WORKING PAPER No. 17
April 1994

STAYING WITH IT: SOME FUNDAMENTAL DETERMINANTS OF BUSINESS STARTUP LONGEVITY

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STAYING WITH IT: SOME FUNDAMENTAL DETERMINANTS OF BUSINESS STARTUP LONGEVITY

ABSTRACT

This paper identifies some fundamental empirical determinants of survival in UK business startups. Human capital factors are established as quantitatively paramount, in particular proprietor maturity, work experience and vocational training play major roles in survival. Such personal assets enhance survival. If the human capital concept is allowed to embrace the size of the managerial team, and can be regarded as embodied in the goodwill associated with business purchase, then the overall impact of human capital on business longevity is still greater. Important by its absence is the businesses’ use of startup finance. Startup capital may not play a role because the provision of finance is itself determined by the presence or absence of human capital, team size, and other identified characteristics of the business. The public policy implication of these findings is that government should pay less attention to startup debt gaps and more to the fundamentals of business survival identified in the paper.

JEL No.s: M2,M13,G33,L2

Key words: Startup, survival, human capital, financial constraints
1. INTRODUCTION

It is an extraordinary fact that the 'failure' (deregistration) rate amongst UK VAT registered businesses is independent of the business cycle and has, over a period of a decade remained at a constant 10-11% of the stock of businesses per annum (Small Business Research Trust, 1994). This is true in the face of huge fluctuations in bankruptcy and takeover rates with the business cycle (see e.g. Hudson and Cuthbertson, 1992). To the unprejudiced eye this observation suggests that perhaps the causes of business closure (as opposed to specific outcomes such as bankruptcy) are rooted deep in human nature or in the structure of economic institutions. But is it possible to empirically identify these causes?

Earlier studies of business closure tended to focus on specific outcomes that generate obvious losses to society, namely, bankruptcies and insolvencies. However these outcomes are only a small proportion of total business closures and are by no means the only kinds of closures that involve losses. It is now becoming apparent that by far the largest cause of business closure is in fact ceasing to trade whilst remaining solvent (see Figure 1).

FIGURE 1 [BREAKDOWN OF CESSATIONS] HERE

Studies of solvent closure in the literature, however, have often focused on the relative economic value of outside alternatives available to the entrepreneur, on the existence of financial constraints damaging business viability, or on the influence of initial size, as determining factors in business longevity (see, e.g., Jovanovic, 1982; Schary, 1989; Evans, 1987; Dunne, Roberts and Samuelson, 1989; Varyiam and Kraybill, 1993; Cressy, 1993). Exceptions are Bates (1989), Evans and Jovanovic (1989); Blanchflower and Oswald (1990), and more recently Holtz-Eakin, Joulfaian, and Rosen (1994), who examine the influence of proprietor human capital, in addition to financial capital, on business survival.

However, one may ask whether these commonly posited causes of closure (initial size, finance, external opportunities) are the most fundamental that can be empirically identified. For example, initial business size has, from a number of studies, been shown to be a major positive influence on survival. But what determines initial size itself? More able, mature, experienced and qualified individuals are more likely to start larger businesses. Financial constraints on business size may also depend on the perceived characteristics of the business and/or the entrepreneur, on his accumulated assets, as viewed by the lender. Finally, the value of an outside alternative to entrepreneurship is a function of human capital possessed.

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1 See Altman (1968) and the subsequent literature.

2 This chart is based on a sample of some 750 UK businesses. See Cressy (1993) and Watson and Everett (1993).

3 Or of 'switching' between the states of employment, self-employment, unemployment, retirement, etc.

4 See Cressy (1992) for an analysis of startup overdraft lending and its relation to owner housing assets and De Meza, Black and Jeffries (1992) for an analysis of the relation of birth and death rates to house prices.
by the entrepreneur: the wage rate, for example, depends on seniority, and this is correlated with entrepreneurial age at startup. We are once more back to 'fundamentals'.

