

Gender, borrowing patterns and self-employment: Some evidence for England

Dr Vania Sena, Aston University

Dr Jonathan M. Scott, Teesside University

Professor Stephen Roper, University of Warwick

Abstract

This paper analyses the impact that financial constraints have on women's entrepreneurial choice. The empirical analysis is based on the data provided by the Household Survey of Entrepreneurship database that surveys individuals' intentions of becoming self-employed in England, UK. We do find evidence that women are less likely to seek external finance for business start-ups. This suggests that women in the general population perceive stronger financial barriers to business start-up than men, and this may be discouraging them from seeking external financial support. We find no evidence, however, that once women do seek finance for start-ups they are any less likely to obtain it than men.

Keywords: Finance constraints; self-employment; gender; discouraged borrowers.

1. Introduction

The availability of finance for business start-ups has attracted much attention over recent years and stimulated the development of a number of policy initiatives in the UK.¹ Recent reports published by the UK Small Business Service (SBS) emphasise different aspects of the finance issue. The Annual Survey of Small Businesses for 2004, for example, suggests that obtaining finance was an obstacle for 15.5 per cent of all small firms but for 16.2 per cent of women-led enterprises (Small Business Service, 2006). The UK Survey of SME Finances (UKSMEF) emphasises another gender related issue, noting that “female-owned businesses pay significantly higher margins on term loans than male-owned businesses (2.9 versus 1.9 percentage points over Base)” (Fraser, 2005: 18). However, the relationship among gender, entrepreneurial choice and access to finance is rather ambiguous. Indeed, previous academic research in this area has emphasised the complexity of the issues related to business finance and particularly the difficulty of trying to isolate and characterise any specific gender effects. Indeed while there is a general feeling that women may be disadvantaged in their ability to raise start up finance (Schwartz, 1976; Carter and Cannon, 1992; Johnson and Storey, 1993; Koper, 1993; Van Auken et al., 1993; Carter and Rosa, 1998), it is difficult to find evidence that supports this view (Carter and Shaw, 2006). Carter and Rosa (1998), for example, based on a survey of 600 firms (equally split by gender) found that there are: “quantifiable gender differences in certain areas of business financing, although intra-sectoral similarities demonstrate that gender is only one of a number of variables that affect the financing process.” Also, it has been suggested that women are no more likely than men to face financial constraints once other factors like age and education are controlled for (Carter and Shaw, 2006). How to explain these findings? Is it really the case that lending institutions discriminate either deliberately or unwittingly against entrepreneurs who are women? Or, are women entrepreneurs simply more reluctant to seek business finance (Kon and Storey, 2003)? Indeed, other factors linked to background or experience may also be important in shaping men’s and women’s access to finance. Obviously it is possible that in reality both mechanisms may contribute to explain the scarce involvement of women into entrepreneurship. However, understanding which mechanism prevails in reality is quite important as the policy interventions required for the two cases differ substantially. While in the first case policy must be focused on removing the barriers to credit access, in the second case policy-makers have to make sure that the perception of how financial intermediaries allocate credit changes among the potential female applicants.

The purpose of this paper is to analyse the relationship between finance access, gender and the individual’s entrepreneurial choice² using English data drawn from the Household Survey of Entrepreneurship, 2003 (the Survey, henceforth) recently made available by the Small Business Service, Sheffield, UK. The real advantage of this data-set is that it provides information on the individuals’ intentions to become self-employed in England and therefore allows us to assess the importance that access to finance has for women’s entrepreneurial choice. Empirically we will use a variety of econometric methods to address the issues outlined above: we will first evaluate the extent to which financial constraints have an adverse impact on the probability of being self-employed and then whether these are compounded by gender. So in the first model, we will try to quantify the extent to which gender has an impact only on the probability individuals have of experiencing financial constraints first, so that only those who do not experience financial constraints can then become self-employed. Therefore we will estimate a two-stage Heckman model where in the first stage we model the probability of experiencing financial constraints as a function of both

gender (and other variables), while in the second stage, we model the self-employment choice of those who have survived the first stage as a function of variables like the ability, human capital and so on. Finally, we will test whether gender affects mainly the access to external finance, while the self-employment choice is influenced by other factors (like previous experience as self-employed, current employment status and so on) that are independent of gender. Again this will involve the estimation of a two-stage Heckman model where in the first stage the probability of accessing external funding is affected by both gender and ethnicity, while in the second stage we model the probability of self-employment for the individuals that have approached external funders as a function of their previous experience, education and so on. We do find evidence that women are less likely to seek external finance for business start-ups. This suggests that women in the general population perceive stronger financial barriers to business start-up than men, and this may be discouraging them from seeking external financial support. We find no evidence, however, that once women do seek finance for start-ups they are any less likely to obtain it than men.

