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POTENTIAL ENTREPRENEURS AND THE SELF-EMPLOYMENT CHOICE DECISION*

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Abstract
In this paper we estimate, on a dataset for the UK, a standard model of self-employment choice. The model is then extended to allow for differences in the potential for self-employment amongst employees. Specifically, we recognise four relevant groups: actual entrepreneurs, potential entrepreneurs, latent entrepreneurs, and non-entrepreneurs. This hypothesised division allows the incorporation of insights from the sociological and psychological literature on entrepreneurship, as well as the more usual economic and socio-demographic variables. The two models appear reasonably robust on statistical grounds. The predictive performance of the standard and sequential models is similar, although both models tend to under predict the number of self-employed. Nevertheless, we believe that the sequential model offers some distinct advantages over the standard model. In separating out the determinants of interest from the idea and firm formation decisions, the model identifies a set of characteristics that are necessary for start-up i.e. the factors determining interest, but which are not sufficient. In the standard model, the necessary and sufficient conditions are assumed to be identical. The results have implications for policy because they reveal a clear distinction between the factors governing interest in entrepreneurship and those influencing start-up from within the interested group.

JEL Classification: C51, J23, J31, M21

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INTRODUCTION

In the last two decades Western governments have increasingly emphasised the importance of new firm formation and small business growth to economic development. In the United States, self-employment as a proportion of the labour force began to rise in the mid-1970s after a long period of decline. A similar reversal of the declining long-run trend in the fraction of self-employment appears to have occurred in Japan and several European countries at much the same time as in the US (Blau, 1987). In the UK, despite strong growth in self-employment in the early 1980s, the fraction of self-employment in manufacturing and services was the lowest of any EU country in 1983 (Creigh *et al*, 1986). Against this background and in the light of findings in such studies as Birch (1979), which claimed that small firms in the US create a disproportionate share of jobs, the promotion of entrepreneurship became an important priority of national and regional policy in the UK. Policies such as the *Enterprise Allowance Scheme*, the *Business Expansion Scheme*, and the *Loan Guarantee Scheme* were introduced at the national level. Furthermore, evidence of low entrepreneurial potential and firm formation in several UK peripheral regions (e.g. Storey and Johnson, 1987; Ashcroft, Love and Malloy, 1991), led to some regional specific policy initiatives, such as the *Scottish Business Birth-rate Strategy* (Scottish Enterprise, 1992).

The growing importance of self-employment and policy interest in small business and entrepreneurship led to several lines of academic research. Of particular relevance is the empirical work on self-employment choice using cross-sectional data (Blau, 1985; Rees and Shah, 1986; Gill, 1988; Dolton and Makepeace, 1990; and de Wit, 1993), or longitudinal data (Blau, 1987; Evans and Leighton, 1989; Evans and Jovanovic, 1989; and Blanchflower and Meyer, 1994). These studies sought to apply some of the insights in models of entrepreneurial choice developed by Lucas (1978) and Kihlstrom and Laffont (1979), which in turn built on seminal work on the economic theory of entrepreneurship by Knight (1921) and Schumpeter (1950).

In this paper, we first apply the standard model of entrepreneurial choice, as developed by Rees and Shah (1986), Dolton and Makepeace (1990) and others, to a new data set[1]. It can, however, be argued that the standard model either breaks with the main tenets of the "classical" theories of entrepreneurship (Blanchflower and Oswald, 1993), or provides only a partial view of entrepreneurship, both in terms of the concept's main defining characteristics and the factors which condition entrepreneurial choice. Accordingly, we consider as an alternative a sequential model, which allows for the hypothesised non-homogeneity of the employed workforce with respect to the self-employment choice decision. Specifically, we recognise four relevant groups: actual entrepreneurs, potential entrepreneurs, latent entrepreneurs, and non-entrepreneurs. This division allows the incorporation of insights from the sociological and psychological literature on entrepreneurship, as well as the more usual economic and socio-demographic variables.

The paper is in 5 parts. First, the standard model of entrepreneurial choice is outlined. Secondly, the sequential model is developed. Thirdly, we discuss the data set and the variables to be used in the estimation. In the fourth part, the results are presented and discussed. The paper concludes with a summary of the findings and considers some policy implications.

1. THE STANDARD MODEL

The standard model that has been applied to cross-section data is the probabilistic, or *endogenous switching*, model applied by, amongst others, Rees and Shah (1986), Gill (1988), Dolton and Makepeace (1990), and de Wit (1993) to the question of self-employment selection.

The model reads:

$$E^* = \delta_1(\ln(y_{se}) - \ln(y_{pe})) + \delta_2 \boldsymbol{A} + \boldsymbol{\varepsilon} \qquad (1)$$

[1] The data were constructed from the records of interviews with a representative set of 2,787 individuals in the UK conducted by the MORI organisation for Scottish Enterprise as part of the

$$\ln (y_{se}) = \theta_s \boldsymbol{Y} + \boldsymbol{\varepsilon}_s \quad (2)$$

$$\ln (y_{pe}) = \theta_p \boldsymbol{Y} + \boldsymbol{\varepsilon}_p \quad (3)$$

Individuals choose the employment status that offers them the highest expected utility. Given that δ_1 is positive, individual i chooses self-employment if and only if E^* is positive, otherwise wage-employment is chosen. Equation (1) indicates that the choice is assumed to depend on the difference between the logarithms of the potential income in the two alternatives ($\ln (y_{se}) - \ln (y_{pe})$), a vector of observable characteristics of the individual ($\boldsymbol{A}$), and a disturbance term ($\boldsymbol{\varepsilon}$). Equations (2) and (3) are potential earnings equations where equation (2) gives actual earnings if the individual opts for self-employment and equation (3) gives actual earnings if the individual opts for paid employment. $\boldsymbol{Y}$ is a vector of individual characteristics, and $\boldsymbol{\varepsilon}_s$ and $\boldsymbol{\varepsilon}_p$ are disturbance terms.

Equations (1), (2) and (3) constitute the structural form of the standard model. Substitution of the income equations (2) and (3) into (1) produces a reduced form equation that is given by:

$$E^* = \delta_1(\theta_s - \theta_p)\boldsymbol{Y} + \delta_2 \boldsymbol{A} + (\boldsymbol{\varepsilon} + \delta_1(\boldsymbol{\varepsilon}_s - \boldsymbol{\varepsilon}_p)) \quad (4)$$

which is typically estimated as a probit.

preparatory work for its *Business Birth-rate Strategy*.

2. EXTENDING THE MODEL

It is clear that in the literature on the employment status decision, the vectors of observable characteristics of the individual (***A*** and ***Y)*** in equation (4) are not simply *ad hoc* specifications. Characteristics are chosen to proxy in the estimation: the degree of risk aversion of the individual, work attributes, human capital and the degree of liquidity constraint. The underlying view of the entrepreneur is essentially that of Knight (1921). Knight viewed the entrepreneur as more willing to bear uninsurable risk, receiving profits as a reward for discharging this function, while being subject to a liquidity constraint because of the failure of capital markets to supply sufficient funds due to moral hazard and adverse selection problems. Knight's view of entrepreneurship contrasts with that of Schumpeter (1950) who argued that the functions of the capitalist and entrepreneur were quite separate, a view that was shared by other Austrian theorists of entrepreneurship, notably Kirzner (1979). However, the evidence of Evans and Leighton (1989), and Evans and Jovanovic (1989), who found that liquidity constraints did appear to bind so that the would-be entrepreneur must bear most of the risk inherent in his/her venture, supports Knight rather than the Austrians.

