

ABSTRACT. This paper examines the extent to which Lucas' ideas on human capital and Jovanovic' theorising on "learning" can provide further insights into the development of small firms. It focuses exclusively upon newly established independent firms. Our evidence from two surveys is that bank lending to new firms is unrelated to many of the personal characteristics of founders which have been argued by other researchers to relate to small firm performance. Instead lending appears to be more related to whether or not the founder can or chooses to use personal savings, and the legal status of the business.

1. Introduction

Simon and Bonini (1958) viewed individual firm growth as a stochastic process, with the size distribution of firms in an industry being the outcome of chance. Lucas (1978) and Jovanovic (1982) however suggested there were patterns of individual firm growth, with Lucas emphasising the human capital characteristics of those working in the firms and Jovanovic focusing upon a process in which business owners learn from good and bad experience. These ideas have subsequently been the subject of empirical analysis [Evans (1987) Variyam and Kraybill (1992)]. They show that firm growth and firm death rates vary according to sector; they show size and growth are negatively correlated, that death is inversely related to age. They also show that these results are not independent of ownership form.

This paper is interested in the extent to which Lucas' ideas on human capital and Jovanovic's theorising on "learning" can provide further insights into the development of small firms. It focuses exclusively upon newly established independent firms.

To test these ideas it is hypothesised that if human capital or experience factors are important in influencing the performance of smaller firms then these factors will also influence whether or not a bank will incur the risk of lending to that business. The paper conducts two tests. The first examines the role of bank loans/overdrafts for new firms, and assesses the apparent importance of human capital and experience factors in the lending decision. The second test examines the extent to which human capital and experience appear to explain the performance of the new firm.

There are three possible outcomes from these tests. The first is that human capital and learning variables are unimportant in explaining either new firm growth or the bank lending decision. This might imply either the lack of power of the theories or some weakness in the testing procedure used. The second possible outcome is that human capital and learning characteristics are important in explaining new firm growth and bank lending. This could imply that banks have a good understanding of the factors influencing new firm growth. The third possible outcome is that there is a mismatch between the factors which seem to influence bank lending differ significantly from those which influence firm growth.

The paper is organised as follows. The next section sets out the models which are used to 'explain' firm growth. From these a series of hypotheses are developed relating the growth of new firms to whether or not the firm used bank financing.

The remainder of the paper is concerned with the testing of these hypotheses. Issues on empirical testing are addressed in Section 3, and the data sources used are explained in Section 4. Section 5 then presents the results of a logit model which explains whether or not a new firm receives bank lending in terms of three groups of variables: those relating to the characteristics of the founder, to the alternative sources of financing used and to other

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identifiable factors such as the legal status of the business and the sector in which it operates. Section 6 then uses these same (groups of) independent variables to explain the current employment size (growth since start up) of the new firms.

Finally, the extent to which there are similarities of explanation, both for sources of finance at start up, and in the subsequent growth of the new firm, are compared.

2. The models

Three models of firm growth are identified by Brock and Evans (1986). The first is a stochastic model in which the probability of firm growth is based on pure chance and the size distribution of firms in an industry reflect these stochastic processes. This model is most closely associated with the work of Simon and Bonini (1958). Firm growth is unrelated either to size, its prior growth or to its age.

The second is a human capital model, associated most clearly with Lucas (1978). He assumed individuals have certain business or management ability which will influence their success in business. He also assumes this varies across workers. In testing this we shall make two further assumptions — that this ability can be identified by others, and can be identified prior to an individual starting in business.

The third model is that of Jovanovic (1982). This assumes that whilst management ability does vary between workers, this information is unknown to the business owner when starting in business and only becomes known to the owner through being in business.

Jovanovic appears to assume that because this information is not known to the business owner it cannot, therefore, be known to any outside person. However this may not be a reasonable assumption since those providing finance may, through experience, have developed expertise which enables them to better predict the success of a new enterprise than the founder/owner.

Our purpose in this paper is to investigate the implications of these three models of small firm growth for financing of new firms.

To derive testable hypotheses from these models it is necessary to make two further assumptions:

- Individuals considering starting a new firm consider the use of bank finance
- Banks are profit maximising institutions operating in a competitive marketplace.

