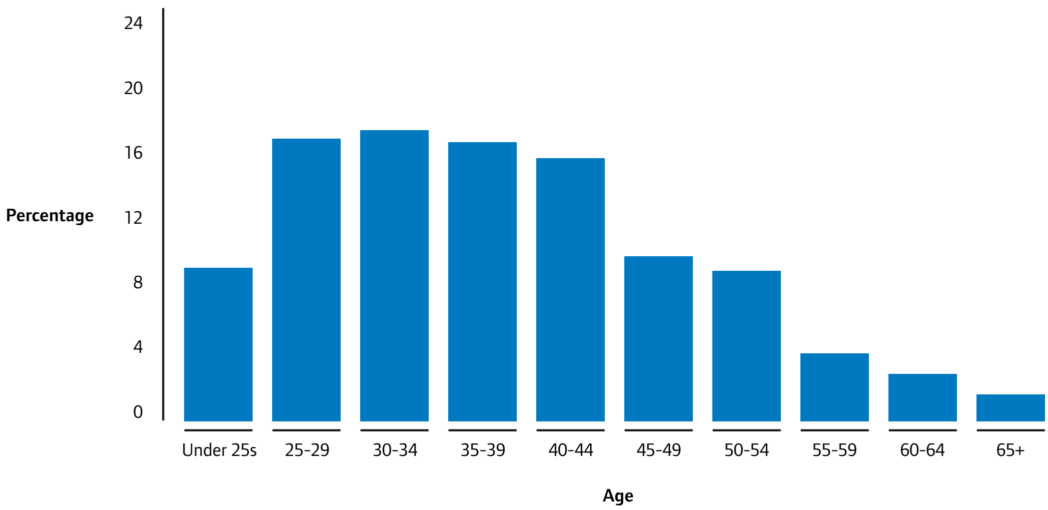
Generally, the 55-64 activity rate is below each country's average and especially below the prime age group of 35-44. The exception is Japan where TEA increases systematically with age. However, this is because of low entrepreneurial activity amongst younger people. The supply of would-be entrepreneurs has not been 'exhausted' by the time individuals reach their late 50s.

As a proportion of all start-ups, the 55-64 year age group accounts for an estimated 11 per cent of UK new starts.[15] This is marginally above the European average and US proportion. However, third age entrepreneurs account for a smaller proportion of entrepreneurs than in, for example, Sweden (13 per cent) and especially Japan (26 per cent). The UK proportion is also higher than the Irish average, although there is a higher level of third age activity in Ireland. The proportion is greater in Britain because activity amongst the younger age groups is substantially lower than in Ireland.

An analysis of the age distribution of US business founders is shown in Figure 9. [16] Of those who participated in setting up a new

15. This proportion is somewhat less than the figure quoted in Table 23. This is because the proportion is somewhat sensitive to small annual variations in TEA – which could be due to sampling error. The 2006 UK TEA is substantially higher than for previous years.
16. Dennis, W.J. Jnr (1999) 'Business Starts and Stops.' Wells Fargo NFIB Series on Business Starts and Stops. Washington DC: Wells Fargo/NFIB.

Figure 9: The age distribution of US business founders, 1998



Source: Dennis Jnr, W.J (1999).

business in 1999, almost 17 per cent were over 50. However, over 50 per cent of these were aged between 50 and 54. Just 4.2 per cent were over 60. A second US study from the late 1990s estimates that over 12.3 million people were attempting to set up in business. Just 1.9 per cent (230,000 people) was over 65.[17]

A recent study of Finland's new businesses set up between 2000 and 2006 found that 16 per cent had a founder aged between 50 and 64. The majority of these (60 per cent) were aged 50-54 with just 10 per cent over 60.[18]

Third age high-tech business formation

The expectation in the literature is that third age founders are likely to be under-represented amongst high tech and knowledge-based new businesses. This is, in part, because the individual's technical knowledge may be outdated and they are less familiar with new technology and its potential market applications.

Evidence from high tech start-up case studies suggests that, at least in the US, the vast majority of high tech firms are set up by relatively young entrepreneurs.[19] The most widely quoted systematic evidence is Robert's studies of US high tech entrepreneurs. For example, in his 270 case studies, just 10 per cent were aged over 48. Two characteristics of the few older founders stand out. They were either serial entrepreneurs who had essentially made business formation a career or they were university lecturers who believed they still had much to offer, sometimes well beyond normal retirement age.[20]

Other US studies from around the same time confirm these findings for the 1980s. For example, Barclay *et al.* found just 10 per cent of high tech founders were over 50.[21] A more recent study of 650 US born founders involved in setting up 500 engineering and high tech firms between 1995 and 2005 found that 24 per cent of them were over 45. Just 6 per cent were over 55.[22]

The characteristics of third age founders

Personal characteristics

Over and above age and gender (disproportionately aged 50-55 and male), other characteristics which appear to differentiate third age founders include:

- They have a reasonable income or an accumulated financial reserve.[23]
- They generally have previous work experience in jobs with some entrepreneurial characteristics such as management, sales and marketing[24] or a professional background.[25] Relatively few have a blue collar, manual or clerical background.
- They are somewhat better educated than the average older person.
- There is some evidence, at least in the US, that they previously worked very long or very short hours.[26]
- Compared with younger founders, rather more have previous experience of setting up in business. For example, 32 per cent of UK founders over 50 years of age have previously set up in business.[27] In Finland, the figure is 43 per cent.[28]

The serial entrepreneurs are believed to be somewhat different to first time or novice founders. For example, novice or first time entrepreneurs appear to be rather better educated and choose different sectors, more orientated to professional services.

Business characteristics

There are few studies of the characteristics of businesses set up by third age founders. However, amongst the business characteristics which have been identified are the following:

- They are somewhat less likely to take over a family business. Compared to 11 per cent of younger founders, just 2 per cent of third age entrepreneurs have taken over a family business.[29]
- They are marginally less likely to be in high tech but, perhaps surprisingly, marginally more likely to be based on a new or significantly improved product.[30]
- They are somewhat more likely to be in property, financial, professional, business and agricultural services.
- They are somewhat less likely to be in retail and consumer services.

Though the differences are small: 'older entrepreneurs choose sectors where there are more opportunities to balance work with leisure'.[31]

17. Reynolds, P.D. et al. (2004) The Prevalence of Nascent Entrepreneurs in the United States: Evidence from a Panel Study of Entrepreneurial Dynamics. 'Small Business Economics.' Vol. 23, pp.263-284.
18. Kautonen, T. (2008) Understanding the Older Entrepreneur: Comparing Third Age and Prime Age Entrepreneurs in Finland. 'International Journal of Business, Science and Applied Management.' Volume 3, Issue 3.
19. For example, Cringelym, R. (1992) 'Accidental Empires: How the Boys of Silicon Valley Make Their Millions.' London: Penguin Books.
20. Roberts, E.B. (1991) 'Entrepreneurs in High Technology: Lessons from MIT and Beyond.' New York and Oxford: Oxford University Press.
21. Barclay, D.I. et al. (1990) 'High Tech Entrepreneurs in the Non-Metropolitan West: Who is Starting What?' Oregon: Western Rural Development Centre.
22. Wadhva, V. et al. (2008) 'Education and Tech Entrepreneurship.' Kauffman Foundation of Entrepreneurship. Kansas City, MO: Kauffman Foundation.
23. Hart, M. (2004) Op. cit.
24. Fouchs, V.R. (1982) Self-employment and Labour Force Participation of Older Males. 'Journal of Human Resources.' Vol. 17, No. 3, pp.339-357.
25. Barclays Economic Reports (2001) Op. cit.
26. Fouchs, V.R. (1982) Op. cit.
27. Barclays Economic Reports (2001) Op. cit
28. Kautonen, T. (2008) Op. cit.
29. Barclays Economic Reports (2001) Op. cit.
30. Harding, R. (2007) 'Technology Entrepreneurship in the UK 2006.' London: NESTA.
31. Barclays Economic Reports (2001) Op. cit. p.8.

Motives
While there is a large survey-based literature on entrepreneurial motivation, there are few systematic analyses of the motives of third age business founders. However, drawing on survey evidence relating to those who have recently considered setting up in business[32] and have set up,[33] the following are the main contrasts with younger founders:

- While making money is the main motivation, a somewhat smaller proportion is driven by the desire or need to make money. Rather more have another source of income (e.g. a pension).

- While they remain a small minority, rather more are motivated by employment push factors.

- A greater proportion (around 11 per cent) has retired and a substantial proportion set up a business to provide the founder with part-time employment to work from home and to work post-retirement age.

However, the differences identified are small. As with much available literature and data, it relates to all founders (including the self-employed) rather than those setting up growth orientated new starts.

Potential explanations

Life cycle and/or generational change?
The probability of setting up a business initially increases with age before declining beyond the age of 45 and substantially after age 55. This inverted U relationship with age could be due to:

- Life Cycle Effects. As individuals age they become less interested in setting up their own business, and their ability to do so declines. This could be due to many factors including biology and changing economic circumstances.

- Intergenerational Effects. It could be that the inverted U relationship reflects different attitudes and experiences of different generations. This could be due to, for example, differing work experience or changes in social attitudes and culture.

To differentiate these effects, longitudinal data and studies are required. As far as we are aware, these do not yet exist.

Biology
Many factors may bring about life cycle and inter-generated effects. Perhaps one of the most obvious, but little discussed in the entrepreneurship literature, is biology. This is because business formation generally involves considerable time, effort and hard work. With increasing age, people's health, energy and mental processes deteriorate. While these effects have been assumed to be an explanation, the entrepreneurship literature has not explicitly examined or assessed their influence. It is possible other factors (such as economic incentives) come into play before the effects of ageing become substantial.

Economic incentives
Without calling on biology, it is possible to offer an economic explanation of declining entrepreneurial activity in third age. For example, after a certain age, individuals may be more likely to choose employment over business formation as a means of making a living.[34]

- Setting up in business means devoting time and effort to activities generating little immediate income in return for future income.

- With less time still available to them, older individuals have shorter time horizons (they have higher discount rates). This means they are less willing to forgo current income for future income. This reduces the attractiveness of business formation.

- At the same time, income from employment generally increases with age. Even if it is not continuing to increase, older employees may have more to lose from leaving employment due to pension entitlements. This increases the attraction of staying put.

- Finally, the risk for older individuals of setting up a business may be objectively greater. Should the business fail, older founders have less time (and fewer employment opportunities) to make good the losses and generate an alternative source of income.

Put simply, the financial incentive to become a business founder falls as people approach the end of their working lives.

These arguments suggest a reduction in the value of opportunities for older would-be entrepreneurs and, therefore, the pull of business formation. It also suggests that the

32. Small Business Service (2007) 'Household Survey of Entrepreneurship 2005: Research Report.' London: TSO.
33. Barclays Economic Reports (2001) Op. cit.
34. Lêvesque, M. and Minniti, M. (2006) The Effects of Ageing on Entrepreneurial Behaviour, Journal of Ageing on Entrepreneurial Behaviour. 'Journal of Business Venturing.' Volume 21, pp.177-194.

nature of third age entrepreneurship may be somewhat different from that of younger entrepreneurs. For example, they would be expected to set up businesses with a more immediate cash flow. They may also be expected to use financing models which do not require them to forgo current income during the start-up's initial phase of negative cash flow.

It is, however, possible to hypothesise scenarios which increase the incentive for third age entrepreneurship. For example, for some, employment income declines with older age. Redundancy could reduce income dramatically. Under these circumstances, the level of involuntary third age entrepreneurship might be expected to increase.

Even if income from employment continues to increase and the returns from business formation decline with age, it is still possible that the pull of business formation may increase for third age individuals. Some may be more or less financially secure for life. For these, the non-financial pull factors of business formation such as independence, enjoying the challenge or simply working from home could become more influential.

