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Owner-Managed UK Corporate Start-Ups: An Exploratory Study of Financing and Failure

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Abstract: After highlighting the importance of small companies to the UK economy, new archival evidence is provided from an exploratory study which investigates the financing and failure of 21,147 UK single owner-managed (OM) corporate start-ups. Relative to comparable US survey evidence, UK OM corporate start-ups rely very heavily on debt financing from inception, with minimal equity being injected by owners and with retained earnings making only a modest contribution to initial financing. Financial gearing is found to be an important determinant of failure after controlling for company-specific and owner characteristics. Interestingly, the results indicate that foreign-owned company start-ups are less failure prone. Based on the empirical findings of the study and that of extant research, a number of suggested avenues for future research are discussed.

Keywords: corporate start-ups, owner-managed, financing, technical and legal failure, financial gearing

JEL Classification: G21, G33, M21

1 Introduction and Background

As stressed by Cassar (2004, 262), “How business start-ups are financed is one of the most fundamental questions of enterprise research ... The importance of the financing decision of new businesses consequentially has important implications for the economy ... for the operations of the business, risk of failure, firm performance, and the potential of business expansion in the future.” Robb and Robinson (2014, 153) also state that “Understanding how capital markets affect the growth and survival of newly created firms is perhaps the central question of entrepreneurial finance”.

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After providing summary statistics highlighting the importance of small companies to the UK economy, this note presents new empirical evidence from an exploratory study which examines the initial financing of 21,147 UK single owner-managed start-up (newly incorporated) small independent private companies; hereafter referred to as new single OM companies. The empirical relationship between the initial financing and failure (insolvency) of new single OM small companies is also examined. Financial data is derived from the first set of annual accounts filed at Companies House, the UK repository for company filing information, following incorporation of the sampled firms; of which 350 (1.7%) subsequently failed. Hence the study focuses on failure in the earliest period of the companies' life cycle.

Based on survey data for 4,928 US small businesses started in 2004, Robb and Robinson (2014, 170) found that 45.6% (29.1%) of start-up capital was in the form of total (owners') equity. Using 2003 survey data, Ang, Cole, and Lawson (2010) examine the capital structure choice of 536 US small single-owner US companies of all ages. After excluding companies with negative equity (below), they report (p. 23) that the mean gearing ratio of total liabilities to total assets for their sample amounted to 0.356. In contrast to these studies, and contrary to the pecking order hypothesis and Berger and Udell's (1998) financial life cycle theory, using archival data from statutory annual accounts, the current study finds that new single OM UK companies rely very heavily on debt finance, with little equity being injected by owners and with retained earnings also making a modest financing contribution.

Extant research which investigates the success/failure/exit choice of start-ups, together with more established SMEs, relies predominantly on survey data (see Miettinen and Littunen 2013; Van Teeffelen and Uhlaner 2013; Harkins and Forster-Holt 2014). For instance, using survey data, Boyer and Blazy (2014) examine the factors associated with the survival of French micro start-up enterprises. After controlling for other variables, they report that innovative enterprises are less likely to survive. Though not focusing on financing, they also find that both financing from personal funds and bank loans are positively associated with survival, with the latter having a larger impact. In addition, employing very large samples and archival data, Wilson, Wright, and Altanlar (2014) investigate the factors associated with the failure of UK newly incorporated companies, of all sizes and types, over a ten-year period and report that, *inter alia*, boards with higher female representation, with more experience, and with lower levels of recent director turnover, are less likely to fail after controlling for other factors. Drawing on this research, and after controlling for owner-manager characteristics and company-specific attributes, this note makes an incremental empirical contribution to the literature by examining the initial financing mix

(gearing) of new single OM companies, together with the association between financing and firm failure.

Although less frequently the focus of SME research, small companies are important in terms of the disproportionate contribution they make to both employment and enterprise turnover. Table 1 shows statistics compiled from official data estimates (BIS 2012a, 2012b) for all UK businesses at the start of 2012 in Panel A, together with those for companies in Panel B. Using BIS size categories, it reveals that 99.2% of the 4,794,105 private sector UK businesses are small (≤ 49 employees), accounting for 46.9% and 34.4% of all business employment and turnover respectively. For micro enterprises (≤ 9 employees), the respective figures are 95.5%, 32.4% and 19.9%. As tabulated in Panel B, companies make a disproportionate contribution in terms of employment and turnover. The 1,341,115 companies represent 28% of all enterprises, but contribute 75.9% (91.4%) of all business employment (turnover); though, as expected, these figures are skewed by larger companies.

Notwithstanding this, small companies comprise only 27.5% of all small enterprises, but contribute 50.2% and 76.0% of all small enterprise employment and turnover respectively; with the figures for micro companies being 25.4%, 36.2% and 64.4% respectively. Of all businesses, 62.7% are sole proprietorships, 9.3% partnerships with the remainder being companies (BIS 2012a, 2). Of the 3,452,990 unincorporated businesses shown in Table 1, no less than 87% (3,004,970) are sole proprietorships, with 13% (448,020) being partnerships (BIS 2012b, Table 3). Though separate figures are unavailable for companies, further official data (ONS 2011, 2) shows that an estimated 14.7% of UK businesses in 2011 were under two years old, with 27.7% being under four years old.