Blanchflower and Oswald (1993), on the other hand, argue that the theory underlying the empirical literature on entrepreneurial choice breaks with the main tenets of the "classical" theories of entrepreneurship. They suggest that the classical writings stressed three key aspects of entrepreneurship. First, that "most individuals are not sufficiently alert or innovative to perceive business opportunities". Secondly, that "an innovative entrepreneur may receive higher expected utility than he or she would as a regular worker", and thirdly, that "attitude to risk is not the central characteristic which determines who becomes an entrepreneur" (p.7). On this view, given the assumed higher utility from entrepreneurship and the relative unimportance of risk, the probability of running a business reduces to a function of the joint probability of having entrepreneurial vision and of having, or obtaining, capital. Blanchflower and Oswald test this model assuming that the probabilities depend upon a set of personal characteristics, and a set of regional and industrial characteristics.

We do not go as far as Blanchflower and Oswald and accept *a priori* the view that entrepreneurship necessarily provides greater utility than paid employment. There is considerable evidence that those who choose employee status may have a comparative advantage at it (Rees and Shah, 1986) or, at the very least, differ from self-employed individuals (Dolton and Makepeace, 1990). Moreover, the evidence that marginal, dispossessed, and previously low-wage workers are often forced to seek self-employment due to non-clearing labour markets would also appear to contradict Blanchflower and Oswald's assumption (Blau, 1985; Evans and Leighton, 1989). However, Blanchflower and Oswald's reminder that theorists such as Kirzner (1973) view the *sine qua non* of entrepreneurship as the perception of business opportunities is important, since it implies that not all individuals have entrepreneurial vision and that it may be incorrect to assume that the possibility of self-employment is open to all employees. Indeed, we can go further than Blanchflower and Oswald and argue that the set of *potential entrepreneurs* may be determined not only by objective capacity (entrepreneurial vision) but also by self-perceptions of that capacity and by individual preferences and attitudes towards self-employment and paid work. Moreover, in view of the possibility of binding liquidity constraints, so that the potential entrepreneurs may have to bear most of the risk, then attitudes towards risk cannot be removed from the entrepreneurial choice decision. Psychological models of entrepreneurial potential consider that attitudes and perceptions may be more important than objective personal characteristics (Kreuger and Brazeal, 1994). And Evans and Leighton (1989) have suggested that many insights are offered by the literature on entrepreneurship in sociology and psychology that economists might usefully incorporate in their models (p.532).

In view of the potential importance of attitudes, perceptions and preferences towards self-employment, and the necessity for entrepreneurial vision, we hypothesise that the self-employment choice decision can be viewed analytically as a sequential process. Individuals first become interested in founding a firm; some then find an idea which they believe will be successful; and from this group a further subset go on to found a firm, presumably after having experienced a displacement event, and/or after overcoming capital and other constraints. We therefore define the following cases:

$E = 1$ if the individual is not interested in founding a firm.

$E = 2$ if the individual is interested but does not believe they have an appropriate idea.

$E = 3$ if the individual is both interested and has an idea but has not set up a firm.

$E = 4$ if the individual has set up a firm.

For any given sample, individuals in the labour force can therefore be assigned to one of four defined groups: the *not interested* group; the *latent entrepreneurs*, that is, those who are interested but do not believe that they have an appropriate business idea; the *potential entrepreneurs*, that is, those who are interested and have a business idea but who have not yet started a firm; and *actual entrepreneurs* or the self employed. Given the assumptions that underlie the sequential probit (see Amemiya (1975) and Maddala (1983)), we can write the probabilities of an individual being in one of the four groups as:

$$P_1 = \Phi(b_1 \boldsymbol{X}) = P(\text{not interested})$$

$$P_2 = [1 - \Phi(b_1 \boldsymbol{X})]\,\Phi(b_2 \boldsymbol{X}) = P(\text{latent})$$

$$P_3 = [1 - \Phi(b_1 \boldsymbol{X})]\,[1 - \Phi(b_2 \boldsymbol{X})]\,\Phi(b_3 \boldsymbol{X}) = P(\text{potential})$$

$$P_4 = [1 - \Phi(b_1 \boldsymbol{X})]\,[1 - \Phi(b_2 \boldsymbol{X})]\,[1 - \Phi(b_3 \boldsymbol{X})] = P(\text{self employed})$$

where Φ is the cumulative distribution function of the standard normal.

It is useful to be clear about the interpretation of the parameters (especially b_2 and b_3). For example, for $P_2 = [1 - \Phi(b_1 \boldsymbol{X})]\,\Phi(b_2 \boldsymbol{X}) = P(\text{latent})$ - the parameter vector b_2 can be interpreted via the conditional probability: $Pr(\text{latent/latent or potential or actual}) = \Phi(b_2 \boldsymbol{X})$ so that it is possible to determine the direction of the relationship between a variable included in $\boldsymbol{X}$ and the probability of an individual being classified as latent if that individual is latent, potential, or actual. This is not the case for the unconditional probability of an individual being classified as latent $((1 - \Phi(b_1 \boldsymbol{X}))\Phi(b_2 \boldsymbol{X}) = \Phi(-b_1 \boldsymbol{X}))\Phi(b_2 \boldsymbol{X}))$ in general. However, where the element of b_1 attached to a variable is negative (positive) and the element of b_2 attached to the same variable is positive

(negative) then an increase in the variable will increase (decrease) the unconditional probability of the individual being classified as latent.[2]

3. DATA AND VARIABLES

As part of the preparatory work for its *Business Birth-rate Strategy* Scottish Enterprise commissioned, in 1992, the MORI organisation to undertake interviews with representative samples of individuals, aged 15 or over, in Britain. The data were weighted to match the known profile of the population. The initial sample of 2048 individuals was reduced to 2007 by excluding those who were unable to place themselves in an entrepreneurial group. Of the remainder, 1195 individuals were active in the labour market and the sample was reduced further to 922 when the unemployed were excluded.

The data set has several key attributes. First, as noted above, it allows the sample to be decomposed into four relevant sub-groups: the self-employed, potential entrepreneurs, latent entrepreneurs, and a not interested group. The labour force is taken as the relevant sample[3].

Secondly, it allows variables to be constructed for inclusion in the $\boldsymbol{A}$, $\boldsymbol{X}$ and $\boldsymbol{Y}$ vectors of the models in sections 1 and 2. We hypothesise that the potential for entrepreneurship will be influenced by 6 sets of explanatory variables: the objective human capital attributes of the individual; regional location; self-perceived human capital attributes; attitudes towards risk; individual preferences towards self-employment; and a set of 'social' attitudes. The latter set are further decomposed into two sub-groups to distinguish what might be termed 'communitarian' or 'collectivist' views from 'individualistic' or 'self-reliant' attitudes. It is hypothesised that individuals whose social attitudes belong more to the former than the latter group will

[2] Similar comments apply to b_3 where the conditional probability: Pr(potential/potential or actual) = $\Phi(b_3\boldsymbol{X})$.