Given these assumptions we are able to deduce the following:

- Under Model 1 (Random) Bank lending to start ups is unrelated to business or founder characteristics since growth and survivorship are random variables.
- Under Model 2 (Human Capital) Bank lending at start up reflects the same managerial ability factors which determine firm performance. Our prediction is that the *same* factors which are associated with firm performance (growth) will be associated with bank lending.
- Under Model 3 (Learning by doing) the factors associated with bank lending differ from those associated with performance, since the decision on bank lending is assumed to be made prior to start up when neither the bank nor the business founder knows whether the firm will be successful. Only after a period of time will it be clear whether a firm will succeed, but our objective is to examine bank finance at start up.

Hence in the table below Model 3 shows that firm performance is predictable in the sense that, with hindsight, it relates to observable influences — which could include the human capital factors in Model 2 — although these were not predicted at start up.

	Model 1	Model 2	Model 3
New Firm Performance	Random	Predictable	Predictable
Bank Finance at Start	Random	Predictable	Random

The outcome of each of these hypotheses are outlined in the diagram above.

From this we derive the following hypotheses to be tested.

Hypothesis 1: The growth of a wholly new firm is unrelated to those business/founder characteristics which could be identified prior to start up.

If Hypothesis 1 is accepted it supports Model 1. If it is rejected, and growth is related to indicators of business/founder characteristics, then

Hypothesis 2: The same business/founder characteristics which explain firm performance will also explain whether or not bank lending is made.

If Hypothesis 2 is supported then it supports Model 2 (Lucas Human Capital), but if it is rejected it supports Model 3 (Jovanovic Learning by Doing).

3. Testing

Empirical testing of these hypotheses will be imperfect for two main reasons. First, it is not possible to be certain that all new firms consider the use of bank finance to start in business. In practice we know that about one third of new firms use loan facilities. Of the remainder some will have been rejected and others never have approached the banks in the first place. Of this latter group some will have considered bank finance but will also have viewed their prospects as poor and so not approached the bank. Others will have access to alternative financing and therefore not consider approaching the bank. Unfortunately our data only distinguish between those obtaining finance and others.

Secondly it cannot be assumed that banks, at least in the UK, operate in conditions of perfect knowledge. The presence of predictable new firm performance characteristics but random lending patterns could therefore reflect either support for the Jovanovic model or the absence of competition within the banking sector.

The use of wholly new firms, rather than small firms more generally, does provide one major advantage over other empirical work. Cressy (1992) shows that more than four out of five wholly new firms obtaining loan/overdraft facilities from the largest UK bank were not required to provide security, since the monies were below that which the bank felt it worthwhile to secure. The firms in this Survey are likely to follow this pattern. This means that the bank is not providing lending based on collateral, and is more likely to be basing its decision upon the characteristics of

the founder and other characteristics of the business which can be identified at start up.

4. Data

The data are derived from face to face interviews with new firm founders in Cleveland, England in two separate surveys, one in 1979 and one in 1990. The surveys collect information upon the sources of finance used to start business, together with information on the background of the key founder.

The data constitute a random sample of all non-farm, non-retail businesses in the county. No firm in the survey is more than seven years old on the grounds that the recall of the founder is lowered with increasing age.

Whilst the purpose of the 1990 survey was to precisely replicate the 1979 survey there were certain additional questions asked for the first time in the later survey. Hence some information is available for only one survey. A full statement on the data sources is found in Storey and Strange (1992).

5. Selection of variables

Analysis is conducted within a multivariate framework in which a logit model is fitted where the dependent variable [BANK] equals one where the business founder made use of loans or overdrafts from a clearing bank in financing the business at start up and zero if these were not used. The independent variables are those shown in Table I — excluding the BANK variable.

Many of the variables proposed in Table I have been used in other multivariable studies of small firm performance and no further justification will therefore be provided for their inclusion. Table II provides an illustrative, rather than comprehensive guide to these prior studies.