The present paper addresses this problem by attempting to identify empirically some deeper empirical determinants of small business survival. Firstly, a set of intuitively reasonable empirical hypotheses is established, relating business survival to owner and business characteristics at inception. These hypotheses are then put to the test on a cohort of UK startup businesses over the period 1988-1992. As far as possible variables are selected that are truly 'fundamental'; in other words, variables that plausibly underlie the traditionally posited causes of survival. Thus we begin by establishing whether traditional measures of business size such as employment, business borrowing, and the value of outside opportunities explain the data. We then estimate a model based on the hypotheses established and test whether the traditional variables are significant given the fundamental variables are included in the model. Thus we focus on fundamentals such as proprietor age, experience, startup mode, size of the startup team, etc that are in some sense conceptually basic, and are also significantly correlated with the survival probability. Variable addition tests are then performed on sets of financial, size, and external opportunity variables to determine whether these add to the explanatory power of the equation, as predicted by theories of credit rationing\(^5\) and survival and exit\(^6\).

The remainder of the paper is organised as follows. Section 2 develops the theory to be tested. Section 3 describes the database used in the empirical work. Section 4 defines the empirical model and Section 5 describes the estimation. A final section concludes and draws out the policy implications.

2. THE THEORY
In this section we define a set of eight hypotheses that are tested in the subsequent empirical work.

**H1. There is a positive relationship between general human capital of the business' proprietors, measured by age, and the survival of the business.**

The reasoning behind this is as follows. For small businesses the owners and managers are the same people. Maturity (proprietor age) brings wage and business experience, in the form of the acquisition of general 'human capital'. This enhances business skills and thereby the business' survival chances (Bates, 1989; Cressy, 1992). Age also brings responsibilities (e.g. a family to support, a house mortgage to pay) which provide a moral and economic push to business continuation. Maturity also brings lower transfer earnings into wage employment (since wages are a function of tenure), 'locking in' the proprietor to his or her business (Cressy, 1992).

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\(^6\) E.g. Jovanovic, 1982.
H2. The number of proprietors in the business is positively associated with survival due to (a) homeostasis effect, and (b) balanced team effect.

The homeostasis effect refers to the fact that the resilience of the management team to chance depletion and/or damage increases with team size. For example, a business run by a larger management team will, if one owner is ill, or leaves, or is inactive (e.g. the proverbial 'free rider'), be less affected than one run by a smaller team. The balanced team effect, on the other hand, arises from the fact that a larger number of proprietors allows specialisation of function. Different individuals in a larger team can engage in general management, finance, marketing, production etc., rather than (say) one owner-manager attempting to perform all of functions\(^7\).

H3. The specific human capital of the proprietors measured by work experience in the same area as the startup enhances business survival chances.

This hypothesis reflects the fact that human capital is not entirely activity-specific, in the sense that skills acquired in one context may be useful in another context. Work experience in particular, may allow the proprietor to use skills previously acquired in the service of an employer in his/her own business to his/her advantage. Established business contacts that have been built up over time may also be utilised as clients for the new business. This latter is the familiar spinoff effect of an enhanced client base via proprietor work experience in the same area as the start.

H4. The specific human capital embodied in vocational qualifications of the proprietors enhances survival chances.

The human capital embodied in a vocational qualification is more suited to the typical small business than day an academic one.\(^8\) The three-year trade apprentice qualification is particularly valuable in starting a small business (say in the building trade). It provides a training that is of direct relevance to the skills needed in the initial stages of a small business and provides the basis of evaluating the skills of potential future employees. Value-for-money is more likely to be forthcoming from individuals who are genuinely skilled at their job. The investment of three years time is also indicative of a commitment to the trade in question.

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\(^7\) This concept goes back to one of the founders of economic science, Adam Smith. It is also argued by some authors to be highly relevant to the growth potential of the business. See Phillips and Kirchoff (1989) for a discussion of the relation of employment size to business survival; and Storey et al (1991) for a discussion of the team concept in relation to business growth.

\(^8\) This argument does not apply to the typical hi-tec start, where high academic qualifications are paramount. It should be noted that the typical startup is very low-tec in nature, as evidenced in the database.
H5. Business purchases survive longer than wholly new starts.