[3] Approximately 43% of the sample were interested in founding a firm, including 158 or 17% of the total, who had actually set up their own firm. Within the interested group, 33% could be classified as *latent entrepreneurs* and 27% as *potential entrepreneurs.* The remaining 40% of the interested group were actually running their own firm.

ceteris paribus have less potential for entrepreneurship and will therefore have a lower probability of becoming self employed.

For the *objective human capital attributes* (OHC) of an individual we allow for a range of characteristics including, gender, age, socio-economic class, marital status, number of children, and entrepreneurial contacts and experience. Individuals are assigned to a broad regional location (L) to reflect the degree of economic opportunity in their area. For the *self-perceived human capital attributes* (PHC) we allow for individuals' views on their dynamism, creativity, leadership skills, and ability to cope with pressure. *Attitudes towards risk* (RA) are measured by the stated willingness to take risks and the importance of job security. *Preferences towards entrepreneurship and self-employment* (PFE) are measured by the desire for independence and the priority placed on earning money. In addition, respondents were also asked about their newspaper readership and their views on the contribution made to society of a range of occupations including entrepreneurs, bankers, directors, lawyers, teachers, plumbers, bus drivers and ministers of religion. Positive *social attitudes* towards bus drivers, ministers, and teachers coupled with readership of left-of-centre broadsheet newspapers were assigned to the 'communitarian' group (SA1). Positive *social attitudes* towards entrepreneurs, bankers, directors, lawyers, and plumbers coupled with readership of centre or right-of-centre tabloid newspapers were assigned to the 'individualistic' group (SA2). Table 1 provides definitions of the variables used in the estimation.

The main problems associated with the dataset are first, that some variables were not continuously observed, specifically the income and age of the respondent and the age of the respondent's children. The availability of income data in bands is a particular problem because only the reduced-form version of the standard model (equation 4) can be estimated. A second problem is that data on some variables, for example, educational background and whether a parent was, or is, an entrepreneur, were not collected in the survey. These variables have proved important in some studies (for example Gill, 1988; de Wit and van Winden, 1989). Unfortunately, we are not able to test for their importance in the present study, although some of the variables used are close proxies. Finally, there is a risk that attitudinal and perceptual variables may not

be wholly exogenous to the self-employment choice decision. While the objective characteristics of the individual are unlikely to change as a result of that choice, this may not be the case with attitudes and perceptions. We are not aware of any evidence that supports this contention but the risk of endogeneity suggests that one should be cautious when interpreting the results.

4. ESTIMATION AND RESULTS

Standard Model

The results from the estimation of the reduced form probit for the self-employment/paid employment choice decision are presented in Table 2. The equation has an overall prediction rate of 85%, comprising 97% for paid employees and 24% for the self-employed. Thirteen variables are statistically significant from the 55 variables included. From the objective human capital (OHC) set five are significant. All three locational (L) variables, the two variables representing attitudes towards risk (RA) and the two variables indicating preferences towards self-employment (PFE), are all significant. Only one of the 'individualistic' attitudes (SA2) is significant, while none of the 'communitarian' attitudes (SA1) attain statistical significance. Individuals who are above age 65, are not single, live outside Scotland, the North and Wales, are willing to take risks, place a high priority on making money, like being independent and believe entrepreneurs contribute a great deal to society, are more likely to be self employed. On the other hand, individuals who are female and believe that job security is important are less likely to become self-employed.

The joint importance of each of the sets of variables defined in Table 1 can be assessed using a likelihood ratio test. The null hypothesis in each case excludes each variable in the set from the explanation of the self/paid employment decision. The results reported in Table 2 suggest that the PHC variables and/or the SA2 variables could be excluded in a restricted estimation.[4]

[4] The results of the restricted estimation are not presented here, but the same thirteen variables are statistically significant and the equation has an overall prediction rate of 84%, comprising 97% for paid

Extended Model

We repeat the above type of analysis for each of the stages in the sequential probit.

(i) Estimating b_1 in $P_1 = \Phi(b_1X)$

Here 1 in the estimated probit corresponds to an individual being classified as not interested.[5] The results are presented in Table 3. The equation has an overall prediction rate of 68%, comprising 79% for the not interested and 54% for the interested group. Twelve variables are statistically significant from the 55 variables used. From the objective human capital (OHC) set three are significant. The two variables representing attitudes towards risk (RA) and the two variables indicating preferences towards self-employment (PFE) are significant. Two of the three locational (L) variables and two of the eight 'individualistic' attitudes (SA2) are significant, while none of the 'communitarian' attitudes (SA1) attain statistical significance. The equation suggests that individuals who are female, place a high value on job security and believe that plumbers contribute a great deal to society, are less likely to be interested in starting a firm. Conversely, unmarried individuals living with a partner, who are located in the East Midlands, East Anglia and the south of England, have a family member who is an entrepreneur, are willing to take risks, perceive themselves to be creative, like to be independent, put a high priority on making money and consider that entrepreneurs contribute a great deal to society, are more likely to be interested in starting a firm.

The results of the tests of the joint importance of each of the sets of variables, which are reported in Table 3, suggest that the PHC variables and/or the SA1 variables could be excluded from the estimation.[6]

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employees and 23% for the self employed. The detailed results of all the restricted estimations reported in this paper can be obtained from the authors.

[5] For more details on the estimation of sequential probits see Madalla (1983) pp. 49-51.

6 In this restricted estimation, the same twelve variables are statistically significant plus a thirteenth variable (NEWTYPD1), indicating that individuals who read tabloid newspapers are more likely to

(ii) Estimating b_2 in $P_2 = (1-\Phi(b_1X))\Phi(b_2X)$

Here 1 in the estimated probit corresponds to an individual being classified as latent and the not interested are excluded from the estimation. The results are presented in Table 4. The equation has an overall prediction rate of 73%, comprising 45% for the latent group and 88% for the potential and actual groups taken together. Four variables are statistically significant from the 55 variables included. From the objective human capital (OHC) set only two are significant, with only one from the RA and SA2 sets, respectively, reaching statistical significance. The equation suggests that from those interested in self employment, individuals who put a high value on job security are less likely to have a business idea, while those who are members of social class A/B, are widowed, separated or divorced, and who believe that lawyers contribute a great deal to society, are more likely to have an idea for a new business.

Table 4 also includes the results of the tests of the joint importance of each of the sets of variables. These results indicate that only the OHC and RA variables are jointly significant.[7]

(iii) Estimating b_3 in $P_3 = (1-\Phi(b_1X))(1-\Phi(b_2X))\Phi(b_3X)$

Here 1 in the estimated probit corresponds to an individual being classified as potential and the not interested and latent groups are excluded from the estimation. The estimation results are shown in Table 5. The equation has an overall prediction rate of 79%, comprising 67% for the potential group and 87% for the group of actual self-employees. Eleven variables are statistically significant from the 55 variables used in the estimation. From the OHC set six variables are significant, while two of

lack interest in self-employment. The equation has an overall prediction rate of 68%, comprising 78% for the not interested and 54% for the interested group.