Table II shows that this study also includes variables which, to our knowledge, have not been included elsewhere. These mainly relate to testing the 'learning by doing' hypothesis. The first is the variable PARTTM which refers to cases where individuals started the business, initially on a part-time basis. Here it is suggested that businesses begun in this way will be most likely to be larger (for a given age) than those begun on a full-time

TABLE I
Variable definitions

Variable name	Definition	Expected sign with growth
<i>Personal characteristics</i>		
PARTTM	Whether or not the business had ever been part time: Yes = 1, No = 0	+
SELFEMP	Whether or not the founder has ever been in business before as an owner: Yes = 1, No = 0	+
QUALIF	Whether or not the founder has any educational qualifications: Yes = 1, No = 0	+
DEGREE	Whether or not the founder has a degree: Yes = 1, No = 0	+
UNEMPL	Whether or not the founder was unemployed or likely to become unemployed immediately prior to starting the business: Yes = 1, No = 0	-
SEX	Gender: Male = 1, Female = 0	?
FOUNDAGE	Age of founder when firm first started	+
SQFUNAGE	Square of founders age when firm first started	-
BIRTHPL	Whether the founder was born and brought up in Cleveland: Yes = 1, No = 0	-
SCTRCO	Whether founders prior job was in same sector as that in which business was founded: Yes = 1, No = 0	+
MNGRCO	Whether founders prior job was a managerial position: Yes = 1, No = 0	+
FULLTM	Founder currently employed full time in this business: Yes = 1, No = 0	+
<i>Financing</i>		
BANK	Use of loans/overdrafts in financing the firm at start up: Yes = 1, No = 0	+
SAVINGS	Use of personal savings in financing the firm at start up: Yes = 1, No = 0	+
FRIENDS	Use of loans from friends/relations in financing the firm at start up: Yes = 1, No = 0	+
FINCO	Use of a Finance Co in financing the firm at start up: Yes = 1, No = 0	+
MORTGAGE	Use of house mortgage in financing the firm at start up: Yes = 1, No = 0	+
REFUSED	Whether or not the founder was turned down for a source of finance at start up: Yes = 1, No = 0	-
<i>Other</i>		
OLDSTAT	Firm type when formed: private limited company = 1, sole proprietorship, partnership = 0	+
MANUF	Whether or not a manufacturing firm: Yes = 1, No = 0	+
AGE	Number of years firm has been trading	-
ADVICE	Whether or not the founder sought advice prior to starting the firm: Yes = 1, No = 0	+
SITES	Whether or not the founder examined any sites other than the one upon which the business started, prior to start up: Yes = 1, No = 0	+

basis on the grounds that the founder will have been able to make a low risk assessment of his/her entrepreneurial skills. In some sense the period of part time businesses activity may be considered as an apprenticeship, at the completion of which the individual might be expected to emerge as a 'better' owner. In addition an individual who has experience of part time business ownership is likely to be more successful if 'forced' to become a full time owner through the loss of a waged job through unemployment than an individual without that prior experience.

Table II also shows the finance related variables have not been included in this form in prior studies, although Bates (1991) does argue (and show) that debt and equity incurred by the owner

at start up is positively correlated with subsequent sales. Our purpose is somewhat different, since we are interested in the extent to which the choices of one form of finance influences subsequent performance. For this reason five out the six main sources of finance are included directly in the equation. (PUBLIC being omitted). We also include the REFUSED variable, which has not been included elsewhere, on the grounds that it would highlight those businesses which have been deemed to be 'high risk' at least by one financial institution. It is to be expected that these businesses would perform less well. Unfortunately the REFUSED variable is only available from one out of the two Surveys.

Finally two "Other" variables which indicate

TABLE II
Variables used in other studies

VARIABLE NAME	Study
PARTTM	None
SELFEMP	KALLEBERG & LEICHT (1991)
QUALIF	BARTIK (1989); BATES (1991)
DEGREE	BATES (1991)
UNEMPL	BLANCHFLOWER AND OSWALD (1991)
SEX	KALLEBERG & LEICHT (1991), BATES (1991)
FOUNDAGE	BARTIK (1989)
SQFUNAGE	BLANCHFLOWER AND OSWALD (1991)
BIRTHPL	BLANCHFLOWER AND OSWALD (1991)
SCTRCO	SOLEM & STEINER (1989); FEESER & WILLARD (1990)
MNGRCO	BATES (1991)
FULLTM	BATES (1991); DOLTON AND MAKEPEACE (1990)
BANK	None
SAVINGS	None
FRIENDS	None
FINCO	None
MORTGAGE	None
REFUSED	None
OLDSTAT	KALLEBERG & LEICHT (1991)
MANUF	BLANCHFLOWER & OSWALD (1991); BATES (1991)
AGE	HAINES, RIDING AND THOMAS (1991); BATES (1991)
ADVICE	None
SITES	None