As well as being important *per se* (Ang, Cole, and Lawson 2010), new single OM companies have characteristics of particular interest. Of all companies, start-ups are the most informationally opaque (Berger and Udell 1998), leading to a higher cost of capital since creditors cannot easily differentiate high- from low-quality businesses (below). In addition, other things equal, sole OM companies have less (cumulative) human and financial capital. This may lead them to be more financially constrained (perceived as being more risky by debt providers), again leading to a higher cost of capital. Also, the focus on single OM companies facilitates a direct (homogeneous) test of the influence of owner attributes (e. g. gender) on outcomes (Ang, Cole, and Lawson 2010). Of course, by examining only single OM new companies, the evidence presented in this study provides only a partial, thought important, picture of start-up financing and failure of all new small UK companies. As discussed below, further research is clearly warranted. The next section discusses the research questions addressed in the study, together with the research method. The following section describes the

Table 1: Private sector UK businesses at the start of 2012.

Panel A: All businesses					
	Businesses Number	Employment thousands	Turnover £ millions	As % of all businesses in Row 1	
				Number	Turnover
All businesses*	4,794,105	23,893	3,131,549	100.0	100.0
≤ 9 employees (micro)*	4,579,950	7,750	623,966	95.5	32.4
10–49 employees (small)	177,950	3,471	454,327	3.7	14.5
All small (≤ 49 employees)	4,757,900	11,221	1,078,293	99.2	46.9
50–249 employees (medium)	29,750	2,909	450,384	0.6	14.4
≥ 250 employees (large)	6,455	9,763	1,602,870	0.1	51.2

Panel B: Companies					
	Companies number	Companies employment thousands	Companies turnover £ millions	As % of column totals in Panel A	
				Number	Turnover
All companies*	1,341,115	18,127	2,861,715	28.0	75.9
≤ 9 employees (micro)*	1,161,410	2,805	402,027	25.4	36.2
10–49 employees (small)	145,110	2,827	417,943	81.5	82.7
All small (≤ 49 employees)	1,306,520	5,632	819,970	27.5	50.2
50–249 employees (medium)	28,205	2,775	442,628	94.8	98.3
≥ 250 employees (large)	6,390	9,720	1,599,117	99.0	99.6

*Includes business with no employees; that is, sole proprietorships and partnerships with only the self-employed, owner-managers and companies with only an employee director. Such businesses owners are included in employment totals.

†Turnover or sales generated by businesses, excluding value added tax.

Sources: Compiled by the author from BIS (2012a) and BIS (2012b), under the terms of the Open Government License: www.nationalarchives.gov.uk/doc/open-government-licence. However, any errors are solely those of the author.

data and variables and reports the empirical results. The concluding section discusses the principal empirical findings and makes a number of suggestions for future research.

2 Research Questions and Method

2.1 Research Questions

Leland and Pyle (1977) posit that information asymmetries between firms and lenders result in owners signaling the quality of their firms via their own equity investments, with such information asymmetries underpinning the pecking order hypothesis (Myers 1984). As stressed by Howorth (2001, 79), “The observed pecking order of demand for finance (internal equity; short-term debt; long-term debt; external equity) is argued to be a response to imperfect markets characterized by information asymmetries.” Related to information asymmetry, Berger and Udell’s (1998) financial life cycle theory is prefaced on the informational opacity of small firms.

In particular, opacity is more severe in small start-up enterprises who have not built reputations. This may lead to a higher cost of capital/credit rationing since external investors cannot differentiate between high- and low-quality businesses. In consequence, such firms rely initially on inside finance. As firms age and grow in size and accumulate experience through the cycle, they become progressively more informationally transparent, facilitating the raising of external finance via debt and then external equity. In this regard, Berger and Udell (1998, 620) reported that equity comprised 48 % of the financing of small US “infant” firms (aged 0–2 years). The following research questions (RQ) are therefore addressed in the current study:

RQ1: *How are UK small OM corporate start-ups financed?*

RQ2: *Is the financing of UK small OM corporate start-ups consistent with the life cycle or pecking order hypotheses?*

From an economic and policy perspective the factors associated with business failure are of major import. In terms of avoiding losses and the sub-optimal allocation of resources, empirical evidence regarding the determinants of enterprise survival is also of clear significance to banks and other providers of finance. For instance, as stressed by Lussier and Halabi (2010, 360), “understanding why firms fail and succeed is crucial to the stability and health of the economy”. Importantly, small firms may fail at any stage of their life cycle. For instance, for

all UK start-up companies, Wilson, Wright, and Altanlar (2014, 14) report that the failure rate – using the same definition of failure as the current study – is around 1.1% after 1 year, rising to about 1.2% after 2 years and then remaining relatively stable over the following five years. Hence the third research question is:

RQ3: *What factors are associated with the failure of UK small OM corporate start-ups?*

With regard to these research questions, extant SME studies typically focus on either the financing (capital structure) of businesses or the factors associated with firm failure/exits, but not both (e. g. Harkins and Forster-Holt 2014). As described in more detail in Section 3, the current study explores both issues; and in particular, after controlling for owner and firm characteristics, it investigates the association between financial gearing and corporate failure. In this context, Serrasqueiro and Nunes (2012, 628) stress that “SMEs at the start of their life-cycle, struggling to survive with low or no retained earnings, may become excessively dependent on short-term debt, where repayment of the debt and interests are easily monitored by creditors.”

Furthermore, Berger and Udell (1998, 645) state that “One reason that smaller firms typically have less access to longer maturity debt is that they tend to be more both informationally opaque and more risky than large firms”. Importantly, other things equal, an advantage of debt finance is that interest payments are tax deductible for the purpose of corporation tax. *Ceteris paribus*, the flip side is that the higher is gearing, the higher is the risk of failure, when a company is unable to pay debt interest/repayments as they fall due. More generally, based on balancing the risk-return trade-off, companies may adopt a maturity matching approach to financing, such that short-term (long-term) assets are financed by short-term (long-term) finance sources (e. g. Pike and Neal 1993, 403).