[7] In a further restricted estimation, we excluded the L, PHC, PFE, and SA1 variables. One of the four variables that were significant in the unrestricted estimation ceased to be significant (ATTLAWD1), while two further variables (SCLASSC1) and (NOCHLD4) became significant. The equation is seen to have an overall prediction rate of 73%, comprising 39% for the latent group and 89% for the potential and actual groups taken together.

the three L variables, one of the two RA variables, and one of the SA1 and SA2 variables, respectively, are significant. The equation suggests that from the set of potential and actual self-employees, individuals who used to run their own business, who place a high value on job security, and who read broadsheet newspapers, are more likely to be potential rather than actual entrepreneurs. In contrast, individuals who are members of social class A/B, are widowed separated or divorced, are located in the North West, Yorks. & Humber, the West Midlands or London and the South East, have either two, three, or four children, and consider that plumbers contribute a great deal to society, are less likely to be potential and more likely to be self-employed.

The tests of the joint significance of each of the sets of variables, which are also presented in Table 8, indicate that only the OHC, RA and SA2 variables are jointly significant.[8]

Comparing Standard and Sequential Models

The key statistical point is that these two models are non-nested meaning that neither model can be obtained from the other by imposing parameter restrictions. This implies there is no straightforward test procedure that can be used to discriminate between the two models. We have to decide on the relative merits of the two models in indirect ways.

Predictive Success in the Two Models

The probabilities that constitute the sequential model can be evaluated using the parameter estimates reported in the tables. Making predictions according to the maximum estimated probability produces the results:

	NI	L	P	SE
Not Interested (NI)	**476**	7	13	31
Latent (L)	98	**16**	7	10

[8] A further restricted estimation was again conducted with the sets PHC and PFE excluded. One of the eleven variables that were significant in the unrestricted estimation ceased to be significant (REGDB), while three further variables (CHAGED4), (NOCHLD1) and (ATTBUSD1) became significant. The estimated equation has an overall prediction rate of 77%, comprising 67% for the potential group and 84% for the group of actual self-employees.

Potential (P)	68	8	**21**	9
Self Employed (SE)	98	6	4	**50**

where the rows are actual classifications and the columns are predicted classifications. However, the model shows a marked tendency to over predict the number of individuals in the not interested group while under predicting particularly membership of the latent group.

For comparison with the standard model we have:

	Sequential Model		Standard Model	
	SE	PE	SE	PE
Self Employment (SE)	**33**	125	**38**	120
Paid Employment (PE)	22	**742**	20	**744**

where the rows are actual classifications and the columns are predicted classifications. The comparison reveals that the results are similar in the two models, but both models under predict the number of self-employed. [9]

Marginal Effects

In the standard model, the probability of self-employment is assumed to be:

$$P = \Phi(bX)$$

and the rate of change of P with respect to X_j is $b_j\phi(bX)$, where X_j is element j of X and b_j is element j of b. $b_j\phi(bX)$ is the marginal effect if X_j is a continuous variable in the standard model. Since all our explanatory variables are dummies, however, it is more appropriate to calculate the value of (the estimated) P for different X vectors. In either case, there is an increasing relationship between the estimated probability of self-employment and the value of an explanatory variable if and only if the estimated parameter attached to that explanatory variable is positive.

In the sequential model, the probability of self-employment is

[9] See Maddalla (1983) pp. 76-77 for a discussion of comparing actual and predicted outcomes in this way.

$$P = (1 - \Phi(b_1X))(1 - \Phi(b_2X))(1 - \Phi(b_3X)) = \Phi(-b_1X)\Phi(-b_2X)\Phi(-b_3X)$$

The marginal effect for a continuous variable, X_j, is defined to be the rate of change of P with respect to X_j. It is straightforward to obtain the expression:

$$- ((b_1)_j\lambda(-b_1X) + (b_2)_j\lambda(-b_2X) + (b_3)_j\lambda(-b_3X))P \qquad (5)$$

where $(b_i)_j$, i = 1,2,3, is the element of b_i associated with variable X_j, and $\lambda = \phi/\Phi$. The sign of this expression is ambiguous but we can note: the probability of self employment increases as the value of X_j increases if $(b_1)_j$, $(b_2)_j$, and $(b_3)_j$ are negative, whereas the probability of self employment decreases as the value of X_j increases if $(b_1)_j$, $(b_2)_j$, and $(b_3)_j$ are positive. In these cases, the sign of the expression in (5) is unambiguous. Its numerical value will depend on the X vector and is not constant. The same comments apply in the case of a discrete explanatory variable but the analytical expression in (5) doesn't apply and we need to calculate the estimated value of P for different X vectors.

It is possible to use the estimations that constitute the sequential probit to deduce a negative relationship between the probability of self employment and the variables: SEXD1, PCHARD7 and a positive relationship between the probability of self employment and the variables: AGED4, AGED9, MARTLD1, MARTLD3, CHAGED2, REGDB, REGDC, REGDD, CONTD2, NOCHLD3, NOCHLD4, PCHARD2, PCHARD9, which conclusions agree with the estimation of the standard probit. As far as the other variables are concerned it is not possible to deduce the direction of the relationship between the variables and the probability of self-employment on the basis of the estimations that make up the sequential model. It is conceivable that the direction of the relationship changes as the X vector changes.

Table 6 presents the results of a set of marginal experiments for the standard and sequential probits.[10] These experiments offer some interesting comparisons. The estimated probability of self-employment for females is only about 57% of that for males in the standard model and about 62% in the sequential model. Males are

therefore at least one and a half times more likely to be self-employed than females. Members of socio-economic groups D and E are according to the standard model around 36%, 31% and 15% less likely to be self-employed than members of groups A/B, C1 and C2, respectively. According to the sequential model, the percentages are 41%, 33% and 13%, respectively. Married people are around three and a half times in the standard model, and two and a half times in the sequential model, more likely than single individuals to be self-employed. The comparison is little different for those who live together, while those who are widowed, separated or divorced are, in the standard model, nearly six times, and in the sequential model 4 times, more likely than single people to be self-employed.

The results also suggest that location has a significant impact on the probability of self-employment. Individuals resident in the North West, Yorkshire & Humber or the West Midlands, are more than twice as likely in both models to be self-employed compared to individuals in Scotland, the North and Wales. The effect is even more pronounced for individuals resident in the East Midlands and the rest of southern Britain.

When attitudes towards risk are considered there are clear differences in the probability of self-employment. Individuals who indicate a willingness to take risks (PCHARD2) are in both models nearly twice as likely to be self-employed, while those for whom job security is not important (PCHARD7) are more than twice as likely to be self-employed. As might be expected, much the same picture emerges for the two variables that are supportive of positive preferences towards self-employment. Individuals placing a high priority on making money (PCHARD9) are in both models almost twice as likely to be self-employed as those who put a lower weight on monetary gain, while a desire for independence (PCHARD10) also doubles the probability of self employment. Finally, individuals who believe that entrepreneurs contribute positively to society (ATTENTD1) are more than one and a half times more likely in the standard model, and less than one and a half times more likely in the sequential model, to start their own firm.