search procedures employed by the founder at or prior to start up are included. The *ADVICE* variable refers to whether or not the founder sought business advice (generally supplied free of charge) from the numerous public and quasi-public agencies in the locality. Use of these agencies is deemed to be an indication of a more sophisticated search procedure. The *SITES* variable records whether or not the founder, prior to starting the business, sought alternative sites to that on which the business started. Again the searching for alternative sites is deemed to reflect a more sophisticated and planned approach characteristic of better subsequent business performance.

The independent variables are in three groups. The first relate to the personal characteristics of the founder, covering factors such as prior employment history and experience. The second group relate to the sources of finance used at start up, with a view to examining whether these were substitutes for, or complements to, bank funding. The third group relate to other information on the business which would have been available to the banker at start up and might be expected to influence the lending decision.

A brief description of each independent variable is provided in the Table together with the expected sign of its assumed relationship with new firm growth.

6. Results

(a) *Obtaining bank finance*

Table III provides four sets of results. The first two columns take the data from the 1979 Survey and examine the extent to which the variables in Table I were associated with the use of bank loans/overdrafts in financing the firm at start up.

None of the personal characteristics of founders is significantly related to use of loans/overdrafts. The only included variables which are significant, at the 5% level, are *SAVINGS* and *OLDSTAT*. The sign on the *SAVINGS* coefficient is negative suggesting that, when the personal characteristics of the founder are held constant, personal savings and bank funding may be considered to be substitutes. The positive sign on the *OLDSTAT*

coefficient indicates that bank lending is more likely to limited companies than to sole proprietorships or partnerships.

Overall, however, the logit equation is not significant indicating a failure to explain the factors influencing bank lending to new start up businesses in the 1979 Survey.

The second two columns in Table III presents an identical analysis of the 1990 Survey data. Column (I) shows the equation for only those variables included in the 1979 survey. The findings are very similar to those using 1979 data, with the personal characteristics of the founder being generally unrelated to whether or not the business used loans and overdrafts at start up. The only partial exception is the inclusion of the *UNEMPL* variable which suggests new firm founders who are unemployed immediately prior to starting their business are less likely to use loans or overdrafts from banks. Overall the equation is not significant at the 5% level.

The third two columns of Table III [Col (II)] present the estimated equations using 1990 data, but including new variables relating to questions which were not asked in the 1979 Survey. The most marked change is the inclusion of the *REFUSED* variable. Its positive sign indicates founders who were turned down for a source of funding were more likely to use the banks. We attribute this counter intuitive finding to the fact that some firms which sought bank funding approached a number of institutions before obtaining their bank funding. The second interesting change is that inclusion of the *REFUSED* variable is associated with a strengthening of the *SAVINGS* and *UNEMPL* variables. It suggests that even taking into account refusals, personal savings may be seen as a substitute for bank finance at start up. It does *not* suggest the bank is more likely to lend where personal commitment is greater.

Neither of the new personal characteristic variables, *SCTRCO* or *MNGRCO* nor the *ADVICE* variable are individually significant in the equation. Even so the equation overall is significant at the 5% level.

Finally in the last two columns the data for the two surveys is pooled, for those variables which appear in both surveys. In addition a new variable *AZ* is created as a dummy to identify whether there are significant differences between the equa-

TABLE III
Logit analysis: personal characteristics of founders explaining use of bank loans and overdrafts