2.2 Method

All UK companies must file statutory annual accounts at Companies House (CH). However, as described below in more detail, small private companies are only required to file a balance sheet (and not a profit and loss) statement of their assets, liabilities, and capital. The accounts must be prepared in accord with accounting standards to provide a “true and fair view” of a company’s financial position. This differs from self-reported comparable data in survey studies which may be subject to measurement error.

The archival data collected for the current study is from the first set of statutory accounts filed at CH by 21,147 small private single OM newly

incorporated companies in the corporate fiscal year ending in 2011. Specifically, none of the start-up companies (including 350 failed ones) had filed their second set of annual accounts. As with the current study, typically, extant studies do not model the time to failure (e.g. Appiah and Abor 2009). Also consistent with prior archival studies (e.g. Brabazon and Keenan 2004), the current study examines the financial information contained in the accounts filed prior to failure; and more specifically, the first set of accounts filed at CH prior to failure.

A limitation of archival corporate data is that it relates to the financial position at the end of a company's financial year.¹ Hence financial data is not available at the date a company is incorporated.² However, relative to survey research, the principal advantage of archival accounting data is its objectivity and reliability, such that financing variables (e.g. gearing) can be readily compared across different corporate studies. A further advantage of archival data is that larger samples are usually available.³ Also, to the author's knowledge, the current study is the first archival one to examine single OM start-up companies. Hence, comparisons with prior studies which employ archival (Clatworthy and Peel 2013) or survey data (Ang, Cole, and Lawson 2010; Robb and Robinson 2014) are made only for comparable variables/results. As with all studies, comparisons are subject to specified temporal, country and sample design differences.

3 Empirical Study

3.1 Data

The Bureau Van Dijk FAME April 2012 DVD disc is the data source for the empirical study. It contains data for the population of UK companies (Clatworthy and Peel 2013), which is compiled from the statutory filings at CH. This includes annual accounts together with information obtaining to directors'

¹ As with all corporate failure archival data, we can only observe the information in accounts filed prior to failure; so that, though the financial position of company may have changed at the date it fails, we cannot observe it.

² An advantage of survey studies is that more nuanced financing questions may be asked; for instance relating to the funding of start-ups at foundation (e.g. Hamilton and Fox 1998). However, the data collected for the current study is consistent; in that the first available financial data for all corporate start-ups is utilized; and likewise for failed start-up companies, it is the first and last available financial (accounts) information.

³ For instance, in a meta analysis of 70 studies which examine the determinants of business growth and profitability, Unger et al. (2011) report that the sample sizes of the studies vary between 32 and 4,637, with most being under 300.

attributes and company-specific characteristics. The sample of 21,147 companies comprises all live (non-failed) and failed OM small, private, independent, newly incorporated companies, with full data available on the April 2012 disc, and which filed abbreviated accounts.⁴ Specifically, owner-managed (i.e. a sole director who holds 100 % equity) private independent (i.e. held by individuals and not as subsidiary) companies, which are newly incorporated, and which are small companies filing abbreviated accounts, are included in the sample.⁵ Financial data is extracted from the first set of annual accounts filed at CH following incorporation for the corporate fiscal year ending in 2011, the latest available on FAME.⁶

Under the Companies Act, an independent private company is classified as small and may file abbreviated unaudited accounts,⁷ if it meets two of the three following criteria: turnover (total assets) do not exceed £6.5 m (£3.26) and the number of employees⁸ is ≤ 50 . As recorded on their publicly available files at CH, and as indicated on FAME, small companies filing unaudited abbreviated accounts are classified as “total exemption small” (TES). Only TES companies were selected from the FAME database for inclusion in the current study. For accounts data for 2008/2009, Clatworthy and Peel (2013, 11) report that a total of 876,687 UK small independent private companies of all ages were classified as TES by CH. TES companies file annual accounts which comprise an abbreviated

4 Eleven companies were excluded from the study, since during liquidation proceedings their directors had filed a declaration of solvency (i.e. they had not failed, see footnote 9). Rather the companies were voluntarily wound-up. In addition, to avoid distorting the financing statistics reported in this paper, 75 unusual companies were excluded from the sample because their shareholder funds included reserves which are unrelated to the owner's initial equity investment. Rather they reflect accounting entries for such items as revaluation of assets.

5 Note that FAME indicates the number of directors and shareholders, the percentage of owned equity and whether or not a director is a shareholder. All selected companies, have one individual (sole) shareholder (owning 100 % equity) who is also the sole director.

6 As described in Section 2.2, none of the sample companies had more than one year of accounting data available on the disc. Although for older (not newly incorporated) companies, FAME includes up to 10 years of accounting data, information for director and company characteristics is available only for the current fiscal year of each company and not in time series.

7 Small companies are permitted to file abbreviated accounts on privacy grounds and to reduce administrative costs.

8 Unlike their larger counterparts, small companies are not required to disclose the number of their employees. In addition, if a private company's total assets or sales exceed £3.26 or £6.5 m respectively, then it must file audited accounts, and cannot be classified as TES. Clatworthy and Peel (2013, 11) report that only 17.9 % of small UK private independent companies, of all ages, voluntarily filed full and/or audited accounts. Such companies were not selected for inclusion in the current study to avoid complexity and to maintain homogeneity in the empirical analysis. In other words, only typical (TES) small companies are examined in this study.

balance sheet and no profit/loss account, though profitability measures can be derived from the balance sheet as explained below.