[10] So, for example, in the first block we compare SEXD1=1 to SEXD1=0, with all other explanatory variables set at the sample average.

The sequential model allows us to go further than the standard model by examining the components that determine the probability of self-employment. In the sequential model, the probability of self-employment is the product of the probabilities of being interested in self-employment, having a feasible business idea when interested, and starting a firm given an idea and interest. Table 7 presents the effect on each component probability of the marginal experiments using the sequential model. The table reveals significant differences in the importance of each component to changes in the probability of self-employment. For example, females are found to have a lower probability of self-employment than males because their probability of interest is much lower (75% of males) than their probability of having a business idea (94%) and their probability of translating their interest and ideas into action (91%). Similarly, individuals who are willing to take risks (PCHARD2) have a higher probability of self-employment principally because their probability of interest is higher (137%). The probabilities of having an idea (115%) and translating this into action (102%) are much closer to those who perceive themselves as less willing to take risks. Much the same situation is found with the variables indicating preferences for self-employment and attitudes towards the contribution of entrepreneurs to society. Those who place a high priority on making money (PCHARD9) and who like to be independent (PCHARD10) have probabilities that are 149% and 133% higher, respectively, than their counterparts who do not exhibit such preferences. The ratio of the probabilities for ideas are, however, only 107% and 108% for the two variables, respectively, and 100% and 99% for the ratio of the probabilities for translating ideas into action. Similarly, those with positive attitudes towards entrepreneurs (ATTENTD1) have probabilities of interest that are 133% higher, whereas the ratios for ideas and action are 96% and 110%, respectively.

For socio-economic group (SCLASS) and marital status (MARTDL), the impact on the probability of self-employment has much less to do with interest and much more to do with higher probabilities for ideas and action. Indeed, members of socio-economic group A/B have an appreciably lower probability of interest than members of the D/E group (76%) but a significantly higher probability both for ideas (136%) and for the translation of ideas into action (162%). This finding would appear to support the intuition that members of the A/B group have comparative advantages in

certain paid-employment occupations e.g. the professions, which lowers their interest in self-employment. On the other hand, for those in this group who are interested, their education, experience and skills, raise the likelihood of having a feasible business idea and equips them better to overcome the obstacles to start-up.

Finally, for the remaining two variables considered in Table 7: location (REGD) and the importance of job security (PCHARD7), the impact on the probability of self-employment reflects differences in the probabilities on all three components. For example, the probability of self-employment is higher in London and the South East (REGDD) than in Scotland, the North and Wales because of higher probabilities of interest (140%), of having ideas (124%) and of translating ideas into action (178%).

CONCLUSIONS

In this paper we have estimated a standard model of self-employment choice that has frequently been employed in the literature. The model was extended to allow for differences in the potential for self-employment within the employed group of the labour force. Three particular sub-groups were identified: the *not interested*; *latent entrepreneurs*, that is, those interested in starting a firm but who believe that they do not have an appropriate idea; and *potential entrepreneurs*, that is, those interested in setting up, who consider that they have a suitable idea but who, for whatever reason, have not yet 'taken the plunge'.

When the two models were specified and estimated they appeared reasonably robust on statistical grounds. Estimation of the standard model suggests that individuals with a significantly greater probability of founding a firm are: non-single males; above age 65[11]; living outside Scotland, the North and Wales; who are willing to take risks; are not believers in the importance of job security; who place a high priority on making

[11] This is presumably because individuals over 65 in the labour force are not likely to be in paid employment due to conventions about retirement. The results in Table 2 indicate that individuals in all age groups are more likely to be self-employed than individuals in the default age group (15 to 17 years).

money and personal independence; and who believe that entrepreneurs contribute a great deal to society.

The sequential model suggests that the following set of characteristics and attitudes produce a significantly greater probability of *interest* in entrepreneurship: being male; living with an unmarried partner; location in the East Midlands, East Anglia and the south of England; having a family member who is an entrepreneur; being willing to take risks; perceiving oneself as creative; exhibiting a preference for independence; placing a high priority on making money and a low value on job security; and considering that plumbers contribute little, while entrepreneurs contribute a great deal, to society.

Interested individuals are more likely *to have an appropriate business idea* if they are in socio-economic group A/B, are widowed, separated or divorced, do not believe job security to be important, and believe that lawyers contribute much to society. Moreover, given individuals have a business idea, they are more likely *to set up* their own firm, if they: are in socio-economic group A/B; are widowed, separated or divorced; have either two, three or four children; are not located in Scotland, the North and Wales; believe that job security is not important; have not run their own business before; have a positive attitude to plumbers; and tend not to read broadsheet newspapers.

The predictive performance of the standard and sequential models was similar, although both models tended to under predict the number of self-employed. Nevertheless, we believe that the sequential model offers some distinct advantages over the standard model. In separating out the determinants of interest from the idea and firm formation decisions, the model identifies a set of characteristics that are necessary for start-up i.e. the factors determining interest, but which are not sufficient in themselves. In the standard model, the necessary and sufficient conditions are assumed to be identical.

So, for example, while the standard model suggests that females are significantly less likely to set-up their own firm, the sequential model reveals that females are less

likely to be interested in self-employment than males, but are no less likely once interested to translate that interest into action. The same comments apply to individuals living together, willing to take risks, placing a high priority on making money, wishing to be independent, and believing entrepreneurs to contribute positively to society. Conversely, while estimates of the standard model suggest, for example, that individuals resident in the North West, Yorks. & Humber, and the West Midland's are more likely to be self-employed than individuals in Scotland, the North and Wales, the sequential model indicates that this reflects difficulties in translating interest into action rather than any relative lack of interest p*er se*.[12] The same conclusion applies to individuals who are widowed, separated and divorced.

The results also offer some support for our earlier contention of the importance of attitudes, preferences and perceptions towards self-employment, and the necessity for entrepreneurial vision. Measures of attitudes towards risk were important both to the stimulation of interest and to the actual start-up decision. This might be interpreted as suggesting that the perceived absence of readily available sources of equity finance for business start-ups in Britain is a key determinant of both the pool of potential entrepreneurs and the start-up rate. Our findings also underline the view present in the psychology literature of the importance to potential entrepreneurship of motivation (Shapero, 1975) and perceptions of self-efficacy (Kreuger and Brazeal, 1994). However, the proxies for self-perception and motivation that were significant in the estimation of the sequential model contribute primarily to the determination of interest and not to the decision to set-up from within the interested or potential group. Whether potential entrepreneurs translate their interest into action appears to depend crucially on the objective human capital attributes of individuals, their location and attitudes towards risk, which conform to the more traditional economics interpretation of the start-up process.

Finally, our findings do appear to have implications for policy. There appears to be a clear distinction between the factors governing interest in entrepreneurship and those influencing start-up. Policy makers seeking to raise the business birth rate need,

[12] However, significantly lower interest *is* evident in Scotland, the North and Wales, compared to the East Midlands, the South West, East Anglia, and London and the South East.

therefore, to take account of this finding. Moreover, while the stimulation of interest appears to be important in raising the pool of potential entrepreneurs, it is not sufficient to ensure start-up. Policies are required both to stimulate interest and to assist in the translation of interest into action, and different groups may be the focus of one or both of the two types of policy.