	1979 DATA		1990 DATA				All DATA	
	Coeff	Coeff/ SE	(I) Coeff	Coeff/ SE	(II) Coeff	Coeff/ SE	Coeff	Coeff/ SE
PARTTM	0.254	0.871	-0.008	-0.023	-0.267	-0.533	-0.028	-0.202
SELFEMP	0.349	1.51	-0.125	-0.554	-0.006	-0.024	0.058	0.385
QUALIF	0.419	1.65	0.013	0.070	-0.179	-0.824	0.275	2.04
DEGREE	0.372	0.791	0.179	0.449	0.097	0.205	0.109	0.398
UNEMPL	-0.107	-0.454	-0.317	-1.87	-0.396	-1.99	0.038	0.333
SEX	0.047	0.136	0.010	0.052	-0.121	-0.524	0.170	1.104
FOUNDAGE	0.045	0.463	0.014	0.226	0.053	0.693	-0.005	-0.105
SQFUNAGE	-0.000	-0.818	0.000	0.033	0.000	-0.286	0.000	0.064
BIRTHPL	-0.185	-0.881	0.136	0.727	0.360	1.465	-0.105	-0.786
SCTRCO					0.072	0.035		
NMGRCO					0.033	0.157		
FULLTM	0.588	0.996	0.716	1.111	0.249	0.345	0.329	1.05
OLDSTAT	0.480	2.068	0.357	1.286	0.302	0.885	0.386	2.507
MANUF	-0.003	-0.014	0.006	0.031	-0.027	-0.121	0.226	1.61
ADVICE					-0.122	-0.618		
SAVINGS	-0.632	-2.682	-0.305	-1.60	-0.398	-1.75	-0.353	-2.560
FRIENDS	-0.287	-0.700	-0.152	-0.428	-0.161	-0.410	0.038	0.158
FINCO	0.199	0.421	-4.824	-0.167	-4.608	-0.160	-0.319	-0.844
MORTGAGE	-0.011	-0.027	0.142	0.417	0.386	0.981	0.014	0.057
REFUSED					0.798	2.447		
AZ							-0.064	0.457
SITES	0.177	0.766	-0.255	-1.21	-0.402	-1.548	0.340	2.67
CONST	3.55	1.877	3.69	2.80	3.27	2.05	4.33	4.91
d.f.	119		185		148		330	
Chi Sq	134.1		207.8		178.8		335.0	
P	0.16		0.12		0.04		0.16	

tions for 1979 and 1990. AZ takes the value of unity for 1979 and zero for 1990.

The only significant personal characteristics variable included in the equation is QUALIF indicating the banks are more likely to lend to those individuals with formal qualifications. Two other variables have significant signs — the SAVINGS variable with a negative sign and the SITES variable with a positive sign. Even so, the equation is not significant at the 5% level.

Overall the data in all four equations suggest neither the personal characteristics of the founder nor other characteristics of the business provide an adequate explanation of whether or not a new firm uses the bank for financing at start up.

(b) Sources of finance and firm growth

The decision by the bank to lend/not lend to new firms depends on the expected value of the return.

Key elements in this will be the expected default rate, but also the growth rate of the firm since faster growing new firms are larger users of bank services than slower growing firms.

Neither the 1979 nor the 1990 Surveys enable us to robustly test the survival or non survival of new firms since only surviving firms are interviewed. [For reviews of these issues see Schary (1991) and Reid (1991)]. Firm survival, of course may be unimportant if the demise of the firm does not mean losses to the bank — that is where the loan is fully secured [Leeth and Scott (1989)]. As we noted earlier this is unlikely to be the case here since most of the lending is too small to justify the requirement of security.

Given the general absence of security it is possible to test whether banks are more likely to lend, at start up, to those business owners with the personal characteristics associated with faster growing firms than to others.

Results are shown in Table IV. It takes the three groups of variables outlined in Table I: 'Personal characteristics', 'Financial Sources' and 'Other' and uses them as independent variables to explain levels (log of) employment in (surviving) new firms. Since a firm age variable is included the dependent variable may be viewed as a measure of growth.

The table presents the results of a (backward) stepwise regression initially including all twenty three independent variables. It has an identical format to Table III, showing four equations, the first being calibrated on 1979 data. In the second column is Equation I which uses 1990 data, but includes only those variables which were used in the 1979 Survey. It therefore facilitates a direct comparison with the Column one equation. In the third column is Equation II which uses all variables from the 1990 survey. Finally in column four is the pooled data for both surveys.

The first column using data for 1979 shows the log of current employment size of the (surviving) new firm is a well identified equation, with five personal characteristic variables included as individually significant in the predicted direction. The PARTTM variable indicates that those businesses begun on a part time basis are larger, as are those where the founder is employed full time in the business — FULLTM. The age of the founder variables are also both significant indicating that it

is neither the very young, nor the very old founders which are more likely to establish new firms which will grow. The inclusion of the QUALIF variable indicates that qualified founders were more likely to have larger firms than unqualified founders.