The rest of the paper is organised as follows. Section 2 illustrates the structure of the empirical analysis. Section 3 provides a descriptive analysis of the data set while Section 4 reports the main results. Finally Section 5 draws the main conclusions and gives an indication of potential caveats to the empirical analysis.

2. The Empirical Analysis

As mentioned in the Introduction, the purpose of this paper is to quantify the extent to which gender conditions the self-employment choice through the lack of access to external finance. Before this, it is necessary though to clarify the theoretical framework that underpins the empirical analysis. In the literature the impact of the availability of external financial funding on the self-employment choice has been investigated by using the discrete models of career choice. In these models, an individual will choose to become self-employed if the utility from self-employment is greater than the one attained from working for a company (Evans and Jovanovic, 1989; Blanchflower and Oswald, 1998). Therefore most models of self-employment start by comparing the salaried income with the income an individual would earn from being self-employed. In this framework, an individual will become self-employed as long as:

$$w - y^{se} < 0$$

where w is the wage income (obviously affected by a host of factors that may be beyond the control of the worker, like the state of industrial relations and so on) and y^{se} is the entrepreneurial income. However, the entrepreneurial income is affected by the ability an individual has to set up and run successfully a new company (so called “entrepreneurial ability”). Each individual in the population differs according to their “entrepreneurial ability” and we assume that the “entrepreneurial ability” is randomly distributed across all the segments of the population, or, in other words, it is independent of both the gender and the ethnic background of the single individual. Entrepreneurial ability is obviously important in determining whether or not the individual becomes an entrepreneur (self-employment choice). Indeed we assume that entrepreneurial income is positively affected by the individuals’ entrepreneurial ability. Therefore, entrepreneurial income can now be defined as:

$$y^{se} = \lambda$$

$$R = \lambda(\theta, e, K)$$

where R is a total revenue function which is affected positively by the individual's "entrepreneurial ability" (θ) or the capability of identifying and running a successful entrepreneurial project, by the entrepreneurial effort (e) and by the amount of financial capital available to the individual (K). The higher the ability, the larger the expected income, all else being equal; in the aggregate a large number of self-employed individuals will be then observed. However, the individual has to consider also the costs incurred when making the self-employment choice. There are three types of costs: a) the foregone wage income: the higher the current wage income, the less likely the individual is to become an entrepreneur. Current wage income is influenced by the level of education so that an increase in education reduces self-employment though it may improve the performance of those who do choose self-employment; b) the costs of gathering funds to finance the project and c) the disutility cost of becoming self-employed that may be captured by a negative attitude towards self-employment. It is well-documented that non-pecuniary lifestyle preferences (like the desire to be one's own boss or the desire to pursue not-for-profit objectives) play a significant role in influencing the self-employment decision (Blanchflower and Oswald, 1998).

Let us focus on b). Under this heading, we group all the costs an individual has to bear to access external finance, among which are the costs of persuading the external funders about the viability of the entrepreneurial project. Evans and Jovanovic (1989) argue that a liquidity constraint may occur when there is asymmetric information in the credit market, in the spirit of Stiglitz and Weiss (1981). In this case, entrepreneurs (borrowers) are more informed about both the profitability of the project and their own entrepreneurial ability than lenders giving rise to problems of moral hazard and adverse selection. Indeed, external funders cannot observe the individual's entrepreneurial ability and may attach to the project a different probability of success; therefore they will prefer to ration external funds on the basis of external indicators (say gender or ethnic background), all assumed to be affecting the probability of entrepreneurial success. This implies that individuals applying for external funds either will receive less financial resources than they ask for or will not receive any financial support at all. In this case, then, the probability individuals have of experiencing financial constraints is influenced directly by both the gender and its ethnic background; then only those that are not financially constrained can become entrepreneurs.

Consider, now, the case where the potential borrower cannot observe completely their entrepreneurial ability or the profitability of the project (probably because it is a first entrepreneurial project). In this instance, the individual will try to infer the probability of being rationed by looking at aggregate data on the number of individuals that can successfully gather the financial capital for their projects. If the proportion of credit-rationed women is high, then potential borrowers will anticipate that they will be financially rationed; so they will decide to self-select themselves and therefore, will not seek external funding. So the result of this mechanism is that in the aggregate is a small proportion of the loans granted to female applicants.