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Table 1: Definition of Variables Used in the Estimation

Variable	Description	Variable	Description
Objective Human Capital (OHC)		*Location(L)*	
SEXD1	female	REGDB	N. West/Y & H/W. Midlands
Default	male	REGDC	E. Midlands/S. West/E. Anglia
AGED1	18-20yrs	REGDD	London/S. East
AGED2	21-24	Default	Scotland/North/Wales
AGED3	25-29	*Attitudes to Risk (RA)*[+]	
AGED4	30-34	PCHARD2	Willing to take risks
AGED5	35-39	PCHARD7	job security is important
AGED6	40-44	*Self-Perceived Human Capital (PHC)*[+]	
AGED7	45-49	PCHARD1	cares for people
AGED8	50-54	PCHARD3	Copes with pressure
AGED9	55-59	PCHARD4	puts work before family
AGED10	60-64	PCHARD5	Dynamic
AGED11	65+	PCHARD6	Creative
Default	15-17yrs	PCHARD8	has leadership skills
SCLASSAB	social class A/B	*Preferences for Self Employment (PFE)*[+]	
SCLASSC1	social class C1	PCHARD9	high priority on making money
SCLASSC2	social class C2	PCHARD10	likes being independent
Default	social class D/E	*'Communitarian' Attitudes (SA1)*	
MARTLD1	married	ATTBUSD1[*]	bus driver
MARTLD2	live together	ATTMIND1[*]	Minister of religion
MARTLD3	widowed/div/separated	ATTTEAD1[*]	Teacher
Default	single	NEWPOLD1	Reads left wing paper
CHAGED1[#]	0-4 years	NEWTYPD2	Reads broadsheets
CHAGED2	5-6 years	*Individualistic Attitudes (SA2)*	
CHAGED3	7-8 years	ATTBAND1[*]	Banker
CHAGED4	9-10 years	ATTDIRD1[*]	Director of large company
CHAGED5	11-14 years	ATTENTD1[*]	Entrepreneur
Default	no children	ATTLAWD1[*]	Lawyer
NOCHLD1	one	ATTPLUD1[*]	Plumber
NOCHLD2	two	NEWPOLD2	Reads centre paper
NOCHLD3	three	NEWPOLD3	Reads right wing paper
NOCHLD4	four	NEWTYPD1	Reads tabloids
NOCHLD5	more than four		
Default	no children		
CONTD1	know an entrepreneur		
CONTD2	family member is entrepreneur		
CONTD3	used to run own business		

[+] Self-perceived characteristics; * Contributes a great deal to society; for all attitudes categories; [#] CHAGED is the number of children in the defined age groups.

Table 2: Standard Model: Reduced Form Probit Equation for Self-Employment Choice

Variable	Coefficient	t-ratio
CONSTANT	**-3.2932325**	**-5.0178276**
SEXD1	**-0.30719235**	**-2.3385786**
AGED1	0.18645538	0.27816931
AGED2	0.63944704	1.0529998
AGED3	0.52972959	0.86605865
AGED4	0.65536128	1.0680108
AGED5	0.51564807	0.84131535
AGED6	0.64420173	1.0467367
AGED7	0.48935755	0.79111864
AGED8	0.89026281	1.4315914
AGED9	1.0632397	1.6747018
AGED10	0.9607227	1.454845
AGED11	**1.5419438**	**2.0116158**
SCLASSAB	0.26984471	1.319714
SCLASSC1	0.21353265	1.1457643
SCLASSC2	0.086371407	0.46631419
MARTLD1	**0.67383467**	**2.8437768**
MARTLD2	**0.68055209**	**2.3722829**
MARTLD3	**0.9949025**	**3.4031644**
CHAGED1	-0.12554148	-0.5634151
CHAGED2	0.16554494	0.7542377
CHAGED3	0.13619831	0.60421814
CHAGED4	-0.53251616	-1.9503527
REGDB	**0.42934853**	**2.185457**
REGDC	**0.67919964**	**3.1780077**
REGDD	**0.61944905**	**3.2259746**
CONTD1	0.11938178	0.99586864
CONTD2	0.2153742	1.8283284
CONTD3	-0.25681014	-1.2611047
NOCHLD1	0.011722025	0.056443314
NOCHLD2	0.24799647	0.91070931
NOCHLD3	0.56926202	1.4913496
NOCHLD4	1.107376	1.749063
PCHARD1	0.12200736	0.73078775
PCHARD2	**0.36943414**	**2.8508848**
PCHARD3	0.016495553	0.13109486
PCHARD4	0.29252548	1.5748944
PCHARD5	0.034887451	0.16897038
PCHARD6	0.027617952	0.20459929
PCHARD7	**-0.54537843**	**-4.5261176**
PCHARD8	-0.12271968	-0.85074629
PCHARD9	**0.3762464**	**2.5223166**
PCHARD10	**0.39932674**	**2.7834779**
ATTBAND1	-0.13054948	-0.91434642
ATTBUSD1	-0.26031582	-1.7268866
ATTDIRD1	0.12051357	0.80647305
ATTENTD1	**0.24975121**	**2.0399631**
ATTLAWD1	0.17249068	1.2985567
ATTMIND1	-0.042049712	-0.25686872
ATTPLUD1	0.24289502	1.6646997
ATTTEAD1	0.034128827	0.24663744
NEWPOLD1	-0.40611215	-1.6727588
NEWPOLD2	0.041037071	0.13150531
NEWPOLD3	-0.095244176	-0.37410376
NEWTYPD1	0.0085391527	0.032651234
NEWTYPD2	-0.18889825	-0.67987218

Likelihood Ratio Test Statistic for zero slopes is 179.5630*

Likelihood Ratio Test Statistics for groups of explanatory variables are:
OHC variables: $\chi^2(29) = 75.12^*$
L variables: $\chi^2(3) = 13.9^*$
RA variables: $\chi^2(2) = 32.03^*$
PHC variables: $\chi^2(6) = 3.35$
PFE variables: $\chi^2(2) = 13.39^*$
SA1 variables: $\chi^2(5) = 11.8^*$
SA2 variables: $\chi^2(8) = 12.51$

Note: **Bold** and * indicate significance at the 5% level at least. Number of observations: 922, of which 158 (17%) self-employed.