We argue that business purchases are more viable than de novo starts for two reasons. Firstly, there is likely to be already an established clientele for the product/service ("goodwill"). This itself means a guaranteed initial demand for the product or service and obviates the problem of establishing/identifying one. Secondly, there is already an established network of suppliers for the business. This again helps to avoid the problem of availability and reliability of inputs to the business. These facts jointly imply there is less 'spade work' to be done by the new proprietor. To some extent the new proprietor has, simply by the fact of purchase, 'bought in' the business experience of his predecessor(s).  

H6. Some industry sectors in which the business is located will be associated with higher survival chances.

Whilst there may be macro-economic effect inbuilt into survival, structural effects also play an independent role. In general we expect that growing sectors will enhance survival due to increasing general demand. However theories of turbulence suggest that competitive sectors will have high birth and death rates. The precise sectoral effects applicable to a given time period, however, cannot be hypothesised with certainty.

H7. Longer-lived businesses start from leased or purchased premises rather than home.

The logic behind this hypothesis is that businesses starting from home are often intended to provide only part-time, income-supplementing work for the wife of the main breadwinner, or to provide additional income in retirement. Therefore such businesses are more likely to cease trading if demand falls; a supplier is lost; or the family acquires children, and so on.

H8. Financial capital inputs (measured by the startup finance vector), business size (measured by employees) and the return to the alternative occupation (measured by pre-entrepreneurial income), play no role in survival, once the fundamental factors identified in H1-H7 have been taken into account.

This essentially defines the sense in which the term 'fundamental' is used in the paper.

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9 There is empirical support for the superior longevity of business purchases in the work of Bates (1989).

10 Reid (1992) examines the influence of a range of variables including finance and product market characteristics.
3. THE DATA

The empirical work of the paper is based on a random sample of some 2,000 startups who opened business accounts with National Westminster Bank of Great Britain in the 1988. The vast majority (80%) of such start were 'entirely new’. Only some 12% were purchases of existing businesses.

Background information on these businesses was obtained from a questionnaire at account opening stage, and bank account information was recorded subsequently. Information on account survival is also recorded\(^\text{11}\). Background information includes business legal type, employees and industry, and proprietor information includes age, education etc. Bank account information includes borrowing levels of the business, interest margins charged on loans, security requirements for loans, bank charges on the account, and business cash-flow\(^\text{12}\).

Variables used in the analysis.

\[
PRES921 = \begin{cases} 
1 & \text{if the business account, opened in the second quarter of 1988, was still open in the first quarter of 1992;} \\
2 & \text{else}
\end{cases}
\]

\[AVAGE = \text{average age of the proprietors at startup}\]

\[AVAGE2 = AVAGE^2\]

\[AGRI = \begin{cases} 
1 & \text{if the business was in the Agriculture sector;} \\
2 & \text{else}
\end{cases}\]

\[TRANS = \text{1 ditto Transport/Distribution sector}\]

\[N = \text{number of proprietors in the business at startup}\]

\[PURCH = \begin{cases} 
1 & \text{if the business start is a purchase;} \\
0 & \text{else}
\end{cases}\]

\[FTRAD = \text{fraction of the proprietors with a trade apprenticeship qualification}\]

\[FWKFLD = \text{fraction of the proprietors with work experience in the same area as the start}\]

\[NWBFIN = \begin{cases} 
1 & \text{if debt finance from the business' own (main) bank was used;} \\
0 & \text{else}
\end{cases}\]

\[OTHBNKF = \begin{cases} 
1 & \text{if other bank finance}\end{cases}\]

\[FRIENDF = \begin{cases} 
1 & \text{if finance from friends and relatives}\end{cases}\]

\(^{11}\) It is worth noting that few accounts closed as a result of account transfers between banks. Thus any potentially spurious effects of account transfer on the business closure data are obviated. (See Figure 1 and Cressy, 1992 for details.)

\(^{12}\) The full set of variables contained in the database is listed in the Appendix.
PERFIN = 1 if personal money/savings
FINHSFIN = 1 if Finance House finance
GOVFIN = 1 if Government finance (e.g. Enterprise Allowance, Loan Guarantee Scheme)
VENTFIN = 1 if Venture Capital finance\(^{13}\)
OTHFIN = 1 if finance other than those listed above

FT = number of full-time employees in the business at startup
FT2 = FT**2

PT = number of part-time employees in the business at startup
PT2 = PT**2

AVINCOME = average prior income of the proprietors
AVINCOM2 = AVINCOME**2

Table 1 provides the descriptive statistics for the sample. A number of points are worth mentioning.