The declining pool of 'would be' entrepreneurs

As we have seen, the level of entrepreneurial activity declines substantially in the older age groups. This is not unrelated to the declining number of 'would be' entrepreneurs with increasing age. The Small Business Service Household Entrepreneurship Survey defines those who have recently considered or thought about setting up in business as 'thinkers'. This is one measure of entrepreneurial potential. Table 26 shows that around 15 per cent of those under 35 have recently considered the entrepreneurial option. This then declines with age to just 4 per cent of the 55-64 age group.

In other words, very few 55-64 year olds have recently considered the entrepreneurial possibility. Consequently, just 6 per cent of all those who have recently considered setting up their own business (including becoming self-employed) are in the 55-64 age group. Furthermore, rather fewer of these thinkers are classified as 'serious thinkers' than in the younger age groups.[35]

Along with most surveys, the SBS survey is limited to those aged under 65. It also adopts a rather narrow definition of 'would be' entrepreneurs. It could be that individuals have an interest in the option but have not recently considered it. While now somewhat dated, surveys undertaken for Scottish Enterprise in the mid-1990s collected data for a more extended age range and adopted a broader definition of 'would be' entrepreneurs as individuals who say they hoped, or would like to and could, set up their own business.

The 1995 results are summarised in Table 27. The proportion of each age group defined as a 'would be' entrepreneur is expressed as a percentage of the age group not already running their own business. The pool of 'would be' entrepreneurs declines systematically with increasing age. Almost 37 per cent of the 15-34 year olds are potential entrepreneurs. This

35. Small Business Service (2007) Op. cit.

Table 26: 'Would be entrepreneurs' or thinkers by age

Age group	Thinkers: percentage of age group	Percentage of total thinkers
16-18	15	8
19-24	14	16
25-34	16	30
35-44	11	23
45-54	7	14
55-64	4	6
All	**11**	**100**

Source: SBS Household Survey of Entrepreneurship, 2003.

Table 27: Entrepreneurial potential by age

Age group	Would-be entrepreneurs percentage of age group	Percentage of all would-be entrepreneurs
15-34	36.8	61.1
35-54	25.2	32.4
55-59	12.2	3.8
60-64	5.8	1.7
65-69	2.3	0.7
70-74	0.8	1.2
75+	-	-
55+	5.4	6.5

Source: MORI for Scottish Enterprise, 1995.
Notes: i) A combined unweighted sample from Scotland (1,035) and England and Wales (1,008).

declines to 12 per cent of the 35-39 year olds and just 2 per cent of 65-69 year olds.

The vast majority of potential or 'would be' entrepreneurs are under 35 (61 per cent). In contrast, only 6.5 per cent are over 55. Despite the differing definitions, both the Small Business Service and Scottish Enterprise surveys demonstrate that the number of potential third age entrepreneurs is small. These findings are confirmed in several other large scale surveys undertaken for Scottish Enterprise in 1993 and 1997.

Conversely, Table 28 shows the proportion of each age group who said they did not want to set up their own business. It rises systematically with age from 67 per cent of the 18-24 year olds to 87 per cent of 55-64 year olds and to almost 93 per cent for those over 65. The majority of those over 55 outside this 'do not want to' category are already self-employed or running their own business.

Those who say they do not want to set up their own business can be subdivided into those who say they could, if they wished, set up their own business and those who believe they could not do so. They may say they could not set up their own business because they lack skills, experience or a business idea or due to ill health.

The proportion of the population who believe they could set up their own business increases somewhat with age. This is not surprising if

Table 28: Entrepreneurial interest by age; percentage of age group

Age	Do not want to set up own business	Could, but do not want to	Could not and do not want to
18-24	67.2	32.4	30.3
25-34	69.5	39.9	29.5
35-54	75.6	42.8	32.8
55-64	87.0	42.6	44.4
65+	95.7	30.2	65.5

Source: MORI, Research for Scottish Enterprise. Scottish Survey, 1992.

experience and capability increase with age. However, the proportion declines considerably after the age of 65, with only 30 per cent of the age group believing they could set up their own business. A substantial proportion of the population believe they could not set up their own business (and do not want to). This includes nearly two thirds of the over-65s.

A possible reason for the very small proportion of older 'would be' entrepreneurs is that most of those with substantive interest in the entrepreneurial option are already running a business which they set up earlier in life.

The appeal of retirement

Others have confirmed the relative absence of interest among older people. For example, just 4 per cent of 50-75 year olds said they would like to start their own business in one survey. Older people were more interested in leisure and volunteering post-retirement.[36]

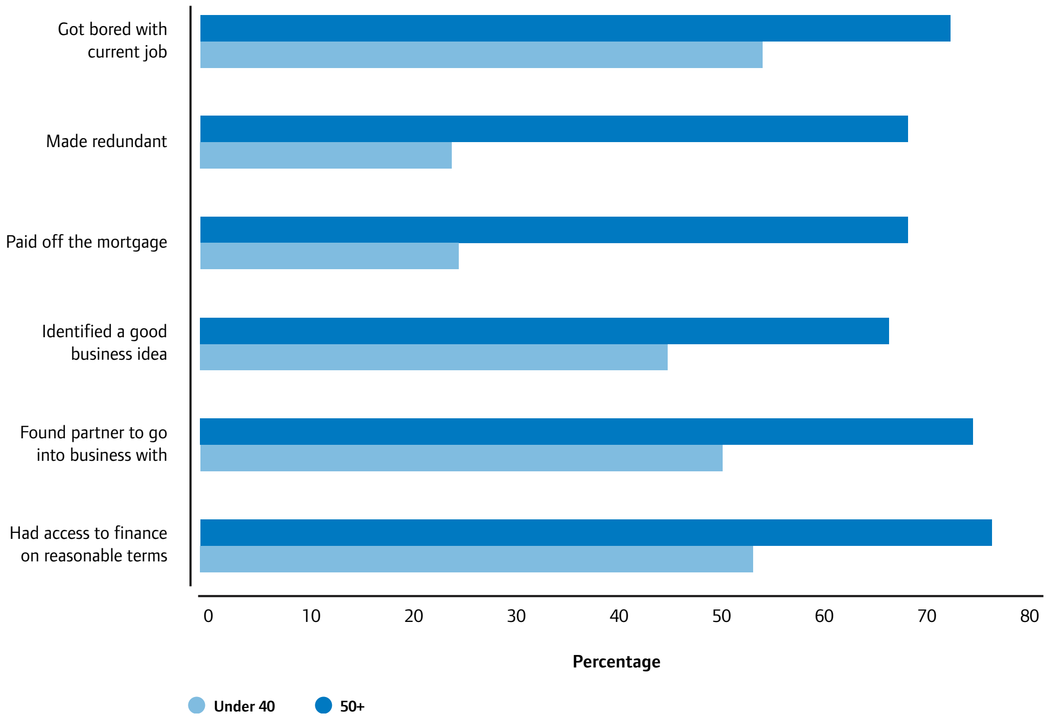
In response to questions as to why they had not recently considered the entrepreneurial option, the SBS Household Survey found that 37 per cent of 55-64 year olds gave age as a principal reason.[37] The Scottish Enterprise survey found that 68 per cent of those over 50 who could, but did not want to set up their own business, simply said they were 'too old'.

A recent study for the Department for Work and Pensions (DWP) gives a 'good feel' for why the entrepreneurial option appeals to few older people.[38] For many, retirement is an appealing option and something to be looked forward to while their health is still good. They have a positive view of retirement especially when they have few financial concerns. Indeed, amongst professionals, early retirement is seen as something of a right; while men simply believe they have 'done their bit'. For women, caring (as a grandparent, for example) is a reason for not being economically active (and therefore not interested in becoming self-employed or setting up their own business).

For those willing to continue being economically active in later life, many wanted more flexible employment, shorter hours, less hassle and greater job satisfaction. Especially for women, the idea of a 'little part-time job' is appealing. They want work which fits around their life rather than having to fit life around work. Such requirements and perspectives are not overly conducive to wanting to set up one's own business. However, for the more

36. Curran, J. and Blackburn, R.A. (2001) Older people and the enterprise society - age and self-employment propensities. 'Work, Employment and Society.' Vol. 15, No. 4, pp.889-902.
37. Small Business Service (2007) Op. cit.
38. Vickerstaff, S. et al. (2008) 'Encouraging Labour Market Activity Among 60-64 Year Olds.' Department of Work and Pensions, Research Report No. 325. London: TSO.

Figure 10: Responsiveness to potential stimuli: percentage of over 50s and under 40s who could set up own business saying they are very unlikely to set up own business if…



Source: MORI Household Survey for Scottish Enterprise entrepreneurial, or those in need of finance or something to do, these requirements may be met through self-employment. Some, indeed, chose the option to avoid retirement.

Whether or not individuals wish to remain economically active is crucially dependent upon their health. Individuals are often still in work and managing health-related problems. It is questionable whether this is possible whilst setting up a business. Good health has been shown to be a determinant of continued labour market participation (including the decision to become self-employed later in life).[39] In addition, the DWP study emphasises that concerns about future health are important in labour market decisions (and the desire to retire). Whilst most people may be living longer, individuals do not necessarily believe this affects their own longevity.

Response to potential stimuli
Given the numbers saying they do not want to set up their own business, perhaps it is not surprising that older people appear less responsive to entrepreneurial stimuli. Taking those who believe they could set up their own business if they so desired, Figure 10 compares the responsiveness of the 50+ age group with those under 40 to specific entrepreneurial stimuli. Over 70 per cent of those over 50 say they are very unlikely to set up their own business in scenarios were they are made redundant, bored with their current job, have a good business idea or find a business partner. Younger individuals are clearly more responsive to such stimuli.

These findings are confirmed by the SBS Household Entrepreneurship Survey. Of those classified as entrepreneurial avoiders, the proportion who say nothing would push or pull them into setting up their own business rises from 20 per cent of 16-24 year olds to 54 per cent of 55-64 year olds.[40]

Resources

Access to finance
The availability of finance is a critical requirement for business start-ups. The most widely used sources are personal savings, family and friends, and bank loans. Accessing bank loans often requires the founder to match the loan with a personal financial input and to offer their home as security. Windfall income such as a lump sum pension payment or redundancy money could also have become a potentially important source. For the minority of new starts, with high growth and capital gains potential, business angels and venture capital investment can be important.

It is generally believed that access to finance for third age founders has improved considerably since the late 1990s. Many, but far from all, older people in employment are relatively well paid. Around 60 per cent of pensioner households have an occupational pension (often taken at a relatively young age) and pensioners are now no more likely to be on low income than the rest of society. Some 70 per cent of pensioners are owner-occupiers giving many of them potential access to external financial sources.[41]

On the other hand, many older people are on low income and do not have accumulated savings. As already illustrated, it is the better off third age population which is more likely to set up in business. Older actual and potential entrepreneurs are less likely to see finance as a serious constraint than younger founders. This could be because they are more likely to use their own savings to start their business or because they set up new businesses with lower upfront financial requirements.

Network and contacts
The probability of being a business founder is influenced by the range of business and social networks – who you know matters. An average individual's contacts and networks should expand with experience and age. Older potential founders may know more people who have already 'done it', investors or potential customers and partners.

However, the evidence suggests otherwise. Table 29 shows that the proportion of the population who say they know an entrepreneur declines somewhat after the age of 55 and more substantially after 65. It also shows that over a quarter of 55-64 year-olds say they have no relevant personal contacts from whom they could seek advice about setting up a business compared with fewer than a fifth of the prime 35-54 entrepreneurial age group. Over half of those over 65 lack contacts.

The SBS Household Entrepreneurship Surveys confirms this pattern. For example, initially the proportion of the population who are aware of business support organisations increases with age before declining from age 55 onwards.[42]

Declining networks could be a barrier to potential third age business founders. A

39. Fouchs, V.R. (1982) Op. cit.
40. Small Business Service (2007) Op. cit.
41. H.M. Government (2005) 'Opportunity Aged: Meeting the Challenges of Ageing in the 21st Century.' London: TSO.
42. Small Business Service (2005) Household Survey of Entrepreneurship 2003: Research Report. London: TSO.