These considerations suggest three potential models that relate entrepreneurial choice to both gender and financial constraints. Notice that rather than working with a highly structured model, we estimate reduced-form equations based on a linearization of the assumed probability function. In the first model we will estimate whether the individual's probability

of becoming self-employed is jointly conditioned by the respondent's gender and by the applicant's probability of experiencing finance constraints. In other words we want to test the extent to which the probability of being financially constrained affects the individual's self-employment choice. Econometrically, this means that the probability of experiencing financial constraints depends on factors like the individual characteristics of the applicants and the availability of collateral. We will therefore estimate a two-stage Heckman model: in the first stage the respondent's probability of experiencing finance constraints (FINCON) is affected simultaneously by gender (SEX), ethnic background (WHITE), location (here measured by the region of residence - Region), education (DEGREE) and the collateral (COLLATERAL) availability (here proxied by the availability of a property that can be used as collateral). In the second stage the probability of becoming self-employed is modelled as a function of gender, the respondent's foregone wage income, attitude towards entrepreneurship, location and previous experience. In formal terms:

$$FinCon_i = \alpha + \beta_1 Sex_i + \beta_2 White + \beta_3 Sex_i * White + \beta_4 Region_i + \beta_5 Degree + \beta_6 Landlord + \varepsilon_i$$

$$DOER_i = \alpha + \beta_1 Degree_i + \beta_2 Attitude_i + \beta_3 Region_i + \beta_4 PreviousExperience_i + \varepsilon_i$$

where $DOER_i = 1$ if $FinCon = 1$.

Finally in the third model, we will test whether a self-selection mechanism is at work in our data so that individuals of a specific gender may decide not to apply for external funds; also we will estimate the impact that this decision has on the self-employment choice. Again, this model will be estimated by using the Heckman two-stage procedure where two equations are estimated: the first equation models the self-selection mechanism where we try to identify the factors that affect the individual's choice of going for external finance; so we will model the probability of seeking external funds (EXTFUND) as a function of gender, education and location. The second equation models the self-employment choice and it is estimated only on the sample that "survives" the self-selection mechanism identified in the first equation. In this equation, we will model the probability of becoming self-employed as a function (among the others) of the previous experience (proxing for the entrepreneurial ability), the employment status (Employment Status) (measuring indirectly the foregone wage income) and the attitudes towards self-employment (as a measure of the disutility cost attached to running an entrepreneurial project). In formal terms:

$$EXTFUND_i = \alpha + \beta_1 Sex_i + \beta_2 White + \beta_3 Sex_i * White + \beta_4 Degree_i + \beta_5 Region_i + \varepsilon_i$$

$$DOER_i = \alpha + \beta_1 EmploymentStatus_i + \beta_2 Attitude_i + \beta_3 PreviousExp_i + \varepsilon_i$$

where $DOER_i = 1$ if $EXTFUND = 1$.

3. The Household Survey of Entrepreneurship (HSE) 2003

The bi-annual Household Survey of Entrepreneurship or HSE (Small Business Service, 2004) was first introduced primarily to enable the Small Business Service to gather information on the number of people *considering* going into business. It is nonetheless, a useful source of data on start-ups and more importantly on the individuals' intentions to become entrepreneurs in England. It surveys 10,002 individuals and segments them into *Thinkers* ('those who are thinking about becoming entrepreneurs'), *Doers* ('those who are already entrepreneurs through running their own business or by being self-employed') and *Avoiders*

(‘those who are neither currently engaged in entrepreneurial activity nor thinking about doing so’). Each segment of the sample is asked different types of questions on the degree of access to external finance and whether they have encountered financial constraints. These questions are:

- **Thinkers:**

- “And have you tried to obtain any finance for this new business in the past 12 months?” (Q13) and
- “And did you have any difficulties in obtaining this finance from the first source you approached?” (Q16)

- **Doers:**

- “In the past year have you tried to obtain finance for your business ?” (Q40)
- “Did you have any difficulties in obtaining this finance?” (Q44)

Avoiders:

- “And which two would you say are the biggest barriers to you starting a business or becoming self-employed?” (Q50).

The answers to these questions give an immediate indication of the access to external finance and the degree of financial constraints every segment of the population experiences. Notice that both Doers and Thinkers are asked whether they have actively sought for external finance and experienced financial constraints, while Avoiders are asked to provide a subjective judgment on the extent to which the difficulty of obtaining external finance has hindered their intention of becoming self-employed. Therefore in our empirical analysis we will concentrate on Doers and Thinkers.

**INSERT
TABLES 1
& 2 HERE**

Tables 1 and 2 summarises the key characteristics of our sample (divided in Thinkers and Doers) by gender and ethnic background. The variables are expressed in percentage.

Overall, male Thinkers appear to be more qualified than female Thinkers. For both sexes, the most common qualifications are either a degree or General Certificate of Secondary Education (GCSE). This is also true for Doers. However, among the male Doers there is a large proportion who do not hold a formal qualification.

A large proportion of Thinkers belongs to the 25-44 age brackets; also this distribution does not appear to differ substantially across gender. Doers appear to be concentrated in the 25-64 age brackets and there does not appear to be any difference according to gender.

As for the employment status, a large proportion of male Thinkers appear to be currently in employment while female Thinkers are not. As for the Doers, the picture is more ambiguous: both male and female Doers appear to be mostly unemployed. This suggests a problem with the coding of the variable as these Doers are not unemployed, they are self-employed.