Firstly, almost two thirds of the businesses in the sample started up from home. Secondly, only one in eight starts were purchases of existing businesses. (Thus most were wholly new startups). Thirdly, the businesses measured by the number of proprietors, were very small, with typically between one and two owners and only a slightly larger number of employees\(^{14}\). Fourthly, they were generally not located in agriculture or transport\(^{15}\). Fifthly, the typical proprietor was quite young, in his or her mid-thirties. Sixthly, although only one in six had a trade apprenticeship qualification, over two thirds had work experience in the area of the start. Finally, almost half the entrepreneurs used their own money to start in business, with ownbank finance also popular, being used by a third of the sample.

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\(^{13}\) This variable is excluded from the logit analysis due to lack of sampling variation.

\(^{14}\) Employees is defined to include the owners.

\(^{15}\) In fact retail and construction and Other services were the most frequent sectors. See Cressy (1992).
TABLE 1: SELECTED SAMPLE STATISTICS

<table>
<thead>
<tr>
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<td>0</td>
<td>586000.00</td>
</tr>
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</table>

Sample size=1651 observations

4. THE EMPIRICAL FORMULATION
To circumvent the need for specific assumptions about business motivation we suppose that business survival depends on an unobservable performance indicator $z^*_i$ for firm $i$. If this indicator falls below some critical value (here normalised to 0) closure of the business is observed. Otherwise we observe the business continuing.
Performance is assumed to be a function of business characteristics \( x_i \) and a random firm-specific factor \( u_i \):

\[
z_i^* = \beta' x_i + u_i
\]  \( \text{(1)} \)

where \( z_i^* \) is a performance indicator, and the vector \( \beta \) shows the weights attached to the elements of the vector \( x_i \). \( z_i^* \) is by assumption non-negative if and only if the business survives.

The performance indicator, whilst intrinsically unobservable, has observable counterpart \( z_i \) satisfying the following relationship to \( z_i^* \):

\[
\begin{align*}
z_i &= 1 \text{ if } z_i^* \geq 0 \\
z_i &= 0 \text{ else}
\end{align*}
\]  \( \text{(2)} \)

Thus we can calculate the probability of survival as a function of proprietor and business characteristics:

\[
Pr[z_i = 1] = Pr[z_i^* > 0] = Pr[v_i > -\beta' x_i] = \Phi(\beta' x_i)
\]

where \( \Phi(z) \) is the Logistic cdf of \( z \).

5. **EMPIRICAL RESULTS**  
The method of variable selection used was three-stage.

The first stage regressed survival against groups of traditional variables, individually, and in total.

The second stage was a standard stepwise estimation procedure with no variables included at the outset. Variables were then added one at a time if they satisfied a significance test of 5%. The variable added was that most highly correlated with the dependent variable, given
the other variables included in the model. The process of variable addition stopped when no other variable met the inclusion criterion.

The third stage was to test if groups of variables, e.g. financial variables as a whole, rather than financial variables individually, added significantly to the model obtained at the second stage. This allows for the possible effect of collinearity and quadratic specification, ignored in the first stage stepwise procedure.

Table 2 below presents the results of the first stage logit estimation.
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</table>

Sample size = 1651 observations

**Stage 1: Remarks**
The regressions are all significant at below the 5% level, indicating that these traditional sets of variables individually and jointly explain the data. Moreover, the traditional variables perform this function well. Of course, some individual variables are clearly insignificant and should be deleted. However, since we are primarily interested in examining the influence of the sets of variables when 'fundamental' variables are held constant, we move immediately on to the stage 2 estimation presented in Table 3.
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<tr>
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<th>MODEL 3</th>
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**Table 3: Second Stage Logit Estimates of Business Survival Probability**
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Sample size = 1651 observations
Stages 2 and 3: Remarks

Model 1
Consider first the significance of the 'fundamental' equation as a whole. The chi-squared for the covariates of the model is 93.193 with 10 df, a figure significant at the .0001 level. The equation thus provides a highly significant overall explanation of the data.