Table 29: Entrepreneurial contacts by age: percentage of age group

Age	Know an entrepreneur	No contacts for assistance
18-24	67.5	22.7
25-34	65.9	27.8
35-54	68.1	19.3
55-64	57.1	26.0
65+	44.0	54.3

Source: MORI, Research for Scottish Enterprise, Scotland, 1992. Sample: 1,760.
Notes: This shows the proportion of the age group who say they do not know an individual in any of the following professions from whom they could seek advice: entrepreneur, banker, accountant, solicitor, small business advisor, company director/senior manager, financial advisor, potential customer, property expert.

disproportionately high number of business founders have parents who ran their own business. Especially for younger business founders, parents are the main source of advice and assistance. For novice older founders, parental influence, advice and assistance is usually not available. Consequently, other sources of inspiration, learning, advice and assistance could be necessary.

Knowledge, skills and experience

A pre-requisite for considering setting up in business is a belief in one's ability to do so. It can be hypothesised that the necessary knowledge, skills and experience to make business formation a possibility increases with age. Exposure to business opportunities may also be expected to increase with age. In this context, older people could have a substantial advantage over younger groups.

However, greater knowledge, skills and experience are far from guaranteed with age. The nature of work experience has an important influence on which older people become self-employed or set up their own company. In other words, what matters is the accumulation of relevant knowledge, skills and experience. It is also possible that having accumulated these attributes through life, they atrophy as one gets older or simply lose their relevance with the passage of time.

The available evidence suggests that the proportion of the population who believe they have the necessary skills to set up their own business initially increases with age but begins to decline after the mid-fifties.[43] It is the retired, the unemployed and the long term sick that are most likely to say they do not have the necessary skills. This is consistent with the evidence reported earlier in this Review that the proportion of the population believing they could, if they so wished, set up their own business, declines amongst older age groups.

Entrepreneurial characteristics

An individual's personality may be an important resource for business founders. There is an extensive literature on the characteristics or personality traits associated with entrepreneurship. For example, characteristics such as assertiveness, an internal locus of control, a willingness to take risk, comfort with ambiguity and the need for achievement are said to be associated with those who set up new businesses.[44]

However, there is little research on whether and how such personality traits vary over the individual's lifespan. Nor is it clear to what extent such characteristics are given at birth or developed by the various environments experienced during life.[45] However, even those arguing that such entrepreneurial traits are largely the product of environment accept that youth is the critical period for their development.

Furthermore, while certain traits may be associated with existing entrepreneurs, it is not so obvious they are effective predictors of who sets up in business.[46] This may suggest that these entrepreneurial traits develop with the experience of setting up in business. In turn, this suggests they may be developed by older people.

43. Ibid. p.133.
44. Hegley, T.M. and Boyd, P.T. (1987) Psychological Characteristics Associated with Performance in Entrepreneurial Firms and Smaller Business. 'Journal of Business Venturing.' Volume 2, pp.79-93.
45. Danon, W. and Lerner, R.M. (2008) 'Entrepreneurship Across the Life Span.' Kansas City, MO: Kauffman Foundation.
46. Caliendo, M. and Kritikos, A. (2006) 'Is Entrepreneurial Success Predictable? An Ex-Ante Analysis of the Character-Based Approach.' Working Paper. Berlin: German Institute of Economic Research.

Creativity and decision making

Business formation involves creativity and cognitive processes. How these change as individuals enter their third age is not clear. Conventional wisdom suggests that creativity and some mental processes decline while others such as wisdom-related decision-making may improve. Such changes could affect the probability of being a business founder and change the nature of businesses set up by older founders.

It has been argued that creativity is a resource largely available to the relatively young.[47] The SBS Household Entrepreneurship Survey finds that somewhat fewer 55-64 year olds believe they are creative compared to younger age groups. Nevertheless, the majority still believe they are creative. At least in terms of artistic creativity, third age creativity may be more widespread than often assumed. It may, however, take on a different form.[48]

While growing older is not sufficient to bring about an improvement in wisdom-related decision-making, it appears it remains more or less constant well into the late third age. Performance declines from around the age of 80 with loss of cognitive processing skills.[49]

Intelligence, at least as measured by IQ, does not decline. While short term memory is reduced, long term memory remains intact. Speed of thought and problem solving abilities decline somewhat but other inputs to decision-making may offset such losses. It has been concluded that aside from illnesses such as dementia, the psychological and mental affects of third-age are not so serious and they can be relatively easily accommodated.[50] Physical health is a different matter.

Health

With increasing age, health and energy decline. More people are living longer. However, 'It is simply a reality, that for many it is associated with a greater degree of disability and illness and that many illnesses are age related.'[51] The 2001 census shows the proportion of the population saying they are in good health declines from 60 per cent for the 50-54 age group to 49 per cent for the 60-64 age group. This probably reduces the number able and willing to set up in business.

The extent to which biology accounts for the decline in entrepreneurial activity is far from clear. However, given entrepreneurial activity amongst the 55+ age group is higher in some countries than in the UK, the existence of inter-regional variations within the UK and the substantially higher levels of male activity appears to suggest that other factors have a significant influence. Subsequently, presumably biology becomes more important. As Keynes noted in a somewhat different context, in the long run we are all dead.

Attitudes to risk

A potential explanation for the paucity of older individuals setting up in business and their lack of interest in doing so could be that older people are more risk averse. For example, Roberts notes that in high tech, older scientists are less likely to leave their scientific job than younger ones. They have more to lose in terms of seniority and pension. They would also find it more difficult to find alternative employment should their business not succeed.[52]

Survey evidence from the UK generally confirms that older individuals appear somewhat more risk averse than younger ones. For example, the SBS Entrepreneurship Household Survey finds that:

- While 51 per cent of 55-64 year olds agree that 'they enjoy the challenge of situations many consider to be risky', the equivalent figure for 16-24 year olds is almost 70 per cent.

- Just over 65 per cent of 55-64 year olds say they avoid taking risks whenever possible compared with 47 per cent of 16-24 year olds.

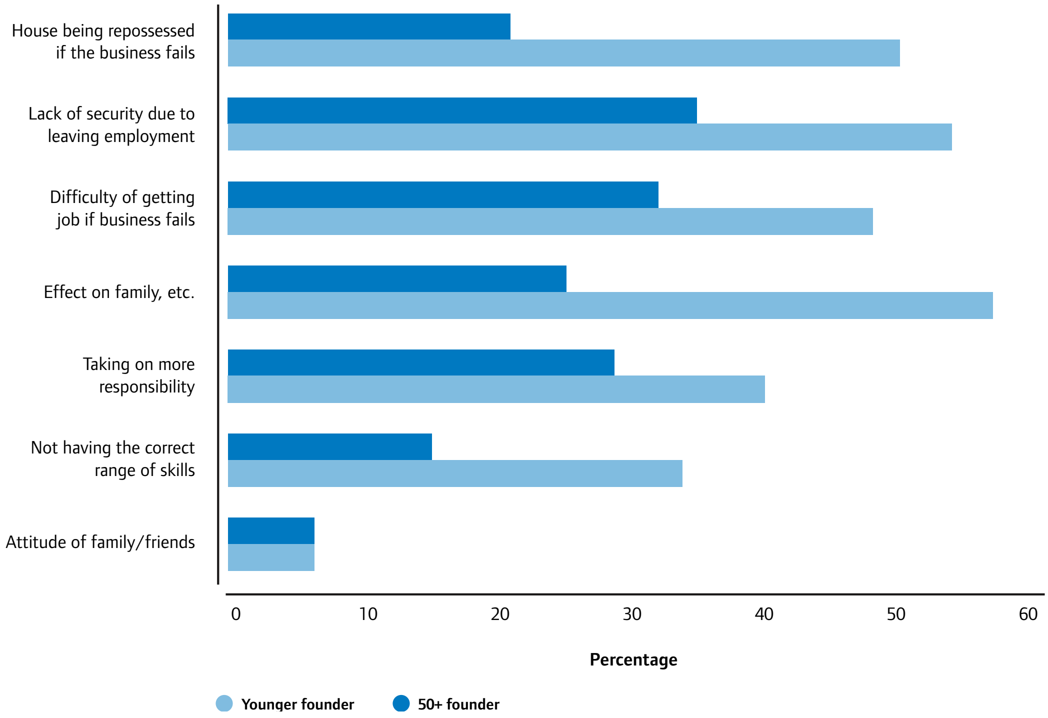
- Explicitly within an entrepreneurial context, just 16 per cent of those over 55 perceive themselves as risk takers compared with 40 per cent of those under 35.

While older people appear more risk averse, a reasonable proportion continues to see themselves as risk takers.[53]

Not only do older people perceive themselves as more risk averse, a greater proportion also believe that setting up a business involves great personal risk to the founder. For example, almost 50 per cent of those aged over 55, compared with 38 per cent of those under 55, believe that setting up one's own business involves great personal financial risk.[54]

47. Simonton, D.K. (1988) Age and Outstanding Achievement: What Do We Know After A Century of Research? 'Psychological Bulletin.' Volume 104(2), pp.251-267.
48. Galenson, D. (2005) 'Old Masters and Young Geniuses: Two Life Cycles in Artistic Creativity.' Princeton: Princeton University Press.
49. Staudinger, U.N. (1999) Older and Wiser? Integrating Results of the Relationship between Wisdom-Related Performance. 'International Journal of Behavioural Development.' Volume 23(3), pp.641-664.
50. Watson R. (2008) Research Into Ageing and Older People. 'Journal of Nursing Management .'Vol. 16, pp.99-104.
51. Ibid.
52. Roberts, E.B. (1991) Op. cit.
53. Small Business Survey (2007) Op. cit.
54. MORI (1992, 1995) 'Entrepreneurship Household Surveys.' Glasgow: Scottish Enterprise.

Figure 11: Start-up concerns by age: percentage of 'would be' entrepreneurs seeing the issue as a major concern



Source: MORI survey for Scottish Enterprise
Notes: The younger age group is those under 30 years of age except for 'the house being repossessed' and 'effects on family' which is for 30-39 year olds (i.e. the age groups expressing most widespread concern).

55. Small Business Service (2008) 'Household Survey of Entrepreneurship, 2007.' London: TSO.

Barriers and constraints

The main barriers to third age business formation relate to lack of interest, poor health and the attraction of retirement. However, beyond the issue of age, older people identify fewer specific 'business' barriers or constraints than younger individuals. In particular they are less likely to cite finance as a barrier. Compared with 71 per cent of 18-24 year old 'thinkers', just 30 per cent of 55-64 year olds see access to finance as a barrier. Nevertheless, access to finance remains the most frequently quoted constraint.[55]

The barriers and constraints that are perhaps most relevant are those faced by individuals at least willing to consider the entrepreneurship option. Figure 11 presents data on 'would-be' or potential third age entrepreneurs compared with younger potential entrepreneurs. Those over 50 have fewer concerns than younger 'would-be' entrepreneurs. Their main concerns relate to a lack of security on leaving their current employment and the difficulty of finding another job should the business not succeed. However, while these are concerns for one third of 'would-be' third age founders, these are concerns for a greater proportion (around 50 per cent) of younger potential entrepreneurs.

Concerns relating to the effects of business formation on family life and the fear of the home being repossessed should the business fail are substantially less widespread amongst older potential founders. They are also less concerned about taking on additional responsibilities and not having the correct range of skills. Very few potential entrepreneurs of any age are concerned about the attitude of family and friends.

Post-start business performance

The influence of the start-up process

The characteristics of new businesses and the start-up process they go through influence subsequent performance. The literature examines performance in terms of business survival and growth. The general view is that an inverted U relationship exists between the founder's age and business performance. In other words, survival rates initially increase with age before subsequently declining. Similarly, it is widely believed that new business growth is greatest for the middle-aged founders and lower for young and third age founders. For third age founders these relationships are generally 'explained' by their reduced energy, commitment, growth ambition and less willingness to take risks plus the nature of the businesses they set up. However, as we shall see, the empirical evidence is less clear cut than sometimes assumed.