Table 3: Sequential Model: Probit Equation for the Absence of Interest in Self Employment

Variable	Coefficient	t-ratio
CONSTANT	**1.046451**	**2.8650795**
SEXD1	**0.29763751**	**2.8964298**
AGED1	-0.047993393	-0.13654801
AGED2	-0.25896641	-0.79597642
AGED3	-0.22116069	-0.67188205
AGED4	-0.18402873	-0.54386203
AGED5	0.077452262	0.22736355
AGED6	-0.015555703	-0.04555215
AGED7	0.064147551	0.18628242
AGED8	0.12594057	0.35057332
AGED9	-0.08700912	-0.23208298
AGED10	0.23284916	0.56400057
AGED11	0.034218272	0.059218653
SCLASSAB	0.28845072	1.7688552
SCLASSC1	0.066537896	0.47003653
SCLASSC2	0.10059252	0.73237876
MARTLD1	-0.13390633	-0.84353643
MARTLD2	**-0.51392797**	**-2.4582017**
MARTLD3	-0.040252003	-0.17820009
CHAGED1	0.070929586	0.38730494
CHAGED2	-0.17092662	-0.90132901
CHAGED3	-0.2824684	-1.4222919
CHAGED4	-0.031283665	-0.14497594
REGDB	-0.17369712	-1.2549879
REGDC	**-0.34227624**	**-2.1480309**
REGDD	**-0.35280159**	**-2.5368595**
CONTD1	0.014782862	0.15398085
CONTD2	**-0.33332963**	**-3.4225635**
CONTD3	0.087613871	0.5186337
NOCHLD1	0.11577701	0.69481693
NOCHLD2	-0.013234106	-0.05739433
NOCHLD3	-0.28277945	-0.86546995
NOCHLD4	-1.1736149	-1.6242555
PCHARD1	-0.19928372	-1.5207945
PCHARD2	**-0.34631538**	**-3.3096965**
PCHARD3	-0.020227989	-0.19965934
PCHARD4	0.048666541	0.28778447
PCHARD5	-0.17935343	-1.0207585
PCHARD6	**-0.22819622**	**-2.0985223**
PCHARD7	**0.30400294**	**3.1780302**
PCHARD8	0.039825898	0.3421052
PCHARD9	**-0.50088919**	**-3.9382492**
PCHARD10	**-0.40086524**	**-3.795192**
ATTBAND1	0.15514461	1.3637951
ATTBUSD1	-0.052976738	-0.45273218
ATTDIRD1	0.07065275	0.5688453
ATTENTD1	**-0.31753534**	**-3.1716357**
ATTLAWD1	-0.17130657	-1.5748367
ATTMIND1	0.089113026	0.68228594
ATTPLUD1	**0.24083592**	**2.0210458**
ATTTEAD1	-0.075668174	-0.69077777
NEWPOLD1	0.26226268	1.4713491
NEWPOLD2	0.35929729	1.3788403
NEWPOLD3	0.044716763	0.23714067
NEWTYPD1	0.074707961	0.372589
NEWTYPD2	-0.097445525	-0.45381612

Likelihood Ratio Test Statistic for zero slopes is 185.14713*

Likelihood Ratio Test Statistics for groups of explanatory variables are:
OHC variables: $\chi^2(29) = 53.31^*$
L variables: $\chi^2(3) = 8.01^*$
RA variables: $\chi^2(2) = 23.16^*$
PHC variables: $\chi^2(6) = 8.92$
PFE variables: $\chi^2(2) = 27.81^*$
SA1 variables: $\chi^2(5) = 3.68$
SA2 variables: $\chi^2(8) = 20.68^*$

Note: **Bold** and * indicate significance at the 5% level at least. Number of observations: 922, of which 527 (57%) not interested in self-employment.

Table 4: Sequential Model: Probit Equation for Latent Entrepreneurs from those Interested in Self Employment

Variable	Coefficient	t-ratio
CONSTANT	0.33138681	0.52580001
SEXD1	0.1064203	0.61426219
AGED1	0.071939325	0.12421944
AGED2	0.33182023	0.60539395
AGED3	0.37889243	0.66410279
AGED4	-0.12376529	-0.2095044
AGED5	0.31640403	0.5258393
AGED6	0.043144287	0.071930372
AGED7	0.6267097	1.022854
AGED8	-0.082436459	-0.12583648
AGED9	-0.25905513	-0.39110254
AGED10	-0.61622927	-0.73834819
AGED11	-3.2794239	-0.14239456
SCLASSAB	**-0.56353264**	**-2.1308032**
SCLASSC1	-0.43341634	-1.8797302
SCLASSC2	-0.26208277	-1.1689303
MARTLD1	-0.30287536	-1.0786469
MARTLD2	0.17569258	0.56706851
MARTLD3	**-1.3467233**	**-2.561577**
CHAGED1	-0.076693857	-0.25716781
CHAGED2	-0.091744553	-0.31165955
CHAGED3	-0.080752792	-0.26287636
CHAGED4	0.54240192	1.6100647
REGDB	-0.13596013	-0.56843712
REGDC	-0.44131444	-1.6165769
REGDD	-0.3734037	-1.5449871
CONTD1	-0.27510283	-1.7719497
CONTD2	-0.2773083	-1.7414286
CONTD3	-0.46699043	-1.5373249
NOCHLD1	0.24546912	0.92708342
NOCHLD2	0.015665465	0.043633402
NOCHLD3	-0.16385659	-0.31458087
NOCHLD4	-0.15534918	-0.19521279
PCHARD1	0.0054695767	0.023764015
PCHARD2	-0.27068623	-1.5930072
PCHARD3	0.1704445	1.0403545
PCHARD4	-0.43297388	-1.4827789
PCHARD5	0.1193215	0.44222069
PCHARD6	-0.073217992	-0.41292159
PCHARD7	**0.42948734**	**2.6347555**
PCHARD8	-0.19038053	-1.0498865
PCHARD9	-0.13545337	-0.71266239
PCHARD10	-0.14446132	-0.76320276
ATTBAND1	0.24273442	1.3079529
ATTBUSD1	0.16526971	0.87240829
ATTDIRD1	-0.28779714	-1.3817724
ATTENTD1	0.083277834	0.52457412
ATTLAWD1	**-0.44299426**	**-2.4550557**
ATTMIND1	0.20283861	0.89943053
ATTPLUD1	0.017057142	0.086055071
ATTTEAD1	0.24080808	1.2650972
NEWPOLD1	0.12137184	0.39588297
NEWPOLD2	-0.37245017	-0.82995151
NEWPOLD3	0.094034256	0.28101174
NEWTYPD1	-0.27065018	-0.78355776
NEWTYPD2	0.43971536	1.2658681

Likelihood Ratio Test Statistic for zero slopes is 88.469327*

Likelihood Ratio Test Statistics for groups of explanatory variables are:
OHC variables: $\chi^2(29) = 50.44$*
L variables: $\chi^2(3) = 4.27$
RA variables: $\chi^2(2) = 11.09$*
PHC variables: $\chi^2(6) = 4.61$
PFE variables: $\chi^2(2) = 0.95$
SA1 variables: $\chi^2(5) = 8.15$
SA2 variables: $\chi^2(8) = 11.15$

Note: **Bold** and * indicate significance at the 5% level at least. Number of observations: 395, of which 131 (33%) classified to the latent group.