Six of the hypotheses H1-H7 set out in the text above are borne out in the data. An exception to the theory appears to be HOMEPREM (whether the business started from home), which had the appropriate sign but only a low level of significance. Thus hypothesis H7 is rejected: initial premises of the business play no role in business survival.

Model 2
This is a re-estimated version of Model 1 with the insignificant HOMEPREM variable deleted and a quadratic term in \( N \) added. The terms in \( N \) are highly collinear and jointly significant on a chi-squared test with 2 degrees of freedom at 1%.

FIGURE 2 [AGE AND SURVIVAL] HERE

Model 3
This model is a re-estimated version of model 2, with the set of financial variables added. The residual Chi-squared for the financial variables with 7 df, at 95% is 11.90 not significant at the 5% or 10% levels. Hence hypothesis H8, evaluated with respect to the financial variables alone, is accepted: startup finance has no effect on survival once fundamental factors are controlled for.

Model 4
Model 4 shows model 3 with the business size variables, FT and PT (and their squares), added. The relevant test statistic for these variables is a chi-squared with 4 df, estimated from the model at 3.476, not significant at the 10% levels. Hence hypothesis H8 with respect to the size variables is accepted: business size (measured by employees) has no effect on survival once fundamental factors are controlled for.

Model 5
This is model 2 with the external opportunity variables, AVINCOME, and AVINCOM2, included. The chi-squared values are highly significant on both terms but the first term is of the wrong sign\(^{16}\). Thus we reserve judgement on H8 evaluated with respect to the external opportunity.\(^{17}\)

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\(^{16}\) A rise in the opportunity cost of entrepreneurship should increase exits.

\(^{17}\) The return to the entrepreneur's external opportunity (measured by his pre-entrepreneurial income) has no effect on his survival chances, once fundamental factors are controlled for. An alternative and plausible interpretation of the positive sign of AVINCOME is that it represents yet another aspect of human capital: higher pre-income individuals have more human capital and hence survive longer.
In conclusion, the preferred survival model is thus Model 2.

Relative importance of different factors in survival
Table 2 also reports the standardised coefficients of the models. The size of these coefficients indicates the relative quantitative importance of the various variables in the equation, allowing for differences in means and standard deviations. It is noteworthy that the largest coefficients are on the general human capital variable, AVAGE and AVAGE2. These are substantially more important than their nearest rival, N (the number of proprietors) and FWKFLD (work experience in the area of the start). Proprietor age enters as a quadratic implying that although older proprietors survive longer, the rate of increase is less than proportional to age. In short, there is an inverse U-shaped relationship between the two variables. (See Figure 2).

We are able to conclude therefore that the primary single determinant of business survival is proprietor age, with more mature proprietors surviving longer. However, the size of the startup team also has a highly significant and substantial quantitative impact on survival.

4. SUMMARY AND CONCLUSIONS
This paper has identified some fundamental empirical determinants of survival in UK startup businesses, which, once controlled for, explain the more commonly posited causes of survival, namely initial size and finance. Human capital factors were established as quantitatively paramount, in particular proprietor maturity, work experience and vocational training. We hypothesised correctly that such personal assets enhance survival. If the human capital concept also allowed to embrace the size of the managerial team, and can be regarded as embodied in the goodwill associated with business purchase, then the overall impact of human capital on business longevity is still greater.

Variables representing startup finance (including owner equity and bank borrowing) did not survive the statistical selection process. In theory this may be due to a number of factors. Firstly, only some one third of startups borrow from the bank, so that inability to meet financial obligations (debt-servicing) is not a factor in the demise of such businesses. Secondly, it may reflect the absence of a capital constraint on such businesses, although this is still a matter of dispute amongst academics. Thirdly, because we have not controlled for the cost of startup finance, it may be that the beneficial effects of more finance are being negated by a rising marginal cost of finance. Fourthly, and we believe most plausibly, financial variables may not appear because capital constraints are ‘endogenous’ to the system: in short, startup capital may not play a role because the provision of finance is itself determined by the presence or absence of individual human capital, team size, and other identified characteristics of the business.