3.2 Variables

Annual accounts data and other statutory information filed at CH is recorded on FAME, enabling a range of variables to be compiled relating to owner, financing and company-specific characteristics. Following extant research, and as indicated on FAME records, the formal definition of corporate failure⁹ (FAIL) is employed. In the UK, under the Insolvency Act, this occurs when a company it is unable to pay its debts and insolvency proceedings follow via receiver/administrator appointments or a court or creditors' winding-up order. It is important to note that companies are known as being technically insolvent – also referred to as negative net worth or negative equity/shareholder funds – where the balance sheet value of total liabilities (TL) exceeds that of total assets (TA). This relates to the gearing ratio (TLTA), which reflects financial risk as follows: $TA = \text{current assets} + \text{fixed assets}$, which must be financed. TL (total debt) = short-term debt (liabilities) + long-term debt (liabilities). Shareholder funds (SF or total equity) = owners' equity (issued capital + share premium) + revaluation reserves + retained earnings (profit or loss).

Hence $TA = TL + SF$ (total equity); so for a company with a gearing (TL/TA) ratio of 0.7, 70 % of its financing (TA) is represented by debt and 30 % by total equity (SF). If $TL > TA$, then a company is technically insolvent. In this case, there must be a negative balancing figure for retained earnings (i. e. retained losses) in the balance sheet profit and loss account. As in this study, for a company producing its first annual accounts, this equates to the loss after tax for the period.¹⁰

9 In order to ensure that all companies which were classified as failed on the FAME April 2012 disc were correctly recorded, I searched subsequent FAME discs and the FAME internet database (including in April 2015) to check their failure status. As stated in footnote 4, 11 companies were excluded from the study because their directors had filed declarations of solvency in liquidation proceedings.

10 This follows since a company is only allowed to pay a dividend out of current after tax profit or from accumulated retained profits. Since a new company has no retained profit (earnings) from the previous year, it follows that the retained loss recorded in the balance sheet profit and loss account should equate to the loss after tax in the full (non-balance sheet) profit and loss statement. Note, however, that a new company with profit after tax may pay all this out as dividend, or a proportion as dividend, with the remainder retained within the company (retained profit) as recorded in the balance sheet profit and loss account. For older companies, the current year retained profit/loss is computed as the current figure in the balance sheet profit and loss account minus the figure for the previous year.

Importantly, although higher gearing ratios reflect higher financial risk, a company which is technically insolvent will not necessarily fail so long as it has sufficient liquid assets to service debt interest. Similarly for one which fails, the reverse may obtain; that is, it may be technically solvent, but have insufficient funds to meet debt obligations.

Of the 21,147 companies, 43 had share premium balances in their shareholder funds. Share premiums reflect the difference (premium) between the value of the issued capital and the amount owners actually invested as equity.¹¹ Share premiums are therefore added to issued capital to accurately measure the owners' initial equity investment. Unfortunately, unlike larger ones, small UK companies are only required to disclose the figures for current and long-term liabilities, and not their elements. Hence it is not possible to ascertain the proportion of debt capital provided by owners, which is a limitation of the current archival study relative to survey research¹² (e. g. Ang, Cole, and Lawson 2010).

In line with the preceding discussion, Table 2 provides definitions, labels and summary statistics for all variables collected for the study, including those used to investigate initial financing (RQ1 and RQ2) and/or which are employed to examine the factors associated with corporate failure (RQ3). With reference to prior failure research, and as shown in Table 2, a range of variables were collected to model the influence of financing and company/owner attributes on the likelihood of failure (FAIL). As well as the gearing ratio¹³ (GEAR), the variables retained profit/loss to total assets (RPTA), and whether a company is technically insolvent (NEGEQ) or is making a loss (LOSS), were also computed.

LIQ, the ratio of current assets to current liabilities, is expected to be negatively associated with FAIL, since higher values indicate higher liquidity. The ratio of fixed to total assets (FATA) reflects asset tangibility and has been found to be negatively associated with corporate failure in prior research (Theodossiou 1993, 445; Wilson, Wright, and Scholes 2013, 1380). This may be because creditors are more likely to defer instituting formal failure procedures for defaulting companies where they exhibit higher asset tangibility. As commented by Bessler, Drobetz, and Kazemieh (2011, 24) "A high ratio of fixed to total assets provides debtors with

11 For example, if the issued capital has a value of £1,000 but the owner injected £3,000 in equity, the share premium balance is £2,000.

12 In this context note, however, that official survey data (BIS 2013, 67) shows that UK SMEs rely heavily on bank finance as a source of new funds. Of those SMEs who sought financing in the preceding year, no less than 83% sought bank finance in the form of loans and overdrafts.

13 It is well documented that financial ratios are subject to skewness due to extreme values. In consequence, and following previous studies (e. g. Löffler and Maurer 2011), ratios for GEAR, LDFA, SDFA and LIQ are winsorised at 3, with TEQFA and RPTA winsorised at their 5% and 95% percentiles.

Table 2: Variable definitions and summary statistics.