Secondly the 1979 data shows that no sources of finance variables are included as individually significant within the equation. There is certainly no evidence to suggest that new firms financed initially by banks have more employees than new firms financed in other ways.

The two other variables are OLDSTAT and ADVICE, suggesting that founders of larger (surviving) new firms are more likely to opt for limited company status at start up than those choosing either partnerships or sole proprietorships. Finally firms which claimed to use one of the advice agencies prior to start up were likely to be larger than those which did not.

Equation I in the second column presents an analysis of the 1990 data including only the variables common to both the 1979 and 1990 Surveys. It again shows the presence of OLDSTAT. This time the personal characteristics variables BIRTHPL and UNEMPL are included. The negative sign on the BIRTHPL variable indicates that local founders were less likely to found firms with more employees. The negative sign on the UNEMPL variable means that those founders who were unemployed immediately prior to starting their business were less likely to found a firm with a high number of employees. Overall this equation is much weaker than that for the 1979 data.

Turning now to the full 1990 data, Equation II shows few similarities to the 1979 Equation, with only the OLDSTAT variable again appearing as significant. The new personal characteristic variable included is SCTRCO. This has a positive sign indicating that firm founders whose prior job was in the same sector are more likely to found a firm with more employees than one switching sector. Unfortunately the SCTRCO variable was not included in a directly comparable form in the 1979 Survey so we are unable to determine whether this constitutes a change since 1979.

Perhaps the major surprise omission in the first two equations is the AGE variable, suggesting no relationship between firm age and the number of

TABLE IV
Regression analysis: current employment size related to personal characteristics of founder and sources of finance

	1979	1990 (I)	1990 (II)	ALL
	LOG EMP	LOG EMP	LOG EMP	LOG EMP
PARTTM	0.188 (2.332)			
QUALIF	0.119 (1.904)			
UNEMPL		-0.106 (1.865)		-0.083 (2.162)
FULLTM	0.347 (2.487)			
FOUNDAGE	0.039 (1.847)			0.028 (1.823)
SQFUNAGE	-0.0005 (1.936)			-0.0003 (1.779)
BIRTHPL		-0.131 (2.037)		-0.140 (3.023)
SCTRCO			0.191 (3.06)	
MORTGAGE			0.252 (2.031)	0.138 (1.671)
OLDSTAT	0.429 (7.348)	0.343 (3.478)	0.361 (3.506)	0.419 (8.523)
MANUF			0.130 (1.877)	0.118 (2.304)
ADVICE	0.226 (3.853)			0.072 (1.689)
AGE			0.26 (1.815)	
SITES		0.119 (1.764)	0.142 (2.005)	
CONSTANT	-0.727 (1.868)	0.662 (10.504)	0.246 (2.767)	0.109 (0.395)
F	11.736	6.247	5.61	14.41
n	137	177	153	337
Adj $\bar{R}_2$	0.354	0.126	0.153	0.241

employees. This contrasts with Variyam and Kraybill who, for a sample of small firms, found a negative relationship between age and growth. To some extent this is rectified in the 1990 Equation (II) where the AGE variable does appear, but it has a positive sign. It suggests that in this sample of

young firms in 1990 it is the older firms which exhibit faster growth rates. This could reflect the general difficulties of growing in the early period of a new firms life, when a greater emphasis is placed on survival. It could also be highly sample specific in the sense that different types of firms

were formed in the macro economic circumstances of 1986–89.

The total absence of the SAVINGS variable from the equation also requires some comment since it appeared consistently in the Equations in Table III. It could illustrate the mismatch between variables which explain probability of using bank finance at start up and subsequent employment growth of the firm. It also seems to conflict with the work of both Reid (1991) and De Meza and Webb (1988) who suggest a negative relationship between firm performance [in their case survival] and use of personal savings. However the MORTGAGE variable which does appear in Equation II may cover similar issues to those of these authors and our findings are therefore in keeping with theirs.

Two other variables MANUF and SITES appear in the equation with the expected signs. They indicate that firms in manufacturing are likely to be larger, as are those which sought alternative sites prior to start up.