Business survival

Many new businesses close early in life. The long established view is that businesses set up by the youngest and older founders are the most likely to close (to exit the market). This is because the young may lack the necessary skills and experience while older founders have less motivation, need for the business to survive and less staying power. In other words, new start survival rates are expected initially to increase with the founder's age before beginning to decline with further increases in the founder's age (an inverted U relationship).[56]

The existence of such a relationship between the closure of new firms and founder's age is confirmed by Green *et al.*'s recent substantive study of English new firms.[57] To capture the nature of this relationship, both founder's age and age are included in multivariate statistical analyses. Such analyses usually confirm that closures of new firms increase amongst older founders. However, Green *et al.*'s analysis finds that age is just one of many statistically significant explanatory factors. Once these other factors are included in the analysis, the influence of age on business closure is less obvious. Consequently, age is not identified as a substantive explanation in their discussion of new firm survival and closure. Nevertheless, in the absence of these other variables, survival rates are somewhat lower for third age founders than for prime age founders.

In contrast to this evidence, in arguing the case for a policy focus on third age entrepreneurs, it has been claimed that businesses set up by older founders are substantially more likely to survive than businesses set up by younger founders. For example, Patel and Gray claim research for Barclay's Bank show older founders have a 70 per cent chance of surviving five years compared with a 28 per cent chance of survival for businesses set up by younger founders. Quoting Cressey and Storey, it is claimed that businesses set up by owner-managers over 55 have a 70 per cent chance of surviving six years compared with an average for all new businesses of just 19 per cent.[58] However, these claims are difficult to substantiate.

Post start-up business growth

Based on an extensive review of the available literature, and especially statistical studies, Storey concluded in the early 1990s that while the evidence was somewhat mixed, "there looks to be some support for the view that the age of the entrepreneur is an influence on the growth of the (new) business."[59] As with business survival, this relationship is an inverted U with businesses set up by the youngest and third age founders growing less than those set up by prime age entrepreneurs.

While not a sufficient condition, a desire to grow may be a more or less necessary condition for growth. There is evidence that fewer third age founders have growth ambitions. They are less concerned with generating substantial income and more concerned with supplementing their existing income and working part-time. They tend to put in fewer hours and take longer holidays.[60] Perhaps reflecting this, businesses set up by older founders employ marginally fewer people and have an average turnover some 30 per cent lower than businesses set up by younger entrepreneurs.

Similarly, Hart *et al.* find that younger new starts, on average, employ substantially more people after five years than those set up by third age founders (14.4 compared with 8.7).[61] The recent BERR study of very high growth new starts in the US and UK noted that 'in both countries there are very few founders (of such companies) over 50 years of age.[62]

The recent study by Green *et al.* which undertook both an extensive review of the literature and multivariate statistical analysis of new start profitability, employment and sales growth, confirms this relationship. However, the founder age variables are not statistically significant, although they have the anticipated size. While the predictive power of the models is not high, other factors such as business strategy and the local environment emerge as more important.[63] That age is not a dominant factor is confirmed by other studies. For example, for US high tech, Roberts notes that founder age does not appear to affect growth.[64] O'Farrell's study of new manufacturing firms in Ireland reached a similar conclusion.

56. Storey, D.J. (1994) 'Understanding the Small Business Sector.' London: Routledge.
57. Green, F.J. (2008) 'Three Decades of Enterprise Culture.' London: Palgrave Macmillan.
58. Patel, S.H. and Grey, C. (2006) 'Grey Entrepreneurs in the UK.' IKO Working Paper No. 18, Open University Research Centre on Innovation, Knowledge and Development. Milton Keynes: Open University.
59. Storey, D.J. (1994) 'Understanding the Small Business Sector.' London: Thomson Learning.
60. Barclays Economic Reports (2001) Op. cit.
61. Hart, M. et al. (2004) Op. cit.
62. BERR (2008) 'High Growth Firms in the UK: Lessons from an analysis of comparative UK performance.' BERR Economics Paper No. 3. London: TSO.
63. Green, F.J. et al. (2008) Op. cit.
64. Roberts, E.B. (1991) Op. cit.

One difficulty with all these studies is that the number of businesses set up by third age entrepreneurs is limited. Consequently, the evidence on the performance of their businesses is also limited. However, a recent study of 838 new Finnish enterprises set up between 2000 and 2006, including a substantial number of third age businesses, found that while age was negatively related to business performance, the relationship was not statistically significant. In other words, there is no convincing evidence that age is a substantive determinant of post-start growth.

This is not, of course, to suggest that should policy encourage many more people over 50 to set up a business they will achieve equivalent growth rates.

The role of teams

Many businesses are set up by teams rather than individual entrepreneurs. Even Microsoft was established by two people (not just Bill Gates). While the evidence is somewhat mixed, generally team based start-ups achieve superior growth. There is little research on the role and contribution of older people to founding teams. However, it has been argued that within a team: 'older members are often not the lead entrepreneur but may be involved as a source of experience and perhaps funds rather than their energy.'[65]

In one empirical study Okani found that the 'team interpersonal effectiveness process' declines with increasing average age of the team after the age of 42.[66] It is argued this is because older team members have poorer cognitive skills, are less able and willing to learn, and that they are less flexible, innovative and more risk averse with less well developed interpersonal skills. However, these explanations seem to be little more than speculation.

Furthermore, the study does not examine the effects of age diversity on performance. It could be argued that teams are more effective when they bring together different skills, experiences and perspectives. However, a recent study found age heterogeneity of teams not to be a statistically significant explanation of entrepreneurial team effectiveness.[67] Demographic team heterogeneity can both enhance and detract from team effectiveness. Other factors not related to age diversity, such as team commitment and diversity of cognitive processes were found to be the significant factors.

However, both studies examine the effects of team composition on the team's performance, not that of the business. It is not obvious that the measure of team performance is a reliable proxy for business performance. In addition, neither study explicitly examines teams composed of younger and older founders. It is more than possible that teams which combine the energy and insights of relative youth with the business experience and perhaps wisdom of third age generate superior business performance.

Future developments

Life cycle and inter-generational change

The future level of third age entrepreneurship will be affected by both:

- Life Cycle Changes. For example, the current population is expected to live a longer, healthier life. This may more or less automatically enable and encourage more third age individuals set up their own business.

- Inter-generational Change. It could be, for example, that the current 35-45 year olds carry forward into their third age greater entrepreneurial potential than those currently in their third age. Future third age generations could have more entrepreneurially relevant skills and experiences.

Both effects might be expected to increase future third age business formation more or less automatically.

Recent and future trends

The general belief in the literature is that third age business formation is increasingly important. This is because both the absolute and relative size of the post-50 population has increased and because their levels of entrepreneurial activity (e.g. TEA) have risen and will continue to do so.

Forecasts are for a large increase in the number of people in their third age. For example, it is suggested that the proportion of the male population over 55 will rise from 23 per cent in 2000 to 33 per cent by 2025.[68] Life cycle changes lead to an expectation that people will be healthier and live longer. For example, the average male is expected to live an additional 19 years by 2051.[69] Increasing longevity is

65. Reynolds, P.D. and White, S.B. (1997) 'The Entrepreneurial Process: Economic Growth, Men, Women and Minorities.' London: Quorum Books.
66. Okani, M. (2002) Demographic Characteristics to Consider for Teaming Up as an Effective High Tech Entrepreneurial Firm: Some Empirical Evidence. 'Journal of Business Venturing.' March 2002.
67. Chowdhury, S. (2005) Demographic Diversity for Building An Effective Entrepreneurial Team: Is It Important? 'Journal of Business Venturing.' Vol. 20, pp.727-746.
68. Barclays Economic Reports (2001) Op. cit.
69. Patel, S.H. and Gray, C. (2006) Op. Cit.

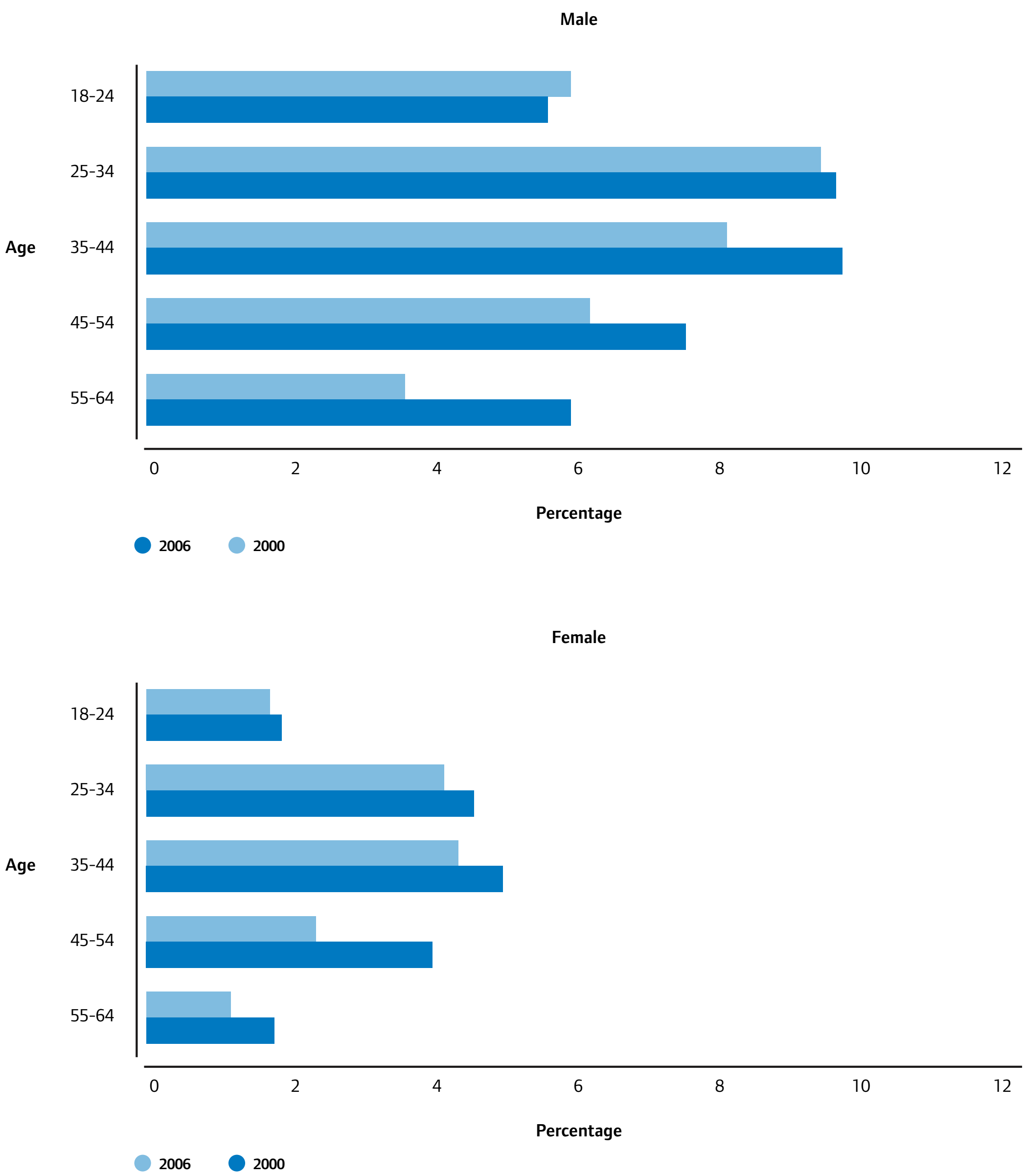
expected to increase the rate of entrepreneurial activity.

Additional increases are anticipated from inter-generational changes. For example, future generations of third age individuals will have experienced a life more conducive to entrepreneurship. It is expected that more of them will have the necessary financial resources, be better educated and have the necessary skills and experience in part because more will have worked in small firms and jobs with entrepreneurial characteristics with fewer having experience of routine manual jobs.

While systematic evidence is limited, it may be that third age business formation has increased over the past few years. Figure 12 shows evidence from the UK GEM on changes in total entrepreneurship activity by age. The data suggest that entrepreneurial activity increased between 2000 and 2006 in all age groups (except for males under 25). However, there has been a substantial increase in activity amongst those over 45.