Table 5: Sequential Model: Probit Equation for Potential Entrepreneurs from Potential and Actual Self Employees

Variable	Coefficient	t-ratio
CONSTANT	**2.5148366**	**2.2209891**
SEXD1	0.14482803	0.6179521
AGED1	0.14844172	0.1406103
AGED2	-0.85275089	-0.89206954
AGED3	-0.34976801	-0.3574468
AGED4	-0.37678612	-0.38164775
AGED5	-0.67314445	-0.67501968
AGED6	-0.99560033	-0.98189421
AGED7	-0.8897801	-0.86985898
AGED8	-1.8678779	-1.7115627
AGED9	-1.5936732	-1.4925781
AGED10	-5.8449836	-0.14987216
AGED11	-5.8984666	-0.09967047
SCLASSAB	**-0.88548611**	**-2.3176504**
SCLASSC1	-0.27856955	-0.81172833
SCLASSC2	-0.079061847	-0.22510653
MARTLD1	-0.74568521	-1.6600186
MARTLD2	-0.6007808	-1.2026604
MARTLD3	**-1.4158725**	**-2.5743611**
CHAGED1	0.57099346	1.282408
CHAGED2	-0.051367019	-0.13100199
CHAGED3	0.34042983	0.75490583
CHAGED4	0.91432945	1.6605331
REGDB	**-0.72991962**	**-1.962432**
REGDC	-0.74042028	-1.8814373
REGDD	**-0.76221925**	**-2.1131602**
CONTD1	-0.41506109	-1.908047
CONTD2	-0.16765811	-0.79303415
CONTD3	**0.70556247**	**2.0502633**
NOCHLD1	-0.80598655	-1.9336436
NOCHLD2	**-1.2413542**	**-2.1548261**
NOCHLD3	**-1.7766265**	**-2.2442195**
NOCHLD4	**-2.628234**	**-2.2117084**
PCHARD1	-0.002057678	-0.00605965
PCHARD2	-0.030287298	-0.12518139
PCHARD3	-0.19925177	-0.87042525
PCHARD4	-0.51910579	-1.4268636
PCHARD5	-0.013421299	-0.03696305
PCHARD6	0.17897926	0.75430714
PCHARD7	**0.60297451**	**2.5477108**
PCHARD8	0.45242598	1.7838255
PCHARD9	-0.020223369	-0.07754126
PCHARD10	0.016280271	0.056294364
ATTBAND1	-0.19446482	-0.71413821
ATTBUSD1	0.49332603	1.6888938
ATTDIRD1	-0.43499852	-1.5588673
ATTENTD1	-0.15931545	-0.71849461
ATTLAWD1	0.23272678	0.93904516
ATTMIND1	-0.040497498	-0.11580409
ATTPLUD1	**-0.98276754**	**-3.3229851**
ATTTEAD1	-0.17373258	-0.70102994
NEWPOLD1	-0.25666163	-0.54696882
NEWPOLD2	-0.586225	-1.0052866
NEWPOLD3	-0.3256402	-0.70972107
NEWTYPD1	0.4471651	0.91720509
NEWTYPD2	**1.1648533**	**2.2119991**

Likelihood Ratio Test Statistic for zero slopes is 122.46500*

Likelihood Ratio Test Statistics for groups of explanatory variables are:
OHC variables: $\chi^2(29) = 71.91^*$
L variables: $\chi^2(3) = 5.431$
RA variables: $\chi^2(2) = 6.87^*$
PHC variables: $\chi^2(6) = 6.69$
PFE variables: $\chi^2(2) = 0.01$
SA1 variables: $\chi^2(5) = 8.64$
SA2 variables: $\chi^2(8) = 18.78^*$

Note: **Bold** and * indicate significance at the 5% level at least. Number of observations: 264, of which 106 (40%) classified to the potential group.

Table 6: The Estimated Probability of Self Employment: Marginal Experiments with Standard and Sequential Models

	Models	
	Standard	**Sequential**
SEXD1=0	0.1391	0.2060
SEXD1=1	0.0820	0.1338
SCLASSAB=0; SCLASSC1=0; SCLASSC2=0	0.0872	0.1269
SCLASSAB=1; SCLASSC1=0; SCLASSC2=0	0.1382	0.2150
SCLASSAB=0; SCLASSC1=1; SCLASSC2=0	0.1262	0.1893
SCLASSAB=0; SCLASSC1= 0; SCLASSC2=1	0.1017	0.1462
MARTDL1=0; MARTDL2=0; MARTDL3=0	0.0379	0.0769
MARTDL1=1; MARTDL2=0; MARTDL3=0	0.1353	0.1885
MARTDL1=0; MARTDL2=1; MARTDL3=0	0.1368	0.1709
MARTDL1=0; MARTDL2=0; MARTDL3=1	0.2175	0.3094
REGDB=0; REGDC=0; REGDD=0	0.0476	0.0729
REGDB=1; REGDC=0; REGDD=0	0.1076	0.1663
REGDB=0; REGDC=1; REGDD=0	0.1613	0.2284

REGDB=0; REGDC=0; REGDD=1	0.1471	0.2261
PCHARD2=0 PCHARD2=1	0.0903 0.1662	0.1460 0.2335
PCHARD7=0 PCHARD7=1	0.1848 0.0746	0.2734 0.1155
PCHARD9=0 PCHARD9=1	0.1013 0.1847	0.1583 0.2599
PCHARD10=0 PCHARD10=1	0.0675 0.1366	0.1233 0.1969
ATTENTD1=0 ATTENTD1=1	0.0967 0.1467	0.1527 0.2142

Table 7: The Estimated Probability of Interest, Having A Business Idea and Start Up: Marginal Experiments with the Sequential Model

	Sequential Model		
	Interest	**Idea**	**Start Up**
SEXD1=0	0.4662	0.6884	0.6418
SEXD1=1	0.3511	0.6499	0.5864
SCLASSAB=0; SCLASSC1=0; SCLASSC2=0	0.4635	0.5460	0.5015
SCLASSAB=1; SCLASSC1=0; SCLASSC2=0	0.3519	0.7515	0.8131
SCLASSAB=0; SCLASSC1=1; SCLASSC2=0	0.4372	0.7085	0.6112
SCLASSAB=0; SCLASSC1= 0; SCLASSC2=1	0.4238	0.6471	0.5331
MARTDL1=0; MARTDL2=0; MARTDL3=0	0.3698	0.5638	0.3689
MARTDL1=1; MARTDL2=0; MARTDL3=0	0.4213	0.6785	0.6594
MARTDL1=0; MARTDL2=1; MARTDL3=0	0.5720	0.4940	0.6049
MARTDL1=0; MARTDL2=0; MARTDL3=1	0.3851	0.9341	0.8602
REGDB=0; REGDC=0;. REGDD=0	0.3306	0.5807	0.3797
REGDB=1; REGDC=0;. REGDD=0	0.3957	0.6329	0.6640
REGDB=0; REGDC=1;. REGDD=0	0.4618	0.7405	0.6679

REGDB=0; REGDC=0;. REGDD=1	0.4660	0.7180	0.6757
PCHARD2=0 PCHARD2=1	0.3718 0.5076	0.6381 0.7337	0.6155 0.6270
PCHARD7=0 PCHARD7=1	0.4873 0.3685	0.7562 0.6043	0.7420 0.5186
PCHARD9=0 PCHARD9=1	0.3853 0.5829	0.6645 0.7124	0.6182 0.6182
PCHARD10=0 PCHARD10=1	0.3112 0.4635	0.6349 0.6877	0.6240 0.6178
ATTENTD1=0 ATTENTD1=1	0.3739 0.4984	0.6838 0.6536	0.5972 0.6574

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