Definitions		Means		
		FAILED (n = 350)	NON-FAILED (n = 20,797)	ALL (n = 21,147)
<i>Financial and firm-specific</i>				
GEAR	Total debt to total assets	1.202	0.950	0.954**
SDTA	Short-term debt to total assets	1.100	0.884	0.888**
LDTA	Long-term debt to total assets	0.105	0.072	0.071*
OEQTA	Owner's equity investment to total assets	0.009	0.016	0.016
RPTA	Retained profit/loss to total assets	-0.170	0.056	0.053**
TEQTA	Total equity to total assets	-0.160	0.070	0.066**
NEGEQ†	Negative equity (technically insolvent)	0.406	0.229	0.232**
LOSS†	Loss-making	0.417	0.239	0.242**
LIQ	Current assets to short-term debt	0.900	1.220	1.215**
TA (£)	Total assets	108025	51516	52451**
SIZE	Natural log of TA (£)	10.912	9.815	9.833**
SIZE ²	SIZE squared	120.60	98.24	98.61**
DIVERS†	Has additional SIC code	0.040	0.033	0.033
FATA	Fixed assets to total assets	0.243	0.205	0.206*
FAILED†	Company failed	—	—	0.017
COURT†	Court judgment for debt in past year	0.220	0.013	0.016**
CHARGE†	Registered charge against company assets	0.229	0.038	0.042**
SERV†	Service sector	0.574	0.769	0.766**
RET†	Retail/wholesale sector	0.140	0.093	0.094**
MAN†	Manufacturing sector	0.074	0.029	0.030**
OIND†	Other industrial sector	0.211	0.109	0.111**
<i>Owner's characteristics</i>				
AGE	Owner's age in years	42.64	41.72	41.74
EXDIR†	Is a director of another active company	0.323	0.216	0.218**
EXINACT†	Previously a director of an inactive company	0.391	0.147	0.151**
QUAL†	Has a degree or is professional qualified	0.006	0.034	0.034**
FEM†	Female owner	0.197	0.241	0.241
FOROW†	Has foreign nationality	0.046	0.123	0.121**

†Indicates a binary variable where 1 = attribute, zero otherwise; and where the mean indicates the proportion with the attribute.

**, * Indicate means differ significantly between the failed and non-failed samples at the 1% and 5% significance levels respectively (two-tailed tests), employing t-tests (chi-square tests) for non-binary (binary) variables.

a high level of security since they can liquidate assets in case of bankruptcy". A further variable which has been found to be positively related to failure (Wilson, Wright, and Scholes 2013, 1380) is whether a charge (CHARGE) is registered by creditors against a company's assets. This is probably because, in cases of debt

default, secured creditors are more likely to institute insolvency proceedings to recover the value of their collateralized loans.

Following prior research, I examine the impact of company size quadratically employing the natural logarithm of total assets (SIZE) and its squared value (SIZE²). Wilson, Wright, and Altanlar (2014) and Wilson, Wright, and Scholes (2013) report a positive (negative) relationship between SIZE (SIZE²) and failure for UK start-up companies and medium and large ones respectively. This indicates that company size is positively related to failure but at a declining rate. In this context, Bernhardsen (2001, 20) emphasizes that “if the firm is sufficiently small, (administrative) bankruptcy costs will exceed the expected liquidation value of the firm, and thus the creditor may not want to initiate bankruptcy proceedings”.

COURT indicates whether or not a court order for non-payment of debt has been obtained against a company in the preceding 12 months and is expected to be positively related to FAIL (Wilson, Wright, and Scholes 2013).

Other things equal, firms with more diversified operations (earnings' streams) would be expected from portfolio theory to be less failure prone. A variable (DIVERS) is therefore included, denoting whether a company has more than one standard industrial classification (SIC) code (i. e. operates in more than one industrial sector). Following prior research, to control for any systematic industry effects, the following industry dummies were computed using SIC codes: service sector (SERV), retail/wholesale sector (RET), manufacturing sector (MAN) other industrial sector (OIND, i. e. construction, utility, agriculture or mining).

From the available information on the FAME, and as shown in Table 2, a number of variables were collected relating to owner characteristics. The owner's age¹⁴ (AGE) is included to control for accumulated general experience (e. g. Ang, Cole, and Lawson 2010; Clatworthy and Peel 2013). Two further variables are available on FAME relating to experience. EXDIR indicates whether an owner is currently the director of another company; whereas EXINACT denotes whether an owner was previously a director of an inactive company that failed or was voluntarily dissolved.¹⁵ *A priori*, the relationship between these variables and FAIL is not clear cut. For instance, increased expertise may result from being the director of another company (EXDIR), but it may mean less time is devoted by owners to their current one. Similarly, owners may learn from mistakes

¹⁴ Computed as the difference between the date of birth of the owner and the company's account year-end date.

¹⁵ Inactive companies include failed and non-failed (solvent) ones which have been voluntarily wound-up (dissolved) by owners. Unfortunately, FAME does not differentiate inactive categories for prior directorships.

associated with having been a director of an inactive company or it (EXINACT) may be associated with a relative lack of competence.

Boyer and Blazy (2014, 667) report that start-up micro French enterprises with owners who had studied to at least undergraduate level were more likely to survive. A variable is constructed (QUAL) indicating if owners had disclosed in filing documents that they had a degree or were professionally qualified (e.g. FCA, solicitor or chemist). However, since the disclosure of qualifications is not compulsory, estimates associated with QUAL are conservative ones. FEM is a binary variable with unity indicating a female owner and zero a male one. Though the evidence on the impact of gender on business survival is mixed (e.g. Boyer and Blazy 2014), for UK companies, higher female board representation has been found to be negatively associated with failure (Wilson, Wright, and Scholes 2013; Wilson, Wright, and Altanlar 2014).