The third age population also increased considerably between 2000 and 2006. Applying the GEM TEA rates by gender and age to the UK population for 2000 and 2006 suggests that the proportion of business founders in the 55-64 age group rose from 8.1 per cent in 2000 to 12.6 per cent in 2006. In terms of the absolute number of individuals over 55 who

Figure 12: UK TEA rates for 2000 and 2006 (percentage; male and female)



have set up, or are considering this option, this is an increase of 85 per cent.

However, a degree of caution is necessary. The TEA figures by age are subject to considerable annual fluctuation which could be due to sampling error. The estimated total number of business founders is sensitive to these small fluctuations. Nonetheless, the 2000 to 2006 changes are sufficiently large to suggest there has been an increase in third age business formation over recent years.

Some implications

Policy

There is an increasing policy focus on third age entrepreneurs. However, some caution is appropriate. There is relatively limited evidence upon which to base policy (either a decision to target the third age or what is required to implement a policy for third age entrepreneurship). The evidence sometimes offers mixed messages. For example, both the number and probability of being a third age entrepreneur appears to have increased (more or less automatically without policy intervention). On the other hand, the number of 'third age would be entrepreneurs' appears limited, implying limited untapped potential in the age group. This is consistent with the observation that there is a restricted number of novice third age business founders.

Furthermore, at least some of the literature appears more concerned to justify third age entrepreneurship as a policy priority rather than to present a balanced view of the available research. For example, the arguments that the survival rate of businesses set up by third age founders is substantially higher than for younger founders is at best misleading.

Third age entrepreneurship remains a relatively small proportion of total entrepreneurship. Very large changes in the size of the third age population and the probability of third age individuals setting up in business will be required to change this. Furthermore, it is conceivable that to increase third age activity, policy intervention much earlier in life is required. Getting individuals into entrepreneurship, or at least ensuring they have the necessary awareness and skills earlier in life, might be more effective than targeting today's over-50s.

It is sometimes implied that one reason for the relatively low level of third age business formation is that the business support system is inadequately geared up to deal with older people.[70] However, there is little evidence to suggest that inadequacies in the current system result in the relatively low rate of business formation. All the evidence presented in this review suggests that more fundamental issues relating to the small proportion of people over 50 with an interest in setting up their own business; the attractiveness of retirement and issues with health are at the root of any problem. Again, policies which improve health among older people, which themselves perhaps need intervention earlier in life, could be more effective than getting the business support system to gear up to treat the third age as a priority market segment.

Finally, there is the question of how to define third age entrepreneurship. The literature does not specifically address this question. However, the evidence does suggest that 50-54 year olds could be seen as part of the core entrepreneurship group. Allowing for those already running their own business and the self employed, business formation does not appear to decline substantially until at least age 55. However, there are very few business founders aged over 60.

Research

Compared with other population subgroups such as the young, ethnic minorities, women and the disabled, there is little research explicitly examining third age business founders and entrepreneurship. That which is available mainly relates to self-employment with almost nothing on their role in innovation and high growth new starts. This is an obvious area in need of further research.

Much of the available evidence is found in more general studies of entrepreneurship including survey-based evidence from the Global Entrepreneurship Monitor and the Small Business Service Household Entrepreneurship Surveys. While these surveys contain much useful information, they have not been systematically analysed from the perspective of third age entrepreneurship. Much more could be achieved with these available data. However, the data are either not collected or not analysed for those past the official retirement age (65 for men and 60 for women). This is despite the fact that many self-employed individuals continue to work beyond that age.

70. Kautonen, T. et al. (2008) Enterprise support for older entrepreneurs: the case of PRIME in the UK. 'International Journal of Entrepreneurial Behaviour and Research.' Vol. 14, No. 2, pp.85-101.

Many of the studies based on surveys of new firms do not identify older business founders in their samples. They also often adopt age classifications, such as under and over 30 years of age which make it difficult both to analyse the influence of age and impossible to examine third age founders.

More research from an economic development perspective is required focusing on issues such as innovation and growth potential of third age business founders. For example, it would be useful to know the extent of innovation and potential growth and whether and how the nature of innovation differs between older and younger entrepreneurs. For example, it might be that third age innovation takes the form of business model development rather than technology.

A specific issue of interest to entrepreneurship research in general and, specifically to third age entrepreneurship, is the role of teams. Generally business founders are studied as individuals. However, many start their business as part of a founding team. It could be that team starts are particularly important for older founders. Being part of a team may enable them to exploit their potential comparative advantage (e.g. experience), and make good their potential disadvantages (e.g. reduced energy).

Finally, the literature suggests a number of specific questions worthy of further consideration. These include, for example, the relative influence of health, economic incentives and cultural attitudes, whether or not third age individuals have shorter time horizons (in the business context) and are more risk averse, what motivates and constrains them and, importantly, do they set up different types of businesses compared with younger founders.

Appendix C: Small business service small firms survey

This Appendix reports the results of an analysis of the 2005 Small Business Service Small Firm Survey. We are grateful to Phill Lacey of the Enterprise Directorate in the former BERR for extracting the data relating to new firms from the database. The data incorporate all forms of independent business start-ups (i.e. it includes those becoming self-employed both with and without employees).

Third age founders

The survey obtained responses from 1,028 business founders who had set up their business (or taken control of an existing business) in the 4 years prior to the survey (i.e. 2005). The survey contains the founders 2005 age (by age band), but not their age when they set up in business.

This means it is not possible to obtain a precise figure for the proportion of the sample businesses set up by third age founders. However, Table 30 shows that 75.7 per cent were under 50 at the time of the survey (and, obviously, when they set up the business.) It also shows 11.2 per cent were over 55. Since the business was set up in the preceding five years, they were over 50 when they set up the business.

However, it is not possible to determine whether those aged 50-54 (8.8 per cent) and those who refused to give an age (4.4 per cent) were over 50 when they set up the business.

Anywhere between 11.2 per cent (the minimum) and around 20 per cent (maximum) of businesses could be set up by third age entrepreneurs. This maximum figure assumes:

- The majority of those refusing to give an age are 'third age'. This is based on the observation that older founders are reluctant to talk about their age.
- One half of the 50-54 year olds were over 50 when they set up in the business in the past 4 years.

Table 30: Age of founders: percentage distribution

Current age	Percentage
Under 50	75.7
50-54	8.8
55+	11.2
Refused	4.4
Total	100

Table 31: Employment size by age of founder: (percentage of firms)

Employment size	Founder under 50	Founder over 50
0	73.3	76.5
1 – 9	24.4	20.9
10 – 49	2.1	2.6
50 – 250	0.3	0

This illustrates the difficulty of obtaining a reliable estimate of third age entrepreneurship. This difficulty is compounded by the failure of the SBS survey to ask questions about participation in teams of founders.

To obtain a clear cut analysis of older and younger founders, the rest of this Appendix compares the founders currently (i.e. 2005) over 55 and those currently under 50.

Business performance

The survey provides several indicators of growth and performance. There is some indication that rather more third age founders are setting up as self-employed. For example, almost 14 per cent say they run the business via a personal bank account compared with 6 per cent of younger founders. However, as illustrated in Table 31, there is no substantive difference in employment size between the older and younger founders. However, all the businesses with over 50 employees in the survey were set up by younger founders.

Measured by annual turnover (Table 32), the data again show little evidence that businesses set up by younger founders have grown more than third age businesses. However, one or two businesses set up by younger founders have grown to achieve a turnover of over £1m and to employ over 50 employees. Almost 70 per cent of third age businesses, compared with 55 per cent of businesses set up by younger founders, say the business has achieved profitability.

Rather more third age founders have sales outside the UK (17.4 per cent compared with 12.9 per cent) and more say they have introduced new products. Against 36 per cent of younger founders, 49 per cent of older founders say they have introduced a new or significantly improved product. However, the equivalent figures for new or significantly improved processes are 24 per cent and 16 per cent. More third age founders say the business uses the Internet (85 per cent versus 73 per cent).

Table 32: Annual turnover of firms by founders age: percentage of businesses

Sales (£000)	Founder under 50	Founder over 50
0 – 60	32.6	32.5
61 – 99	11.6	6.1
100 – 249	16.1	10.5
250 – 499	4.9	9.6
500 – 999	3.9	7.9
1 million+	2.1	0.9
Don’t know/refused	28.8	32.5

Expectations

However, third age founders have lower expectations of future growth and somewhat fewer are trying to grow the business.

- Compared with 78 per cent of younger founders, just 62 per cent of older founders aim to grow the business over the next 2 or 3 years.
- Compared with 55 per cent of younger founders, just 46 per cent of older founders expect sales to increase.

These findings may be related to the expected future of the business. For example, rather more of the third age entrepreneurs (21 per cent compared with 11 per cent) expect a full transfer of ownership or the business to close in the next five years.

When asked what they expect to do with the business when they retire, there is almost no difference between those under 50 and over 50 in the proportion who plan to sell it (28 per cent), keep it in the family (28 per cent), or close it (3 per cent). The only significant differences are that 46 per cent of those under 50 either have no current plans or say they don't know; the equivalent figure for the over-50s is 35 per cent. Given their age, this is a high proportion that have not thought about or planned for succession.

Of the third age founders not wishing to grow the business, by far their main reasons are they are looking to reduce the number of hours worked (almost all), looking to retire (43 per cent) with 41 per cent simply saying they are happy with the business's current size. Business issues such as staff recruitment, obtaining additional resources, financial risk, the absence of incentives, and problems of managing or obtaining resources are almost never mentioned.

Start-up motivation

Figure 13 shows why people set up their businesses. There are few fundamental differences between older and younger founders. The most substantive are that third age entrepreneurs are:

Figure 13: Reasons for starting a business: percentage of founders

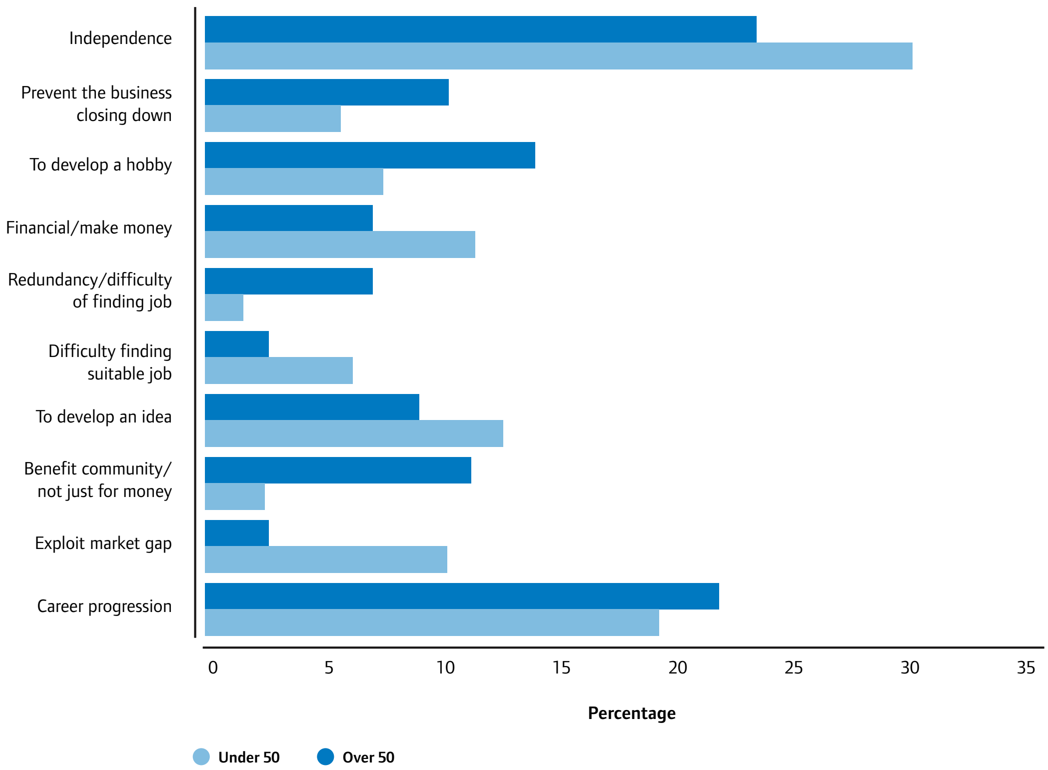
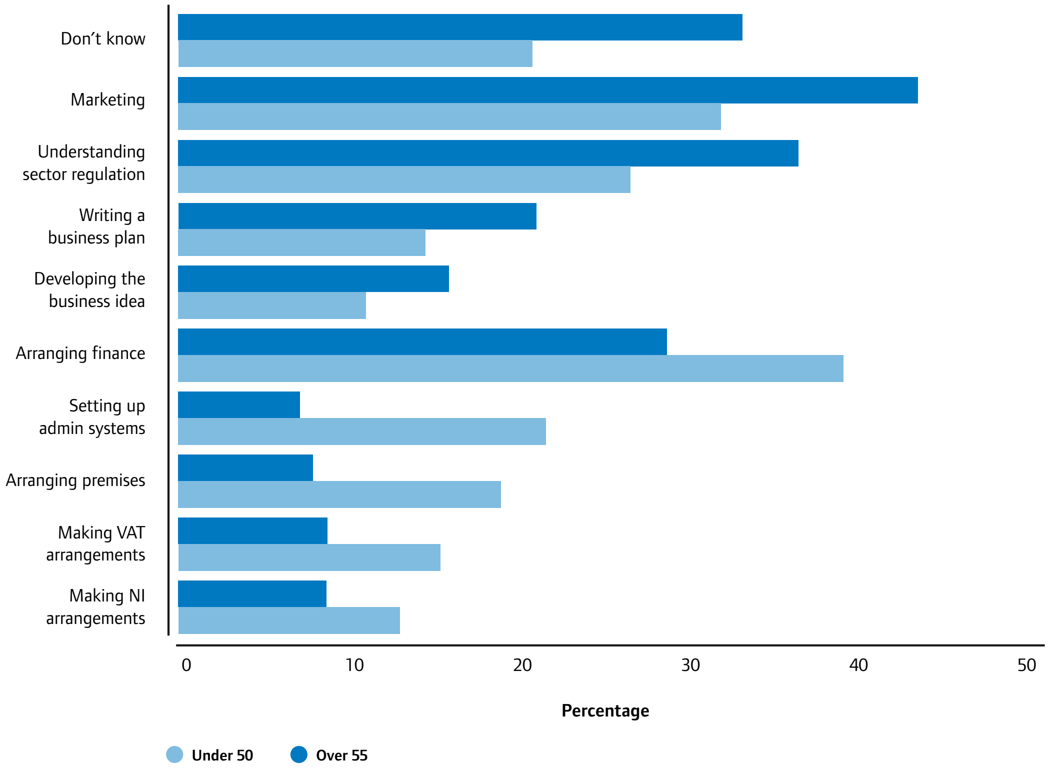


Figure 14: Main start-up challenges: percentage of respondents



Notes: Similar percentage responses were received with regard to other elements of the tax system.

- Rather less likely to have set up the business to be independent. However, a desire for independence is generally the main reason for setting up the business.
- Rather fewer are driven to fill a market gap, exploit an opportunity or to make money.
- Rather more are seeking to develop a hobby when setting up the business.
- Rather more set up the business to prevent an existing business closing.
- Rather more are concerned to contribute to society. But only 11 per cent, compared with 2 per cent of younger founders, give this as a reason.

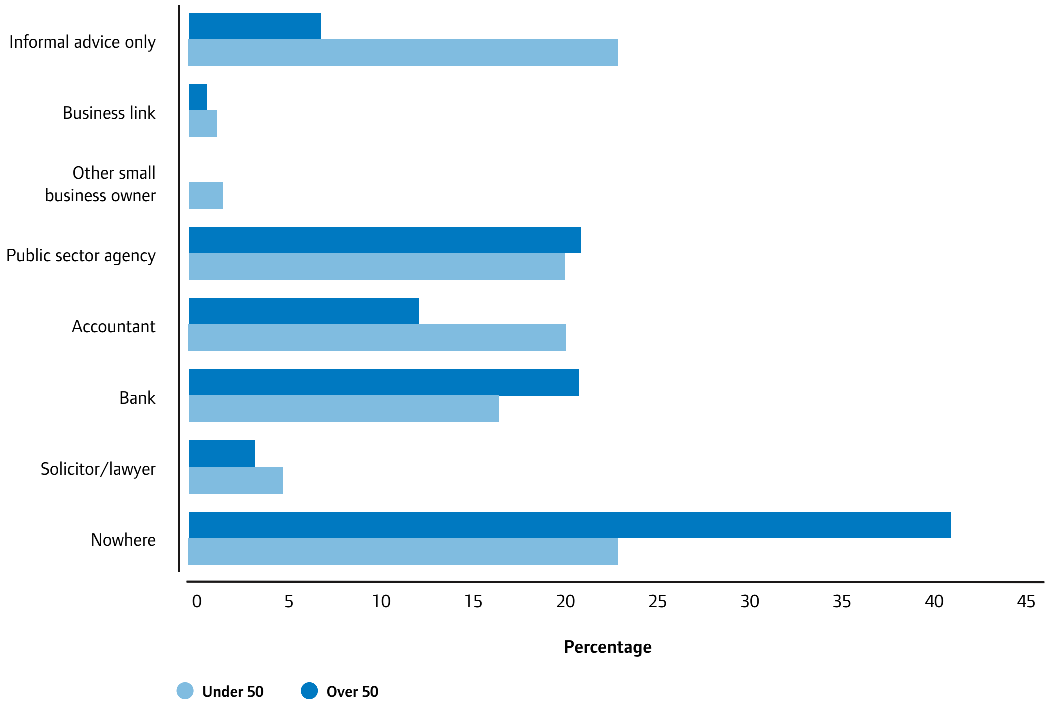
For both groups, career progression is the second most frequently given reason (22 per cent of the over 50s, compared with 19 per cent of the younger founders). This perhaps suggests a degree of frustration with their job before setting up the business.

While employment issues drive an equivalent proportion of both third age and younger entrepreneurs, the younger entrepreneurs were less driven by the difficulty of finding a job or redundancy and more driven by finding a job they liked. Nevertheless, relatively few were driven by employment issues.

The start-up challenges

Figure 14 shows the responses to the question 'when setting up the business, what were the main challenges?' It shows the most frequently quoted challenges and those which most differentiate third age and younger entrepreneurs. A major challenge for both age groups, but especially third age founders, is marketing. The other important factors which differentiate third age founders is the difficulty of understanding sector-specific regulations and, to a lesser extent, developing the business idea and writing a business plan. Rather more third age founders say they do not know what

Figure 15: Sources of start-up advice: percentage of founders



the challenges were (perhaps because they were not offered 'none' as an answer).

On the other hand, substantially fewer older founders found raising finance, sorting out tax, setting up administrative systems, finding premises or recruiting staff to be a challenge. Interpreting these findings is not straightforward. The data could reflect the greater business experience of older founders. On the other hand, they could reflect less need to finance the business, set up tax arrangements or recruit staff.

Start-up assistance

The main sources of advice and information used are shown in Figure 15. Just over 40 per cent of third age founders did not seek any external advice. This compares with 23 per cent of younger founders. It is not possible from the survey to know whether they did not need or want advice or whether they did not seek it because of lack of knowledge or other problems in accessing it. However, those who did seek advice report almost no problems in obtaining it.

Around 20 per cent of both older and younger founders used a local or government agency (but very few used Business Link). For older founders, the bank was used by 21 per cent compared with 17 per cent of younger founders. However, the main contrast is that many fewer use informal sources such as family and friends only (7 per cent compared with 23 per cent of younger founders).

It does not appear from this evidence that third age founders are making use of greater resources accumulated over time, such as business and personal networks. Older founders might be expected to make greater use of other business owners and agencies such as Chambers of Commerce, the Federation of Small Business, the Inland Revenue or specialist financial advisors and consultants. However, few reported doing so. In this respect, they are no different to younger founders.

Conclusions

It was not possible to establish the precise proportion of new businesses set up by third age founders in the period 2001 to

2005. However, the proportion appears to be approaching 20 per cent. There is little difference in the early growth performance between older and younger founders but the very fastest growing businesses were set up by younger founders.

A marginally greater proportion of older founders say their business introduced a product innovation but slightly fewer say it introduced a process innovation. More third age businesses exported in 2005 and had achieved profitability. At the same time, a smaller proportion were trying to grow the business. Nevertheless, the majority of older founders were trying to grow the business.

There are some differences in the motives for setting up the business. More third age founders are motivated by a desire to prevent a business closure, to develop a hobby or to give something back to society. Rather fewer are driven by the desire for independence, to make money or to exploit a market gap. There are also some differences in the main challenges faced by younger and older founders with a greater proportion of the latter identifying regulation and marketing. `

However, substantially more of the older founders made no use of external sources of advice. In particular, substantially fewer used informal networks or sources of advice. There is no evidence that this limited use of external advice is due to difficulties in accessing such advice.

Appendix D: Case studies

MTEM Ltd: An academic-led university spinout

A new technology that radically cuts the cost of oil exploration was the basis for a university spinout company led by two academics in their sixties from the University of Edinburgh. Within three years the company was sold to a Norwegian multinational for a substantial sum.

Anton Ziokowski, Professor of Petroleum Geosciences and Senior Lecturer Bruce Hobbs set up the oil services company MTEM in late 2004 with their research student. Three years later, it employed almost 70 people and was sold to a Norwegian company, Petroleum Geo Service (PGS) for $275 million.

Prof Ziokowski and Dr Hobbs had been researching transient electromagnetic oil exploration for almost a decade when in 2001 the team invented an electromagnetic method for detecting oil, which was patented by the University. In contrast to existing seismic technology, this method differentiates between oil, gas and water reducing dramatically the risk of drilling dry holes. As a cable-based technology, it also generates real time results in the field (rather than having to dismantle the equipment and take the data back to the laboratory for analysis). So, it substantially reduces oil exploration costs.

The founders joined Scottish Enterprise's High Growth New Ventures Programme and in 2003 won one of the development agency's Proof of Concept awards to design, test and build a prototype system. Having shown the potential for their invention, the company was launched in late 2004 with £7.4m from Scottish Equity Partners (a Scottish Enterprise-backed venture capital fund) and two Norwegian investment companies. In return for the investment, each took 22 per cent of the equity, leaving the University and the three founders with approximately 7 per cent each.

A further equity holder became the new CEO, recruited in early 2004 from a major oil services multinational. As well as bringing in a highly industry experienced CEO to develop and run the company, a well connected and entrepreneurially experienced Board was appointed.

From the outset, there was substantial interest in the technology from the oil majors. Initial contracts demonstrated the technology's worth. With teams working in the North Sea, the US and Canada, it had revenues of £1.5m in the first quarter of 2007. The company was in the process of trying to raise a further £25m to meet rising demand, when it received an unsolicited offer from PGS to purchase the company. Formed in 1991 and now listed on the Oslo stock exchange, PGS is an established global player in oil services with a well developed range of seismic technologies for both onshore and offshore activity. With offices in 28 countries, it operates a fleet of 15 specialised vessels. MTEM's technology complements its seismic expertise.

Given PGS's established market position and complementary technologies, the founders believed the MTEM business could be developed more quickly as part of PGS rather than as an independent company. Consequently, the board decided to sell MTEM to PGS leaving the University, founders and original investors substantially wealthier.

The academics continue to work for MTEM under its new ownership. Professor Ziokowski is PSG's chief scientist with responsibility for Multi Transient Electromagnetics. While no longer working there full time, they retain their links with the University.

From the founders' perspective, there was no personal financial risk involved. Nor did they take any career risk. Essentially the start-up decision had no potential downside and substantial potential upside. The experience and knowledge of the oil industry was critical. The start-up was assisted by having leading edge customers on the doorstep, the infrastructure for high tech entrepreneurship developed by Scottish Enterprise and the University's well developed system for commercialising its science and technology.