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18 Evidence from other studies indicates that initial interest margins play little role in survival either. See Cressy (1992).

19 Since we have controlled for only initial finance availability, and business viability over time may depend also on subsequent funding (e.g. at crisis points), the issue of initial funding constraints, it may be argued, is irrelevant. this, however, is a separate issue, and whether or not the hypothesis turns out to be correct, much government money throughout Europe and America has been poured into financial assistance to
The same logic applies to the absence of the size variables from the final equation: initial size is explained by the fundamental variables of the model.

Finally, we found that pre-income was significant in survival once the fundamental factors were controlled for, but registered the 'wrong' sign. This may be because in fact pre-income plays the role not of the opportunity cost of staying in business but rather that of an additional measure of proprietor human capital.

The results reported in this paper thus confirm the assertions of the opening paragraph. There it was suggested that structural features of the economy, deep-seated and relatively independent of the macroeconomic events, may be the primary determinants of business survival. The policy implications of this finding are, moreover, substantive. Government policies aimed at easing these constraints may turn out to be more important than those aimed at alleviating supposed shortages of startup capital20. An ill-trained, suboptimal-sized business, run by youngsters and located in the 'wrong' sector will be likely to find its supply of capital constrained. Should this gap be plugged by a well-meaning but ill-informed government, unaware of the fundamental deficiencies of the business, the effect, when magnified many thousand-fold, can only be a disastrous squandering of public resources.

20 Studies of the Loan Guarantee Scheme, introduced to alleviate perceived borrowing constraints on small businesses have, by and large, found little evidence of finance additionality (see e.g. NERA, 1990). Recent tests of the Stiglitz-Weiss theory provide no clear evidence of credit shortage either (see Berger and Udell, 1993; Cressy and Cowling, 1994).
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Maddala, G S, 1983, Limited Dependent and Qualitative Variables in Econometrics, Cambridge, England


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APPENDIX:
LIST OF VARIABLES IN THE STARTUP TRACKING EXERCISE DATABASE

Variables are binary with values 0,1 unless otherwise stated. A variable used as the base from which other related dummies are measured as deviations is listed with a star (*).

Type of Startup

NEW = wholly new business

PURCH = purchase of an existing business

UPGRAD = upgrading of an existing business from Part- to Full-time

UPAN* = Upgrading of existing business previously conducted through another account

Time since business first started trading

TRADTIME = time in years business had been trading at time of startup with the present owner:

= 0 if not yet started to trade
= 0.5 if trading for less than 1 year
= 1.5 if trading 1-2 years
= 3.5 if trading for 2-5 years
= 5 if trading for more than 5 years

Legal Status of Business

ST = 1 if the business is a Sole Trader

PTNR = 1 if the business is a Partnership

LTD* = 1 if the business is a Limited Company

COOP = Co-operative [no business in this category in the database]

Franchise

FRAN = 1 if the business is a franchise
Industry Sector

AGRI = 1 if in Agriculture\textsuperscript{21}

RETAIL = 1 if in Retail

CATER = 1 if in Catering

PROP = 1 if in Property/Finance/Professional Services

CONST = 1 if in Construction

MOTOR = 1 if in Motor trades

PROD = 1 if in Production/Manufacturing

TRANS = 1 if in Transport/Distribution

WHOLE = 1 if in Wholesale

OTHER* = 1 if the business was not located in any of the industrial categories listed above

Computer Technology

COMP = 1 if the business used computers in any significant way

Direct Sale

DSALE = 1 if the business was significantly involved in direct sale

Import/Export

IMPT = 1 if the business relied for its operations on imported products/raw materials

EXPT = ditto exports

Initial Staff Numbers

FT = number of full-time employees (including proprietors) at startup

\textsuperscript{21} The sector definitions used here do not conform exactly to the SIC but were used by the Bank because of conformity to marketing definitions.
PT = ditto part-time

**Initial Premises**

HOMEPREM = 1 if the business' initial premises was one of the proprietors' homes.