Both male and female Thinkers appear to have some previous experience with self-employment. The proportion of male Doers with some previous experience in self-employment is higher than for female Doers; however, for both sexes, the proportion of Doers without any previous experience is quite high.

The proportion of Thinkers (belonging to both sexes) with a positive attitude towards self-employment is large. The same applies to the Doers with the fraction of male Doers being quite substantial.

Consistently with our a priori expectations, the proportion of Thinkers trying to get access to external finance is quite small and among these, the number of women from ethnic minorities is quite negligible. More than suggesting a potential problem of discrimination against women by ethnic minorities, this finding seems to confirm the common perception that potential entrepreneurs may consider getting access to external finance quite difficult and therefore, prefer to rely on more informal sources of funding (say friends and family circles) to set up their business. White men do not have any difficulty in getting access to external finance. Altogether a small number of women seem to have access to external funds, even if in proportion they do not seem to be more financially constrained than men. Asian and Black women do not appear at all in the survey suggesting the existence of a self-selection process prior to the application to external finance.

Thinkers appear to be mostly located in the Northern and Southern regions. The proportion of Thinkers located in the Midlands is small. However, for all three areas, we can see that the fraction of male Thinkers is usually larger than that of female Thinkers. The same pattern applies to the Doers. Most Doers (male and female) are located in the North and the South of the country. Also, the proportion of male Doers is quite large. Is that not the whole country? I think you need to be more specific where 'north' and 'south' cover – so are you excluding the east and west here? This is not very clear.

So, in the sample, female respondents are less qualified than men; they may think about self-employment as an alternative to unemployment; they have a positive attitude towards self-employment; they are relatively young; they may have some previous experience (even if this is not true for the Doers); they are mostly located in the Northern and the Southern regions.

In terms of ethnic background, consistently with what presented before, we have sorted the respondents into three ethnic groups: White, Black and Asian. Generally speaking, the Black and Asian minorities appear to be under-represented in our sample. With this caveat in mind, these are the main characteristics of our respondents.

White Thinkers are generally more qualified than those from other ethnic minorities. However, all respondents have some sort of qualification, with degrees and GCSE being the most common. The same applies to the Doers, even if there is large proportion of White Doers who do not hold any qualifications.

Most White thinkers belong to the 25-54 age bracket while most respondents from other ethnic backgrounds seem to be younger and belong to the 25-44 age bracket. White Doers are in the 35-64 age brackets, while the proportions of other minorities are quite small in all age brackets.

As for the Thinkers, the three ethnic groups seem to be equally distributed among those who are employed and those who are not. In other words, there is no clear pattern. Doers appear to be mostly unemployed and this applies to all the three ethnic minorities.

Most White Thinkers have previous experience in self-employment along with the Black Thinkers. White and Asian Doers are almost equally split between those that have previous experience in self-employment and those who have not (with the proportion of White Doers without previous experience being larger than that of those with previous experience), while in the case of Black Doers, having some sort of previous experience matters.

Finally, the proportion of Thinkers with a positive attitude towards self-employment is large and proportionally distributed across the three ethnic groups. The picture for the Doers is no different as a large proportion of Doers (from the three ethnic groups) have a positive attitude towards self-employment.

Interestingly, finance constraints are mostly experienced by males of white ethnic background. This does not mean that they are discriminated against in their access to finance; it may simply be a hint that financial requests by men may be considered excessive by external funders and therefore, these are not always accommodated. Women do not have problems in having access to external funding. Indeed, women who have already started their business and have shown some entrepreneurial capability do not have more difficulties than men in getting financial resources. So, it seems that women encounter financial constraints mostly when they try to set up their business as at that stage they have not proven yet their worth.

In terms of location, most White Thinkers are located in the North and the South. A relatively large proportion of Black thinkers is located in the South, while Asian Thinkers are equally distributed between the North and the South. Doers share the same type of distribution: the North and the South are the areas of the country where most White and Asian Doers are located.

Finally, it is possible to notice that the proportion of respondents located in the 15% most deprived ward is very small and it appears that most Thinkers and Doers are located elsewhere. The only exception is for respondents of Black background as they appear to be equally distributed between the most deprived wards and the other ones.