Wideblue: A management buyout from a former Polaroid subsidiary

Jim Hall was approaching his third age when he led a management buyout team which set up high tech innovation services company Wideblue as an independent business in 2006. With 18 highly qualified science and technology staff, the former Polaroid subsidiary offers a one stop shop for product design, development, prototyping, early stage batch manufacturing, supply chain management and business development. It has a particular specialism in the application of imaging and photonics.

Wideblue offers innovation services particularly to the high tech start-up market. But its origins are as a 30-strong Polaroid design centre co-located with the photographic company's manufacturing facility in Scotland. Following several years in international marketing for Polaroid, Mr Hall became the site MD in 1998 where he was involved in the company's restructuring, including the shift of its manufacturing activities in China. While still requiring the design centre, demand from Polaroid was declining. To maintain capacity, a decision was taken to sell its services externally which led Wideblue to be set up as a Polaroid subsidiary in 2001. At this stage, there were no plans to become a fully independent business.

Following a period in administration, Polaroid was purchased by the Tom Petters Group and its strategy started to change. It began to shift from a company which designs and manufactures imaging equipment to one which buys in innovative technology products, brands them and takes them to market. This strategy is complemented by Tom Petters' private equity investment vehicle SpingWorks.

By late 2005 restructuring at the Scottish site was largely complete. There was little left for the management to do. At this stage, Wideblue's management proposed that they should buy the company. The proposal was accepted by the new owners leading to an independent company owned by its three member management team with the Tom Petters Group retaining 20 per cent. By this time, Polaroid accounted for around 20 per cent of turnover. Wideblue retains collaborative links with Petters, Springworks and Polaroid.

The management team used their personal savings for the buyout. However, as a going concern, they were able to draw down a reasonable salary from the outset. Their main concerns related to whether they could generate sufficient revenue to replace work from Polaroid (which had just six months to run), the difficulty of finding an alternative career should it fail and whether they could adjust to a small business environment. But with few obvious alternative corporate careers in Scotland and a feeling that they had had enough of corporate politics and restructuring, the trio found the independence option exciting.

The company essentially assists other businesses to innovate and commercialise their technology. While its market has diversified somewhat to include one or two larger businesses, its main market is high tech (and especially academic spin out) start-ups. It adds the technology, engineering and commercial skills often required to complement scientific skills. For example, for a biotech company with a number of key patents, it designed and now manufactures an instrument to monitor the potency of the drug based on imaging of blood vessels.

In addition to early stage manufacturing, Wideblue assists clients arrange larger scale manufacturing (often overseas) with some accessing the Polaroid branding and marketing 'service'. Using underused Polaroid space, the company has also developed a small business incubator for some of its clients.

To generate revenue to meet running costs, the company charges a straight fee for its technology and business development services. Sales have increased steadily and in 2007 were £1.2m. From the outset, with no upside gain from the products it helps develop, it was recognised that the potential for growth from these services is limited. Consequently, it has joined up with angel and venture capital syndicates to invest its profits in selected start-up clients. It has made two investments to date.

The company does not expect to expand substantially at its current site. It believes proximity to clients is critical. Given its current business model, its success will be strongly influenced by the development (or otherwise) of high tech entrepreneurship in Scotland. If successful, it will seek to replicate its facilities elsewhere in the UK.

Its key strengths are its wide range of in-house business and technology expertise, experience, global contacts and its management team all built up within Polaroid. It would have been difficult to assemble this range of skills and expertise from scratch in a traditional start-up.

The founder age has not been an issue. Indeed, it is the source of the business's credibility and expertise.

Eclipse Aviation: Making personal air travel more affordable[71]

Eclipse Aviation developed a 'very light jet' as a small, relatively cheap form of personal jet and air taxi. With backing from investors including Microsoft founder, Bill Gates, the company brought together two third age visionaries in a bid to revolutionise air travel. The company was set up in 2001. Unfortunately, the demand for personal air travel did not survive the recession, and after several attempts at restructuring, the company was liquidated in early 2009.

Located at Albuquerque Airport in New Mexico, Eclipse was founded by Vern Raburn (in his early fifties) and Sam Williams who was in his early eighties. Both had a long standing interest in aerospace and a shared vision of 'free flight' by small, relatively cheap, fast and safe jets for personal transportation and air taxi operations. The company's first product, the Eclipse 500, was a five-seater jet selling for around $1m. (£670,000)

71. Based on material in Fallows, J. (2001) 'Free Flight.' Cambridge, MA: PublicAffairs; and email correspondence with the company.

Raburn is an aviation enthusiast. His father was an important player in the U.S. aerospace industry and the younger Raburn gained his pilot's licence at age 18. He has a degree in aeronautical engineering and industrial technology with a subsequent career in the computer and software industries. In 1976 he set up one of the first computer shops in Los Angeles before joining Microsoft during its early years. Subsequently he held senior positions in companies such as Lotus and Symentex. In 1990 he raised venture capital to set up Stark Corporation to design and develop hand held computers. Having sold its assets to Compaq in 1994, he became president of the Paul Allen Group with responsibility for identifying technology investment opportunities. While undertaking this role, he met Sam Williams. By this time, the family was more than financially comfortable.

Sam Williams has spent his life developing highly innovative small turbo engines. As an employee of Chrysler, these were initially intended for the car industry. However, when Chrysler showed little interest, he left and set up what became Williams International in 1954. At the time, he was in his mid thirties. His major innovative achievements, for which he has received widespread recognition and several congressional awards, is the development of a low cost, small, lightweight turbofan engine with a high power to weight ratio. This enabled the development of the Cruise missile which subsequently became a major source of demand for the engine and of the company's revenues.

The engine was a critical constraint on the development of a jet-propelled small aircraft. Williams International had no intention of manufacturing aircraft. However, to stimulate demand for its engines, it invested substantially during the 1990s in the design of a small jet aircraft to demonstrate the potential. This was an approach to demand creation Williams had used earlier in life.

When Raburn and Williams met in 1997, it was agreed Raburn would go to work for Williams International to design, develop and launch a new aircraft. The deal was that Raburn would set up his own company while Williams International would fund and develop the aircraft from its own resources. If Raburn could then raise the necessary finance, the new company would meet the development costs in return for a limited period exclusive supplier agreement. The critical importance of the turbofan engine would give Eclipse a first mover advantage over competitors such as Cessna whose planes used slower, more difficult to maintain, less safe and more difficult to pilot turboprop engines.

Using his many contacts, Raburn raised over $300m (£200m) from investors including Paul Allen and Bill Gates. By the time Eclipse was formally launched in 2001, it had obtained non-refundable deposits on several hundred aircraft before the plane had even been manufactured. The expertise and staff, initially employed by Williams International, gradually transferred into Eclipse.

The nature of its formation meant the company was launched with scale. It recruited highly experienced staff and, in addition to the engine, developed a whole range of design, technological, business and manufacturing process innovation. From the outset, it was set up for large scale production. It drew on ideas, innovations and best practice from industries as diverse as computing, (e.g. Intel's approach to innovation and manufacturing), software (e.g. sale of vapourware) and the automotive industry (e.g. lean manufacturing). Finally, it made extensive use of computer-aided design. It revolutionised the technology and business models of the general aviation sector.

A wide range of, not a single, innovation underpins the company's development. Importantly, these include manufacturing process innovations. For example, even before it had been approved by the regulatory authorities, it planned to use friction-stir welding (a UK innovation) to dramatically reduce manufacturing costs. From the outset Eclipse Aviation was planned and thought like a scale manufacturer

Other traditional 'garage' start-ups had similar visions and were trying to develop the 'free-flight' market. Generally led by younger entrepreneurs, they achieved many technological innovations. However, a shortage of funds consistently limited their ambition and constrained their development. With fewer resources, they continued to rely on less speedy, reliable and safe turbo-prop engines. This limited their ability, beyond the enthusiast market to compete with commercial airliners.

By 2009 the company had sold 250 Eclipse 500s and employed 1,100 people. It had built up an experienced management team and Board consisting of senior industrialists. A new younger CEO had been brought in with Raburn becoming company President. The company was self-evidently highly innovative, visionary and well funded. However, none of this was sufficient to guarantee success. Such radical innovation, especially in the context of a sharp recession, is far from easy. The company is currently up for sale.

EnerTech Environmental: Teamwork pays off in the long term[72]

When most people would be ready to retire, 65-year old Norman Dickinson was starting his first company in 1980. After a career in construction as a chemical engineer, he 'retired' to turn his attention to chemical process inventions, obtaining his first patent in 1981. Over the next 15 years, Mr Dickinson obtained over a dozen further US patents relating to what has subsequently become known as the SlurryCarb process. This converts municipal organic waste into a fuel suitable for combustion and reburning in industrial and utility boilers.

His business model was to generate revenue from licensing the technology. However, Dickinson was becoming frustrated by the lack of progress in getting his technology applied. He began talking to his accountant grandson, Kevin Bolin, who was then in his early thirties, about the problem. Bolin was becoming frustrated with his own job, so in 1992 with a small amount of seed money from Dickinson's son, the three of them set up EnerTech Environmental to exploit Norman's patents. While Dickinson remained the technology driver, Bolin became the business driver.

72. Based on material in Bodde, D.L. (2004) 'The Intentional Entrepreneur; Bringing Technology and Engineering to the Real New Economy.' New York: M.E. Sharpe.

Initially, they continued the licensing business model. By winning Small Business Innovation Research (SBIR) projects, Dickinson's work and technology gained credibility. Nevertheless, without a reasonably sized commercial demonstration project, there were few takers. Eventually, Bolin was able to strike a deal with a Mitsubishi-led Japanese consortium to construct a demonstration plant in Japan which was commissioned in 1997.

While the Japanese consortium did not progress to the commercial development of the technology, it did provide EnerTech with valuable lessons as well as a demonstration that the technology worked and a cash payment from Mitsubishi of $500,000 for a license to use the technology in Japan.

By this time it was becoming clear that the licensing model was unlikely to work. Consequently, Bolin set out to raise finance to enable EnerTech to build and operate its own plant. These would be paid to take municipal waste, convert it into pellets and sell them as a substitute for coal. The plant would generate a long term income flow.

There then followed a prolonged period of seeking to obtain municipal contracts, site planning battles, broken contracts, deals falling through and the hard slog of raising finance for both working capital and to build facilities. At the same time, Bolin had to build the company recruiting a strong management team with credibility in the sector. The company was involved in a continuous struggle to raise finance (not made easier because its business model did not conform with traditional venture capital investments).

Finally, in 2007 work began on its first commercial plant in Rialto, California (whose State Government has a strong commitment to renewable energy) and progress is now being made on the commercial application of its Japanese license. Subsequently, substantial money began to flow to EnerTech from organisations such as Citigroup Inc's environmental investment fund.

This illustrates just how long it can take to turn invention into commercial reality and the benefits of a 'team' approach to the process. At the age of 92, Dickinson finally saw his work coming to fruition when he joined his grandson in attending the commissioning of the Rialto plant.

Medical Devices Innovation Limited (MDIL): When age is not a great barrier to innovation[73]

Low cost medical devices for the diagnosis and treatment of cancer are at the heart of a company developed by a former professor in his sixties. The founder has a long history of involvement with the medical industry and health establishment and had previously set up businesses to exploit his research.

His aims – and those of the company – are largely social and medical whilst covering costs for ongoing work in the laboratory. It is a private company with no employees apart from the founder and, according to Dun and Bradstreet data, it has a negative net value. However, it continues to operate over a decade after being established.

The company has developed several ultrasound based medical devices. These have had small niche markets and are 'manufactured as one-off products in-house. It produced its first prototype of a hand-held cancer diagnostic device for retail sale several years ago. As with its other products, early funding came through government innovation grants and (essentially social) angel funding.

However, faced with a number of unsolved heat-related technical problems beyond the founder's field of expertise, the company turned to an external technology development company (Tech Co). Having solved the problems, Tech Co recognised the commercial opportunity and negotiated a deal.