Pooling the data from both surveys provides the results shown in Column 4. It enhances the earlier results that the personal characteristics of the founder are related to the (log of) current employment size. Four variables included are UNEMPL and BIRTHPL, together with the two variables relating to the age of the founder at start up. Overall the equations suggest that those founders most likely to establish larger firms are those who are middle aged, employed and in migrants to the County.

Amongst the financing variables only the MORTGAGE variable is (weakly) significant.

Amongst the other factors current employment size is strongly related to MANUF and OLDSTAT, confirming that businesses in manufacturing which are limited companies are likely to have more employees. The ADVICE variable is also included indicating that those founders establishing a larger business were more likely to contact an advice agency prior to start up. This variable, however, has a very much lower 't' statistic than either MANUF or OLDSTAT.

7. Discussion

This section relates our empirical findings to the hypotheses specified in Section 2. There it was

suggested in Hypothesis 1 that the personal characteristics of new firm founders would be unrelated to firm growth.

Our findings do not support Hypothesis I. They suggest that, in the 1979 survey particularly, the personal characteristics of the founder at start up are related to the subsequent growth of the firm. It is also the case that other characteristics of the business which can be identified at start up have some explanatory power — such as whether the firm is in the manufacturing sector and its legal status.

Hypothesis 2 stated that bank lending will be explained by the same personal characteristics of founders which explain firm performance. Taking the four equations overall there is little support for this hypothesis, although it is the case that UNEMPL and QUALIF appear (with the same signs) in the equation explaining both initial sources of finance and current employment size.

Current employment size appears to be more strongly related to the personal characteristics of the founder than the bank lending decision, suggesting support for Model 3, which we have characterised as the "learning by doing" model. Further support for the "learning" element is that one or other of the two variables included to characterise these processes — SITES and ADVICE — appear in all four equations explaining firm growth.

8. Conclusion

This paper has examined the characteristics of new firm founders who used loans and overdrafts from the clearing banks to initially finance their business. It hypothesized that the bank manager, if faced with a decision of whether or not to lend to a business, would be primarily influenced in this decision by those personal characteristics of the founder likely to relate to better business performance.

Our evidence from two Surveys, one conducted in 1979 and the other in 1990, is that bank lending to new firms is unrelated to many of the personal characteristics of founders which have been argued by other researchers to relate to small firm performance. Instead lending appears to be more related to whether or not the founder can or

chooses to use personal savings, and the legal status of the business.

Whilst it is not possible, given the nature of the data, to determine the extent to which bank lending patterns relate to the survival/non survival of new firms, it is possible to relate it to current employment size of (surviving) new firms. These results demonstrate that some personal characteristics of founders such as their age, employment status and birthplace are associated with larger new firms. These are not characteristics which appear to influence the use of bank finance.

The only variable which appears to consistently influence both bank lending and the employment growth of firms is whether or not the business is a limited company. Corporate status at start up appears to be associated with a greater likelihood of bank lending and more employees.

It is also important to note that the form of financing used at start up does not seem to be a major influence upon the growth of the business. There certainly appears no evidence that the use of bank finance leads to more rapid growth of the business.

Overall, bank lending is only weakly related to the personal characteristics of new firm founders. The factors influencing firm growth only overlap partly with the factors influencing lending decisions. Three explanations for this can be provided none of which we can fully reject. The first is that bankers at the time of business start up are not concerned with business growth — or possibly even survival — but merely have to ensure that loans are fully covered by collateral. Although we know from other work that collateral is rarely sought for start ups we cannot formally test this because of the absence of data.

The second explanation is that banks are simply ill informed about their marketplace or that they were reluctant to turn down business propositions on the grounds that their profits were more influenced by propositions accepted than on losses incurred through bad debts. This we believe to be quite plausible since the 1980s was a decade in which bank lending to start ups increased massively and when the 1990 Equations indicated that the personal characteristics of the founder were less clearly related to firm performance.

The third explanation is that since our surveys examine only surviving new firms it may be that

bank lending decision are focused upon avoiding lending to short life firms, and the criteria are different from that of lending to fast growth firms. Currently we are also unable to test this explanation, again because of a shortage of data.

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