Finally, FAME records indicate whether a director is of foreign nationality (FOROW). It is possible that foreign nationals who locate their companies in the UK will be more international in outlook (Higon and Driffield 2011), may possess more expertise/networks in international markets (especially their home ones), and may have access to more sources of debt finance via institutions in their home countries, as well as from those in the UK. In this regard, based on UK SME survey data, Higon and Driffield (2011) report that foreign-owned firms are significantly more likely to export than their UK counterparts. Other thing equal, therefore, a negative association between FOROW and FAIL might be expected.¹⁶

3.3 Empirical Results

Table 2 reports variable means for the total sample and for the failed and non-failed ones. Just over 24 % of the start-up companies are female owned, with 12.1 % being in foreign ownership, and with the mean age of owners approaching 42 years. About 15 % of owners had previously been the director of an inactive company (EXINACT) with a higher proportion (22 %) currently serving as a director of another company (EXDIR). Given that firms in the current study are managed by single owners, this is consistent with prior comparable research which reports that a high proportion (45 %) of Scottish start-up companies had boards where at least one director was a director of another company (Rosa and Scott 1999, 27).

¹⁶ Note, however, that Boyer and Blazy (2014, 677) report a negative relationship between foreign ownership and the survival of start-up micro French enterprises.

With respect to RQ1 and RQ2, the mean level of gearing (0.954) for all companies is very high, with the median (typical) value also being high (0.894). For the failed and non-failed samples, the means (medians) are 1.202 (0.990) and 0.950 (0.891) respectively. The high reliance on debt financing is reflected in the other financing ratios; with retained profits (RPTA), owner's equity (OEQTA) and in consequence total equity (TEQTA) making only modest contributions to the financing of new single OM companies. This is reflected in their sample means of 0.053, 0.016 and 0.066, respectively. Furthermore, 23.2% of companies have negative equity and are technically insolvent, with 24.2% making losses. These findings contrasts with recent US survey evidence that 29.1% of small business start-up finance was in the form of owners' equity (Robb and Robinson 2014). More particularly, excluding failed companies and those with negative equity to facilitate comparability, the mean (median) gearing ratios of 0.720 (0.781) in the current study are more than double those of 0.356 (0.305) reported by Ang, Cole, and Lawson (2010) for small US single-owner companies of all ages.

While not examining financing and corporate failure, the study of Clatworthy and Peel (2013) provides some comparable summary statistics for all UK independent small private companies as defined above under the Companies Act. As shown in Table 3, though lower than for the current study (89%), they report (p.10) a median gearing¹⁷ ratio of 78%, with around a fifth

Table 3: Comparative summary statistics.

	Clatworthy and Peel (2013) study† (n = 1,067,577)	Current study (n = 21,147)
FAILED (mean)	0.022	0.017
TA (mean)	£286,490	£52,451
GEAR (median)	0.780	0.894
NEGEQ (mean)	0.218	0.232

†Data for Clatworthy and Peel (2013) study was collected from the FAME April 2010 disc for all private independent small companies, as defined under the Companies Act. Data for the current study was collected from the FAME April 2012 disc. Only summary statistics are reported for available variable means or medians in Clatworthy and Peel's (2013) study which are specified in the same terms as those in the current study.

17 They also report a mean gearing ratio of 1.06, though this is heavily skewed when compared to the median (0.78), which is typical of accounting ratios.

(21.8%) of companies having negative equity. The failure rate (2.2%) is higher than for the current study (1.7%), which is consistent with larger companies being more failure prone¹⁸; with the reported (p.10) mean total assets in Clatworthy and Peel’s study (£286,490) being substantially higher than that for the current one (£52,451). This is unsurprising, in that the Clatworthy and Peel study examines small companies of all ages.

Table 4 presents a correlation matrix of the principal financing variables. As expected, there is a high degree of correlation between GEAR, NEGEQ, RPTA and LOSS. A principal components analysis on these variables revealed that only one component (PC) had an eigenvalue > 1, explaining 86% of their variance. This variable (PC) is employed in an alternative failure logit model specification (below) as a robustness test. Consistent with expectations and maturity matching (above), the table shows that companies with higher asset tangibility (FATA) are associated with higher gearing (GEAR), with the degree of correlation (0.20) between FATA and long-term debt financing (LTDA) approaching twice that (0.11) of the correlation between short-term debt financing (SDTA) and FATA. In accord with this, CHARGE is positively and significantly related to LTDA, but the correlation between CHARGE and SDTA is statistically insignificant. Hence, companies with a charge against their assets and higher asset tangibility are associated with higher long-term debt financing.

Table 4: Correlation matrix of principal financing variables.

	GEAR	RPTA	NEGEQ	LOSS	CHARGE	FATA	SDTA
RPTA	−0.980*						
NEGEQ	0.724*	−0.747*					
LOSS	0.707*	−0.746*	0.974*				
CHARGE	0.058*	−0.067*	0.096*	0.096*			
FATA	0.202*	−0.224*	0.226*	0.225*	0.130*		
SDTA	0.901*	−0.880*	0.627*	0.612*	0.007†	0.108*	
LDTA	0.280*	−0.274*	0.239*	0.234*	0.104*	0.199*	−0.138*

*Indicates correlation (r) coefficient is significant at $p < 0.01$ (two-tailed tests).

†Indicates correlation (r) coefficient is insignificant ($p = 0.318$).

Table 5 provides further evidence on financing. Based on the sum of actual company balance sheet items, it shows total (aggregated) figures for all

18 The lower failure rate (1.31%) reported by Wilson, Wright, and Scholes (2013) for family-owned medium and large UK companies is consistent with a turning point for failure risk as company size increases (from small to medium/large ones).