4. The Results

**INSERT
TABLE 3
HERE**

The empirical results for our three models are presented in Tables 3-7. First of all, we do not find evidence of any disadvantaged area effect (here proxied by the dummy variable for the 15% most deprived wards) in any of the attempted specifications and therefore we have decided to drop this variable altogether. This is not surprisingly in the light of the descriptive analysis that showed that the proportion of respondents located in the 15% most deprived wards is rather negligible. The estimates for the first model are presented in Tables 3-4. Generally speaking neither gender or ethnicity (and their interactions) have a significant impact on the probability of encountering financial constraints. Also, the correlation coefficient is not significant for this specification raising doubts on the validity of the selection mechanism. This is not surprising given the fact that the proportion of respondents claiming to be financially constrained is very small. Interestingly, the two significant

**INSERT
TABLE 4,
5 & 6
HERE**

variables in the first stage equation are the regional variables (REGION) and the dummy variable on whether or not the respondent owns a house. This last result is definitely expected: financial constraints are exacerbated by the lack of collateral (which however can be tied to gender). As for location, it is necessary to qualify these results: indeed, the regional variable picks up all those local factors (like underdevelopment, presence of criminality, low level of economic activity and so on) that can have an adverse impact on the likelihood of running a successful business and that therefore are taken into consideration by lenders in deciding whether or not to fund an entrepreneurial project. In the first stage, the probability of being a Doer is not affected significantly by gender, but rather by the previous experience and by the attitude towards entrepreneurship. However, marginal effects (Table 4) are generally not significant showing that from this sample it is not possible to draw conclusions regarding the whole population.

The results for the third model are presented in Table 5 while the marginal effects are presented in Table 6. Notice that again the marginal effects are only presented for the second-stage equation. Generally speaking, the probability of having access to external finance increases if the respondent is male and white¹. This implies that women prefer not to seek for external finance. For the subset of individuals that decide to seek external finance, an improvement in the attitudes towards self-employment implies an increase of 2% of the probability of becoming a Doer; also becoming unemployed means that the individual is less likely of becoming a Doer by 4%. Finally an increase of the previous experience is likely to increase the probability of becoming a Doer by 4%. In these models, the regional variables are not significant showing that there is no location effect at work in either the self-selection mechanism or the self-employment choice.

Altogether these results confirm our initial hypothesis. In our population, women (from any ethnic background) do not appear to be financially constrained because of their gender but only because of the lack of collateral; also, in the population, the expectation of being financially constrained in the future deters women from seeking external finance for their investment projects. These results confirm the initial hypothesis, namely that gender conditions the probability of seeking external finance rather than the probability of being financially constrained. Some caveats to the empirical analysis are important and they mostly arise from the data we have used. First, the data analysed here are purely cross-sectional, however, and while this makes it possible to draw some inferences about the effects of financial constraints on start-up rates, for example, it is impossible to draw implications on the unobserved heterogeneity among individuals that clearly affects whether applicants experience financial constraints and then their self-employment choice. In other words, finance constraints may also depend on the unobserved heterogeneity of the individuals in the sample and the use of cross-sectional data prevents from controlling for all these additional factors that may affect finance constraints. Second, cross-sectional data does not alter /control on the impact of finance constraints on the subsequent success of the start-up companies. Similarly, it is difficult from the existing survey data to draw any firm conclusion about the impact of finance shortages on subsequent business performance. Both require more longitudinal follow-up of individuals that have participated in cross-sectional surveys.

¹ Also for this specification, the correlation coefficient is significant at 5%.

5. Concluding Remarks

In this paper we have estimated a set of empirical models of entrepreneurial choice in an attempt to quantify the extent to which financial constraints affect negatively the involvement of women into entrepreneurship. The analysis has been conducted on the Household Survey on Entrepreneurship 2003, compiled by the SBS Unit and a valuable source on the intentions respondents have to become self-employed in England. In the first model we have estimated directly the impact of financial constraints on the self-employment choice to understand how these interact with gender to impact negatively upon self-employment choice. Afterwards, we have tried to model the impact of gender on the probability of experiencing financial constraints in an attempt to model the potential sources of endogeneity that could affect the first model. Finally in the third model we have assumed that gender and ethnic background affect the probability of seeking for external funding as women may expect to be either credit rationed or to have less favourable credit conditions than men.

The key findings from our empirical analysis are the following: a) being female does not appear to enhance the finance constraints that adversely impact the self-employment choice. On the contrary these are compounded by the lack of collateral and by the location; b) a self-selection mechanism is at work where women anticipate encountering substantial financial constraints (even if this may not necessarily be justified) and then implicitly decide not to be self-employed. Interestingly enough, being located in a very deprived area does not affect the probability of becoming self-employed, in contrast to what the previous literature suggests accordingly, rates of female self-employment in the northern regions are up to half of those in the more economically dynamic south.

Taking these points together suggests that females in the general population perceive stronger financial barriers to business start-up than males, and this may discourage them from seeking external financial support for business start-ups. We find no evidence, however, that where females do seek finance for start-ups they are less likely to obtain it than males or that financial institutions condition their decision of awarding external finance to different variables than in the case of male applicants: indeed collateral availability is the key decision variables. This is suggestive of a dominant demand rather than a supply side effect. In either case, however, the effect is similar – that gender differences in access to finance are reducing female start-up rates. From a policy perspective the key points here are that female start-up rates are being reduced by (a) the general perception of stronger financial barriers to start-up among females and (b) their unwillingness to seek external finance for business start-ups. Addressing these issues is likely to require a combination of measures designed both to redress the perception that it is more difficult for females to access business finance and to encourage potential female entrepreneurs to be more ambitious in seeking external finance.