LEASPREM = 1 if the business' initial premises was leased

OWNPREM = 1 if the business owned its initial premises

OTHPREM* = 1 if the business started from premises other than those listed above (e.g., van, market stall)

**Sources of Information on Starting a Business**

NWBINFO = 1 if NatWest information used

OTHBNKFO = 1 if other bank

FRNDINFO = 1 if friends

AGYINFO = 1 if Government agencies

SFSLERINF = 1 if Government Small Firms Service

ACNTINFO = 1 if accountant

SOLINFO = 1 if solicitor

OTHINFO = 1 if other sources of information used than those listed above

NOINFO* = 1 if no information was used

**Sources of Finance Used to Start**

NWBFIN = 1 if NatWest finance was used. This variable is often referred to in the text as "Own-bank finance".

OTHBNKF = 1 if other bank finance

FRIENDF = 1 if finance from friends and relatives

PERFIN = 1 if personal money/savings
FINHSFIN = 1 if Finance House finance

GOVFIN = 1 if Government finance (e.g. Enterprise Allowance, Loan Guarantee Scheme)

VENTFIN = 1 if Venture Capital finance

OTHFIN = 1 if finance other than those listed above

NOFIN* = 1 if no finance was used

**Gender of Proprietors**

F = number of female proprietors

N = total number of proprietors

**Age of Proprietors at Start**

AVAGE = average age of proprietors

**Academic Qualifications of Proprietors**

FNOAC* = fraction of proprietors with no academic qualifications

FNOLEV = fraction of proprietors with at most 'O' Level academic qualifications

FNANEV = ditto 'A' Levels

FNDEG = fraction of proprietors with at most a Degree

AVQUAL = average academic qualifications of proprietors

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\[22\] The scale is taken as:

0 = no academic qualifications
1 = at most 'O' Levels
2 = at most 'A' Levels
3 = at most Degree
Vocational Qualifications of Proprietors

FTRAD = fraction of proprietors with trade apprenticeships
FPROF = fraction with professional qualifications
FHND = fraction with Higher National Diploma
FOTHQUAL = fraction with other vocational qualifications
FNOVOC* = fraction with no vocational qualifications

Prior Employment Status of Proprietors

FUNEMP = fraction of proprietors unemployed before startup
FFTWK = ditto in full-time work before startup
FPTWK* = ditto in part-time work before startup

Most Recent Type of Occupation

FRECDIR = fraction of proprietors who were previously employed as directors of businesses
FRECMAN = ditto as managers
FRECLE = ditto clerical workers
FRECSUP = ditto supervisors
FRECSKIL = ditto skilled workers
FRECUNSK = ditto unskilled workers
FRECNON = ditto no recent occupation

Annual Income Prior to Start

AVINCOME = the average income of proprietors prior to startup
House Ownership of Proprietors

FHSE = fraction of proprietors owning their own houses

AVMOR = the average mortgage of home-owning proprietors

AVVAL = the average house valuation of home-owning proprietors

Proprietor Gave up job to Start

FGIVUP = fraction of the proprietors who gave up their jobs to start the present business

Work/business Experience of Proprietors

FEXSB = fraction of the proprietors who had small business experience

FWKFLD = fraction of the proprietors who had worked in the field of the startup

FMANFLD = fraction who had worked as manual worker ditto

FSUPFLD = fraction who had worked as supervisor ditto

FOTHFLD = fraction who had worked at another level ditto

Main Reason for Startup

FRUNEMP = fraction previously unemployed

FRBOSS = fraction of proprietors who entered in order to be their own boss

FRDISSAT = ditto because of dissatisfaction with current job/prospects

FREDUND = ditto made redundant

FRINDER = ditto wanted more independence

FRMONEY = ditto wanted more money

FRFULFIL = ditto wanted more fulfilment

FROTHER = ditto for other reasons
Data source: bank questionnaire

Figure 1
Startup Survival Rates, 1988q1-1992q1
By Age of Proprietors

Age of Proprietors

![Bar chart showing survival rates by age of proprietors. The x-axis represents survival rate from 0 to 0.8, and the y-axis represents age of proprietors from 15 to 70. Each bar represents the mean survival rate for the respective age group.](image)

Figure 2