Table 5: Total (aggregated) financing

	All companies (<i>n</i> = 21,147)		Failed (<i>n</i> = 350)	Non-failed (<i>n</i> = 20,797)
	£	% of total assets	% of total assets	% of total assets
Current assets	757759457	68.32	73.18	68.15
Fixed assets	351426624	31.68	26.82	31.85
Total assets*	1109186081	100.00	100.00	100.00
Short-term debt	775842117	69.95	90.02	69.24
Long-term debt	153150071	13.81	14.53	13.78
Total debt	928992188	83.75	104.55	83.02
Owners' equity	13665792	1.23	0.24	1.27
Retained profit/loss	166528101	15.01	-4.79	15.71
Total equity	180193893	16.25	-4.55	16.98
Equity + total debt	1109186081	100.00	100.00	100.00

*Aggregate total assets (financing) for other columns are: failed = £37,808,719 and non-failed = £1,071,377,362. Note that the values (£) comprise the sum of the values of the balance sheet figures of all companies in each sample.

companies, together with those for the failed and non-failed sub-samples. For all companies, financing amounted to £1,109.19 million (3.41% of which is represented by failed companies), with total debt comprising 83.8% of all finance; and with short-term debt making a much higher contribution (70.0%) than long-term debt (13.8%), confirming the reliance of small companies on the former. Retained profits and owners' equity amount to only 15.0% and 1.2% of financing respectively. As can be seen in Table 5, for failed companies, total debt exceeds total assets, which is also reflected in retained loss and negative total equity figures, with owners' equity amounting to only 0.24% of total financing. For non-failed companies, debt comprises 83% of financing with the remainder being in the form of retained profit (15.71%) and owners' equity (1.27%). In summary, contrary to the pecking order and life cycle hypotheses (RQ2), UK single OM UK start-up companies rely very heavily on debt financing; and considerably more so than that reported in recent US survey studies of small OM companies more generally (Ang, Cole, and Lawson 2010) and small business start-ups in particular (Robb and Robinson 2014).

In addressing RQ3, on a univariate basis, Table 2 reveals that most of the variable means differ significantly between the failed and non-failed sub-samples and are generally consistent with prior expectations. More specifically, failed companies are larger (TA), have lower liquidity (LIQ), are more highly

geared (GEAR), have a lower (negative) ratio of retained profit to assets (RPTA), and are more likely to be making a loss (LOSS) and to exhibit negative equity (NEQE). In addition, they are more likely to be male-owned, have a court order for non-payment of debt issued against them in the preceding year (COURT) and to have a registered charge against their assets (CHARGE). Interestingly, foreign-owned companies (FOROW) are associated with a lower likelihood of failure.

Table 6 presents multivariate logit estimates for FAIL. Model 1 shows the principal estimates, with the remaining models reporting alternative specifications. It reveals that, other than for DIVERS, the logit coefficients of all the financial and firm-specific variables exhibit their expected signs and are all highly significant. Specifically, companies are more likely to fail if they have higher gearing, lower liquidity, lower asset tangibility, have a charge against their assets and have a court order against them for unpaid debt. The positive (negative) signs attracted by SIZE (SIZE²) are consistent with extant research (above), indicating a quadratic relationship with FAIL. Hence, company size is positively associated with failure, but at a reducing rate. As discussed above, this may be explained in terms of debts being written-off on cost grounds for smaller companies. It may also be related to owners, or family members, providing loan capital.¹⁹ Nonetheless, and importantly, gearing is still a significant determinant of failure after controlling for size and other factors.

With regard to owner characteristics, AGE is negatively related to FAIL, but is statistically insignificant; whereas FEM has a positive but insignificant coefficient ($p = 0.653$). The statistical insignificance of FEM is not necessarily inconsistent with the prior research of Wilson, Wright, and Altanlar (2014), since the benefits of female board representation may be associated with mixed (rather than unitary) gender boards – with extant research indicating that balanced gender boards are the most effective (Litz and Folker 2002; Clatworthy and Peel 2013). EXDIR and EXINACT are negatively and positively related to FAIL, though only EXINACT is significant. The latter finding is consistent with prior research (Wilson, Wright, and Scholes (2013), and suggests that companies with owners who were previously directors of inactive companies are more likely to fail. Model 1 also shows that companies with owners who disclosed they had a degree/professional qualification are less failure prone. Of particular interest, is that new companies owned by foreign nationals (FOROW) are significantly less likely to fail, a finding which warrants further research in a wider context.

¹⁹ As emphasized above, a limitation of this study is that this issue cannot be explored further (see Conclusion).

Table 6: Multivariate logit estimates of start-up failure determinants.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
GEAR	0.978**	–	0.990**	–	1.195*	–	0.858**	0.981**
NEGEQ	–	0.520**	–0.025	–	–	–	–	–
RPTA	–	–	–	–1.101**	0.264	–	–	–
LIQ	–0.484**	–0.889**	–0.485**	–0.487**	–0.494**	–0.966**	–0.469**	–0.543**
SIZE	3.615**	3.176**	3.618**	3.498**	3.636**	4.090**	0.629**	3.813**
SIZE ²	–0.137**	–0.121**	–0.137**	–0.132**	–0.138**	–0.161**	–	–0.146**
DIVERS	0.002	0.031	0.003	0.005	0.002	0.079	–0.021	–0.045
FATA	–1.025**	–1.380**	–1.022**	–1.061**	–1.025**	–1.324**	–1.060**	–1.172**
COURT	2.381**	2.434**	2.382**	2.367**	2.386**	2.421**	2.465**	2.495**
CHARGE	0.805**	0.859**	0.806**	0.790**	0.810**	0.907**	0.732**	0.867**
FOROW	–0.749**	–0.707**	–0.749**	–0.742**	–0.750**	–0.678**	–0.770**	–
FEM	0.065	0.060	0.065	0.064	0.065	0.044	0.068	–
AGE	–0.008	–0.008	–0.008	–0.009	–0.008	–0.008	–0.009	–
QUAL	–1.681*	–1.679*	–1.680*	–1.713*	–1.675*	–1.644*	–1.802*	–
EXDIR	–0.105	–0.055	–0.104	–0.097	–0.105	–0.047	–0.147	–
EXINACT	0.887**	0.895**	0.888**	0.883**	0.888**	0.895**	0.912**	–
CONSTANT	–27.103**	–22.934**	–27.132**	–25.430**	–27.431**	–27.839**	–10.916**	–28.373**
PCT†	–	–	–	–	–	0.330**	–	–
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R ²	0.240	0.228	0.240	0.239	0.240	0.232	0.230	0.220
Model chi-square	803.0**	762.2**	803.0**	798.4***	803.1**	775.5**	767.5**	734.2**