NOTES

(1) In England a wide consultation exercise by the Small Business Service led to the launch of a “Strategic Framework for Women's Enterprise” (SBS, 2003), in collaboration with the devolved administrations, various government departments, and with Prowess, a national UK network to promote women's enterprise. The strategic framework has identified six barriers to women's greater participation in entrepreneurial activity (SBS, 2003, page 8): lack of appropriate business support; lack of access to finance; the impact of caring and domestic responsibilities; difficulties experienced in the transition from benefits to self-employment; lack of appropriate role models and low levels of confidence and self-esteem.

(2) In the remainder of this paper we will use “entrepreneur” and “self-employed” as synonyms.

ACKNOWLEDGMENTS

We are grateful to the Small Business Service for supporting the research on which this paper is based, and to delegates at the Prowess conference 2008 for comments on an earlier draft.

REFERENCES

- Blanchflower, D. & Oswald, A. J. (1998). What makes an entrepreneur? *Journal of Labour Economics*, 16(1), 26-60.
- Carter, S. & Rosa, P. (1998). The financing of male- and female-owned businesses. *Entrepreneurship & Regional Development*, 10(3), 225-241.
- Carter, S. & Shaw, E. (2006). *Women's business ownership: Recent research and policy developments*. (Sheffield: Small Business Service).
- Carter, S. & Cannon, T. (1992). *Women as entrepreneurs*. (London: Academic Press).
- Evans, D. S. & Jovanovic, B. (1989). An estimated model of entrepreneurial choice under liquidity constraints. *Journal of Political Economy*, 97(4), 808-827.
- Fraser, S. (2005). *Finance for small and medium sized enterprises: A report on the 2004 UK survey of SME finances*. (Coventry: Warwick University).
- Johnson, S. & Storey, D. J. (1993). *Women entrepreneurs*. (London: Routledge).
- Kon, Y. & Storey, D. J. (2003). A theory of discouraged borrowers. *Small Business Economics*, 21(1), 37-49.
- Koper, G. (1993). Women entrepreneurs and the granting of business credit. (In S. Allen & C. Truman (Eds.), *Women in business: Perspectives on women entrepreneurs*. London: Routledge.)
- Schwartz, E. B. (1976). Entrepreneurship: a new female frontier. *Journal of Contemporary Business*, winter, 47-76.
- Small Business Service (2003). *A strategic framework for women's enterprise: sharing the vision: a collaborative approach to increasing female entrepreneurship*. (London: Small Business Service).
- Small Business Service (2004). *SBS household survey of entrepreneurship 2003*. (London: Small Business Service).
- Small Business Service (2006). *Annual survey of small businesses: UK 2004/05*. (London: Small Business Service).
- Stiglitz, J. E. & Weiss, A. (1981). Credit rationing in markets with imperfect information. *The American Economic Review*, 71(3), 393-410.
- Van Auken, H. E., Gaskill, L. R. & Kao, S. (1993). Acquisition of capital by women entrepreneurs: patterns of initial and refinancing capitalisation. *Journal of Small Business and Entrepreneurship*, 10(4), 44-55.

Data Annex

The data for the empirical analysis have been drawn from the Household Survey on Entrepreneurship 2003 data file with sample observations being weighted to give results representative of the UK working age population (variable: weight_1).

Dependent variables:

DOER = this is a dummy variables taking the value of 1 if the respondent is a Doer and 0 otherwise. This variable has been constructed by combining the dummy variables indicating Thinkers and Doers in the dataset.

EXTFIN = this is a dummy variable taking the value of 1 if the respondent is trying to get access to external finance and 0 otherwise. This variable has been constructed by combining the answers to Q13 for the Thinkers and Q40 for the Doers.

FINCON= this is a dummy variable taking the value of 1 if the respondent has experienced financial constraints and 0 otherwise.

Independent variables:

Degree: a dummy variable taking the value of 1 if the respondent has a degree or not.

Region: this enters in M1 as a group of dummies indicating the regions (with South East being the omitted category). In M2, it enters as a continuous variable with the largest values indicating the Midlands and the Southern regions.

Sex: this is a dummy variables set to one for men.

Age: this is a set of dummy variables taking the value of 1 for each respondent who is in a specific age bracket and 0 otherwise.

Employment status: this is a dummy variable taking the value of 1 if the respondent is NOT in either full- or part-time employment.

15% most deprived wards: this is a dummy taking the value of 1 if the respondent is located in one of the most deprived areas and 0 otherwise.

Attitude towards entrepreneurship: this is a dummy variable taking the value of 0 if the respondent has a positive attitude towards entrepreneurship and 1 otherwise.