Tech Co invested substantially to set up a new business to commercialise and market the product. Tech Co subsequently raised around £2 million from the venture capital industry with MDIL receiving a substantial down payment, a consultancy contract and a royalty on future sales in return for the IP. Having raised the finance, Tech Co has been left with 20 per cent of the new company's equity. It remains responsible for its development and management.

The main constraints on innovation identified by the founder of MDIL are:

- The conservatism of the medical profession He believes that the profession prefers the status quo rather than trying something new.
- The regulatory system. This slows down the adoption of new devices even though the company's devices do not involve drugs.

Reflecting this, MDIL does most of its product trials in Africa. If the products are satisfactory in this environment, he believes there is a better chance of the device winning acceptance in the UK.

The founder did not appreciate discussion of his age. He believes publicity surrounding his age (he is approaching 80) would be a constraint on future development and funding. While it has never been made explicit, he believes that venture capitalists and other funders prefer younger applicants. He has taken to asking organisations why they require information about age on application forms.

Nevertheless, he implicitly recognises some age-related issues. For example, he is now reluctant to undertake the air travel necessary when raising finance and marketing. Here, he believes it is better to leave the slog of building the business and taking products to market to younger people. Essentially, he has subcontracted this work to the new company set up by Tech Co. This enables him to spend his time on his preferred activity, namely working on new devices in his laboratory.

This story illustrates that age is not an insurmountable barrier to innovation, and that innovation is not necessarily linked to company growth or driven by the desire to make money. The potential growth effects of successful innovation may well be outwith the innovating company.

73. Based on an interview with the founder who did not wish to be identified. Consequently this is a pseudonym.

Attention Space Limited: A one-man company translating the language of science and technology for business

As a company which seeks to translate the language of science and technology for businesspeople, Attention Space Ltd has recently branched into green issues. For its third age founder, Stuart Harris, it is a chance to bring together his own qualifications and life experience to the benefit of science, business and society. While the company remains small and without technological innovations, it makes a potentially important contribution to the innovation process.

Before recently incorporating the company in the UK, Mr Harris set up a company several years ago in the Netherlands at the age of 50. He has a degree in languages and a long-standing fascination with science and technology, and has enjoyed a varied career including spells in journalism, the City of London, corporate consultancy and as a freelance consultant and journalist. His core skill is in translating science and technology for non-scientists in the business world (such as managers and venture capitalists).

Mr Harris's parents ran their own business in which he worked as a boy. Given his varied career and family background, the move into self-employment and eventually setting up his own company was a natural progression. He had few concerns when doing so and sees little prospect of again becoming an employee.

To date, within the UK the company has largely sold his expertise. He has recently begun working with two major automotive companies on how they can develop, integrate and communicate sustainability across their businesses. It essentially remains a one man band.

However, having recently joined a CEO networking group, he has clarified and developed a vision for growing the company. This is to exploit market opportunities being created as a result of environmental concerns and, at the same time, to promote innovation within the environmental sector to overcome society's fundamental environmental problems. In addition to developing the business, he is motivated by the desire to be involved in work and issues about which he feels passionate. He perceives the business as part of a wider campaign.

Mr Harris sees the company's role as connecting scientists and technologists with those responsible for decision making in business and finance. This requires his science and technology translation and communication skills. The environmental sector is an expanding market because, not only is it growing and becoming more important, but also because the innovation process in sectors such as water and energy is fundamentally different to that in, for example, consumer products or the IT sector.

The environmental industries do not produce quick wins and have few high growth new starts. Traditional venture capital does not meet the needs of innovation in the sector. The sector is not one in which quick wins and fortunes are generally possible. It requires a different innovation and entrepreneurial model. Long term commitment, hard work and ongoing technology and engineering developments are essential. Mr Harris sees the company playing a role in 'selling' this message.

The main constraints on growing the business are perceived to be:

- Developing the market and establishing contacts and clients in relevant industries. Many do not as yet recognise the issues.
- Recruitment of a member of staff or partner able to market the service. He sees his main strengths as the delivery of services.
- Recruitment of additional staff to deliver the services. There are relatively few people with the hybrid skills (language, communication, science/technology) required.

Even if successful, the company is unlikely to grow substantially. Nevertheless, it could play a potentially important role in the innovation process.

Mr Harris has never sought external finance for the UK business. Age has never been an issue. He expected it to be profitable in the short term, and it has been.

Baseefa Limited: Using redundancy money to 'privatise' a public sector activity

Baseefa is a certification company, principally concerned with electrical and mechanical equipment intended for use in potentially explosive atmospheres. The company was set up in 2001 by a mixed age team led by 57 year old Ronald Sinclair.

The company was formed after the closure of a Health and Safety Executive (HSE) unit which provided a certification service for equipment going into sectors such as oil and gas, food processing and energy on a commercial basis.

Discussions within the Executive about selling off the unit in the early 1990s had stalled when legal advice suggested a sale was not possible under health and safety legislation. However, by 2001, the HSE felt it could no longer bear the unit's perceived losses, and a new HSE Chief Executive decided to close the unit and make the staff redundant. Clients would be expected to obtain the service from other organisations elsewhere in Europe.

At this stage, the unit's management decided to set up a new company to offer the service. Mr Sinclair made a director's loan to the new company of around £25,000 from his redundancy pay and the new company was formed. Baseefa began life with around 25 ex-HSE staff, a good worldwide reputation and an established customer base. Indeed, one customer was so keen to retain the service that it provided £20,000 upfront to the new company as payment for future services.

The management team expected the company to be a success. After all, its prime market is essentially driven and created by regulation. Clients have to obtain certification to meet their legal obligations under a European Union Directive and Baseefa can legally request upfront payment for its services. While the uncertainty surrounding its future led to the loss of a few clients in the early years, the company has since achieved modest growth. Turnover has grown from around £1.5 million in the first years to nearly £2.5 million and the company now has nearly 35 employees.

As a company operating in a legally regulated sector, the scope for innovation is seen as limited. However, Baseefa has achieved substantial improvements in efficiency and productivity. For example, as a unit in HSE it had a substantial overhead cost from 12 dedicated support staff and central functions for finance and HR provided by HSE. These functions are now performed by just four people. This has helped keep prices down and maintained competitiveness. Also, compared to its major competitors, it has adopted a somewhat different organisational structure. While its competitors have separate departments for marketing and client management, Baseefa engineers look after these relationships and business functions.

Trace Technologies Limited: Third age innovation in faster fibre optics

The company was founded as a new independent business by three people in their fifties in 2002 to develop and market a software tool to simulate and assist the design and installation of fibre optic cabling systems in the aerospace sector.

At the time, fibre optics were replacing copper cabling and the software was designed to make it quicker and cheaper to design, build and install harnesses by getting it right first time. The tool has been successfully developed and the company is now marketing and selling the product worldwide.

The company has its origins in an EU Fifth Framework collaborative research project undertaken by the major aerospace companies. Having completed the project, none of the participants wished to take responsibility for commercialising the intellectual property. At the time, two of Trace's founders – Geoff Fisher and Ernie Edwards -were running aerospace businesses. Having recognised the opportunities arising from the research, they sought to raise finance to develop the product and set up a new business. They approached several funding sources including public sector venture capital, but finance was not forthcoming.

Having been failed by formal investment channels, one of the founders presented at a business angels forum. This resulted in two angels deciding to invest £100,000. One, Geoffrey Andrews, became the firm's third founder and its part-time commercial director. The initial £100,000 was expanded into a £600,000 investment with matched equity funding from a public sector venture capital organisation, a small firm guaranteed loan from a major bank and a Regional Selective Assistance grant. In 2003, the company purchased the IP rights from BAE Ventures Limited arising from the Fifth Framework research project.

Geoffrey Andrews' first entrepreneurial venture was via a management buyout from Pilkington Optoelectronics. He subsequently sold the business in the early 1990s for a substantial cash payment and became an informal investor. Since then he has invested in several new businesses, sometimes becoming involved in their management on a part-time basis. These businesses include a company managing a technology incubator centre with a strong focus on photonics and optoelectronics. He has a background in optoelectronics. He is currently involved in ten companies.

Mr Andrews had originally intended to be a passive investor in Trace Technologies Limited. However, helping develop the initial business plan led to his becoming a part-time, one day a week commercial director. His skills and experience complement those of the other founders. One of these is now a non-executive director and the second is the part-time managing director of the business while continuing to run his other businesses.

The simulation tool has now been fully developed and is on sale at around £20,000. The software is either sold to the client or Trace Technologies does the work for the client using the tool on a consultancy contract. It has also produced a 'pay as you go' payment system for the product. This enables the client to obtain its product but without the need to raise a capital requisition in these stringent times.

The product serves a niche market. Consequently, sales staff don't have to spend hours on the phone seeking new customers. It is this which enables the commercial and senior management of the company to be undertaken on a part-time basis. This obviously reduces overheads. The aim is now to utilise the software concepts to develop applications in other sectors such as research (e.g. for HEI photonic research centres) and the oil and gas industry.

The initial funding difficulties seem to have resulted from a lack of understanding of the technology and its sector of application within the financing community. Venture capitalists are rarely exposed to the aerospace sector. However, there is something of a suspicion that some of the difficulties may have arisen from the grey hairs of the founders. Beyond this, age has not been a substantive issue.

Kisa Engineering Limited: A management and customer buyout

By joining a management buyout, 48 year-old Malcolm Baskett helped to rescue an Ipswich-based fabrication company from closure. Subsequently, the company has experienced modest employment growth, is now profitable and has an annual turnover of £1.5 million

The original parent company owned a ducting fabrication workshop. However, as ducting became more of an 'off-the-shelf' part of its heating and ventilation business, it began planning to close its ducting workshop and make the staff redundant. Kisa Engineering was formed in 2001 as Mr Baskett joined the workshop's works director in a buyout of the workshop in a 50:50 partnership.

At the time, Mr Baskett was working for a local grain handling business, and was a customer of the workshop. He knew the Works Director, they got on well and he thought the workshop was a good business. He was also motivated, at least in part, by 'sentimentality' to save jobs and preserve traditional engineering. While the parent company probably believed the workshop had no future, it cooperated with the buyout to avoid redundancy payments and to continue earning rent from the workshop's premises.

The founders funded the buyout from their personal savings. Given neither had substantial assets, the MBO price was reasonable. The business also had orders which gave the new company cash flow. While the first few months were 'tight', neither the founders nor the company had to raise any external finance. However, when they sought to raise small amounts of working capital (around £20,000) from the banks, the founders were told they would have to secure the loan with their homes, terms they found unacceptable.

In the beginning Mr Baskett continued working for his grain handling employer. This assisted the cash flow of the new company. However, it also posed some constraints since it was necessary to avoid conflicts of interest (e.g. in the placing of work) and competing with his employer in some areas. When the owner of the grain handling company decided to retire in 2003 and close the business, Mr Baskett joined Kisa Engineering full-time and took a small part of the grain handling company into Kisa.

Kisa Engineering has continued the work of fabricating and installing handling equipment for the grain, flour, Maltings and animal feed sellers. The former Works Director provides the fabrication skills and Malcolm the material handling skills. There has been a small amount of diversification (e.g. stairways for construction) on the fabrication side of the business, but essentially it has continued its previous activities. It is a business the two Directors have been in all their lives and perceive little prospect of, or need for, substantive innovation.

Nevertheless, the company has achieved modest growth from 18 employees at start-up to 25 today. It has a turnover of £1.5m. The company achieved profitability in its first year and remains profitable. While the founders invested their own resources for the buyout, they were pretty certain it would be successful and do not believe they took any substantial risk.

Turning to the future of the business, it may be unlikely to continue into the next generation of owners/managers. It is believed that the younger generation has no interest in traditional engineering in sectors such as grain or animal feed handling. The university system simply does not produce individuals with the interest or skills to keep the business going.

Age has never been an issue in setting up the business. However, while the workshop staff is young, the drawing office includes people in their sixties and seventies. Their experience and expertise cannot be replaced by younger people operating CAD systems. Ultimately, the business will close, not because of the absence of demand, but because these traditional skills die out and cannot be replaced.

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