**,*Indicates coefficient is significant at the 1% and 5% levels respectively (two-tailed tests).
†PC is a variable with an eigenvalue > 1, which is extracted from a principal components analysis of GEAR, NEGEQ, RPTA and LOSS.

As described previously, GEAR, NEGEQ, RPTA and LOSS exhibit a high degree of collinearity. Models 2–6 illustrate this.²⁰ More specifically, Model 3 reveals that, though significant in Model 2, NEGEQ is insignificant ($p = 0.883$) in the presence of GEAR. Models 4 and 5 produce similar findings for RPTA. In all cases, including Model 6 which contains the PC variable, the empirical findings are stable and robust to these specification variations whilst demonstrating the principal role of GEAR. In addition, Model 7 shows that the results are also robust to the omission of SIZE².

Finally, for comparison with Model 1, Model 8 reports estimates for a specification which omits the vector of variables representing owner attributes. Though the remaining model coefficient estimates are stable, the model chi-square and pseudo R^2 decline. This is consistent with extant research findings (above) that directors' characteristics are influential in determining failure.

4 Conclusion and Suggestions for Future Research

Robb and Robinson (2014, 153), stress that “much of what we know about entrepreneurial finance comes from firms that are already established ... the dearth of data on very-early-stage firms makes it difficult for researchers to look further back in firms' life histories.” From a policy perspective, the financing and failure of new enterprises is of key import. As discussed above, in the UK the overwhelming choice of business form is sole proprietorship. This research note has contributed new archival evidence regarding the financing and failure of a relatively large sample of 21,147 UK new single OM companies. Contrary to the pecking order and life cycle hypotheses, and to comparable recent US research, a key finding is that such informationally opaque companies rely very heavily on debt financing from inception, with a substantial proportion being technically insolvent, with minimal equity being injected by owners, and with retained profits also making only a modest contribution to finance. It is important to view these findings against the background of the similar financing characteristics exhibited by all UK private independent small companies as discussed above.

At least partly, this may relate to directors/owners or their families providing or guaranteeing loans; factors which may also contribute to the relatively low observed failure rate and the reported positive association between failure and

²⁰ Note that, for parsimony, LOSS is excluded from the models since it produced similar results when substituted for NEGEQ.

company size. Further survey research would throw light on these issues, including the trade-off in costs/benefits associated with owners investing their capital as debt or equity. For instance, in the UK, the interest on owner or family loans is deductible for corporation tax purposes, but increases gearing; whereas capital invested as equity has the opposite effect. Given information on gearing in annual accounts is publicly available, and so may be viewed by creditors and customers, the choice is potentially important. Notwithstanding this, after controlling for a range of owner and firm-specific characteristics, financial gearing was found to be an important determinant of failure. Extant evidence (above) indicates that SMEs owned by foreign nationals have a higher propensity to export. Coupled with the finding here, that foreign-owned companies are less failure prone, and given the increasing mobility of individuals and capital, foreign ownership is worthy of further investigation, including with regard to its impact on SME growth/productivity/competition.

While, to the author's knowledge, this is the first study to focus on new single OM companies using archival data, as with the recent US survey research of Ang, Cole, and Lawson (2010), it only presents a partial picture, limited to the most closely-held company start-ups. It is hoped that the evidence presented in this study will provide a benchmark for further archival research into how private start-up companies with more dispersed ownership are financed, together with similar research examining medium and large private company start-ups. Given their importance (Table 1), a natural extension is to investigate how corporate start-ups and more established companies finance growth. Of course, the empirical findings of this study are country-specific and hence similar research is warranted in other jurisdictions.

Though survey evidence for US firms is now emerging (Cole 2011), additional research is also required to investigate why SME entrepreneurs choose a particular form of legal ownership for new firms and the impact this has on business development and growth. In this context, the potential benefits of incorporation include lower personal financial risk (limited liability), a higher business profile, lower taxation and transparency, which may lead to a lower cost of capital (De Mooij and Nicodeme 2008). As discussed by Harkins and Forster-Holt (2014, 330), companies are also "easier to value and transfer". Potential disadvantages include loss of business privacy and the compliance costs of producing and filing mandatory company annual accounts and returns.

Similarly, further research is warranted to examine the motivation for, and impact of, owners switching business forms during their firm's life cycle; especially as, for the UK at least, companies make a disproportionate contribution to employment and turnover (Table 1). Together with extant research, the findings in this study emphasize the importance of debt financing to small UK

companies. Specifically, both new single OM companies, and small private companies more generally (Clatworthy and Peel 2013), exhibit very high gearing levels, especially when gauged against recent US survey findings. Given this, further research is required to establish how medium and large private independent companies are financed, together with how small, medium and large private companies finance growth.

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