Finance constraints: this variable is a dummy variable taking the value of 1 if the respondent has experienced financial constraints and 0 otherwise. This variable has been constructed by combining the answers to Q16 (for the Thinkers) and Q44 (for the Doers).

Ethnic Background: this is a set of dummy variable taking the value of 1 if the respondent has a specific ethnic background (White, Black and Asian, respectively) and 0 otherwise.

Past Experience: this variable takes the value of 1 if the respondent has previous entrepreneurial experience and 0 otherwise.

Landlord: this is a dummy variable taking the value of 1 if the respondent does not own a house and 0 otherwise.

Table 1. Thinkers' Characteristics by Gender and Ethnic Background.

THINKERS					
	<i>Sex</i>		<i>White</i>	<i>Black</i>	<i>Asian</i>
	<i>Male</i>	<i>Female</i>			
	%	%	%	%	%
Education					
Degree	1.75	1.34	2.48	0.23	0.20
A level	0.83	0.64	1.25	0.11	0.08
GCSE	1.07	0.78	1.64	0.09	0.09
Other	0.60	0.25	0.79	0.03	0.01
None	0.88	0.46	1.12	0.08	0.09
Age					
16-18	0.26	0.16	0.33	0.03	0.05
19-24	0.61	0.30	0.73	0.05	0.07
25-34	1.44	1.10	2.12	0.20	0.16
35-44	1.42	1.09	2.02	0.22	0.15
45-54	0.89	0.57	1.36	0.04	0.04
55-64	0.51	0.25	0.72	0.00	0.00
Current Employment Status					
Not Employed	1.76	2.00	3.12	0.26	0.24
Employed	3.37	1.43	4.12	0.28	0.23
Previous experience					
Yes	3.26	2.48	4.83	0.43	0.27
No	1.87	0.99	2.45	0.11	0.20
Attitude towards entrepreneurship					
Negative/Neutral	1.49	0.82	2.05	0.05	0.10
Positive	3.64	2.65	5.23	0.49	0.37
Seeking External finance					
Yes	4	2	5	0.6	0.2
No	56	38	83	6	5
Experience of Finance Constraints					
Yes	2	0.6	1.9	0.24	0
No	2	0.9	2.6	0.1	0.24
Location					
North East	0.95	0.63	1.50	0.02	0.03
Yorks and Humber	0.22	0.20	0.39	0.00	0.02
East Midlands	0.33	0.15	0.45	0.02	0.01
East	0.15	0.10	0.22	0.01	0.02
London	0.72	0.45	0.66	0.29	0.09
South East	0.74	0.61	1.17	0.04	0.09
South West	0.41	0.21	0.61	0.01	0.00
West Midlands	0.33	0.26	0.45	0.04	0.07
North West	1.28	0.86	1.83	0.11	0.14
15% most deprived wards	1.02	0.48	1.11	0.14	0.15
Others	2.60	1.90	4.01	0.16	0.25

Table 2. Doers' Characteristics by Gender and Ethnic Background.

DOERS					
	<i>Sex</i>		<i>White</i>	<i>Black</i>	<i>Asian</i>
	<i>Male</i>	<i>Female</i>			
	%	%	%	%	%
Education					
Degree	2.61	1.55	3.74	0.10	0.17
A level	0.96	0.62	1.50	0.02	0.03
GCSE	1.43	0.96	2.25	0.03	0.07
Other	1.11	0.55	1.53	0.00	0.02
None	2.11	0.66	2.65	0.01	0.06
Age					
16-18	0.09	0.02	0.09	0.00	0.02
19-24	0.24	0.11	0.29	0.03	0.02
25-34	1.25	0.58	1.62	0.01	0.16
35-44	2.39	1.39	3.49	0.04	0.10
45-54	2.21	1.27	3.32	0.05	0.04
55-64	2.04	0.97	2.86	0.03	0.01
Current Employment Status					
Not Employed	6.61	3.74	9.62	0.14	0.29
Employed	1.61	0.60	2.05	0.02	0.06
Previous experience					
Yes	3.72	2.21	5.51	0.11	0.17
No	4.50	2.13	6.16	0.05	0.18
Attitude towards entrepreneurship					
Negative/Neutral	1.94	1.20	3.01	0.01	0.03
Positive	6.28	3.14	8.66	0.15	0.32
Seeking External finance					
Yes	10	5	14	0.23	0.31
No	52	28	77	0.62	0.42
Experience of Finance Constraints					
Yes	2	0.7	3	0.15	0.07
No	7	4	0.1	0.15	0.23
Location					
North East	1.43	0.82	2.14	0.00	0.03
Yorks and Humber	0.42	0.16	0.55	0.00	0.03
East Midlands	0.46	0.20	0.62	0.00	0.04
East	0.32	0.20	0.48	0.01	0.01
London	0.86	0.44	1.06	0.07	0.10
South East	1.33	0.69	1.85	0.05	0.04
South West	0.72	0.36	1.05	0.00	0.00
West Midlands	0.45	0.26	0.67	0.01	0.02
North West	2.23	1.21	3.25	0.02	0.08
15% most deprived wards	1.12	0.37	1.29	0.02	0.11
Others	4.40	2.34	6.41	0.05	0.13

Table 3. Model 1: Heckman two-stage model

<i>Model 1</i>		
<i>Stage 2: Dep. Var.=Probability of Becoming an Entrepreneur(DOER)</i>		
	<i>Coefficient</i>	<i>T-ratio</i>
<i>Previous experience</i>	1.93	1.99
<i>Degree</i>	0.49	0.71
<i>Attitude towards entrepreneurship</i>	-7.79	-5.29
<i>Region</i>	-0.18	-1.72
<i>Sex</i>	-0.25	-0.5
<i>Stage 1: Dep. Var. = FINCON</i>		
	<i>Coefficient</i>	<i>T-ratio</i>
<i>Region</i>	0.09	2.41
<i>Degree</i>	0.17	0.72
<i>Landlord</i>	0.02	4.17
<i>Sex</i>	-1.13	-1.54
<i>White</i>	-0.91	-1.61
<i>Sex*White</i>	1.29	1.69
Correlation coefficient	-1.118	-1.52

Table 4. Model 1: Marginal Effects

	<i>Coefficient</i>	<i>T-ratio</i>
<i>Previous experience</i>	0.011	1.32
<i>Degree</i>	0.003	0.66
<i>Attitude towards entrepreneurship</i>	-0.073	-1.53
<i>Region</i>	-0.001	-1.07
<i>Sex</i>	-0.002	-0.39

Table 5. Model 2: Heckman two-stage model.

Dependent Variable: Probability of Becoming an Entrepreneur (DOER)						
	<i>Model 1</i>		<i>Model 2</i>		<i>Model 3</i>	
	<i>Coefficient</i>	<i>T-ratio</i>	<i>Coefficient</i>	<i>T-ratio</i>	<i>Coefficient</i>	<i>T-ratio</i>
<i>Previous experience</i>	0.261	2.940	0.366	0.680	0.287	0.520
<i>Degree</i>	0.199	1.730	0.245	0.880	0.226	1.010
<i>Attitude towards entrepreneurship</i>	-0.174	-2.550	-0.213	-1.070	-0.138	-0.780
<i>Employment Status</i>	-0.295	-2.040	-0.280	-1.040	-0.207	-0.780
<i>Region</i>	-0.006	-0.240	-0.021	-0.350	-0.014	-0.160
<i>Constant</i>	-1.632	-9.410	-1.609	-7.570	-1.649	-8.580
Dependent Variable: EXTFIN						
	<i>Coefficient</i>	<i>T-ratio</i>	<i>Coefficient</i>	<i>T-ratio</i>	<i>Coefficient</i>	<i>T-ratio</i>
<i>Region</i>	0.002	0.120	0.005	0.290	0.003	0.170
<i>Degree</i>	0.096	0.990	0.094	0.980	0.101	1.030
<i>Sex</i>	0.387	2.540	-0.118	-1.030	-0.073	-0.490
<i>White</i>	0.233	3.270	-	-	-	-
<i>Asian</i>	-	-	-	-	-0.397	-0.910
<i>Black</i>	-	-	-0.054	-0.260	-	-
<i>Sex*White</i>	-0.529	-3.170	-	-	-	-
<i>Sex*Black</i>	-	-	0.575	1.260	-	-
<i>Sex*Asian</i>	-	-	-	-	0.440	1.150
<i>Constant</i>	-1.460	-10.290	-1.264	-9.700	-1.244	-9.650
Correlation coefficient	3.803	2.200	2.266	0.850	2.844	0.490

Note: Initial number of observations: N=2106. The observations are weighted by WEIGHT_1.

Table 6. Model 2: Marginal Effects

	<i>Model 1</i>		<i>Model 2</i>		<i>Model 3</i>	
	<i>Coefficient</i>	<i>T-ratio</i>	<i>Coefficient</i>	<i>T-ratio</i>	<i>Coefficient</i>	<i>T-ratio</i>
<i>Previous experience</i>	0.041	2.720	0.064	0.490	0.046	0.420
<i>Degree</i>	0.033	1.620	0.045	0.580	0.038	0.700
<i>Attitude towards entrepreneurship</i>	-0.029	-2.310	-0.040	-0.670	-0.023	-0.570
<i>Employment Status</i>	-0.047	-2.020	-0.049	-0.710	-0.033	-0.600
<i>Region</i>	-0.001	-0.240	-0.004	-0.290	-0.002	-0.150