DETERMINANTS OF GRADUATE ENTREPRENEURSHIP IN THE UK

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ABSTRACT

This paper examines the career progression of graduate entrepreneurs immediately following graduation and four years subsequently. Using career socialization theory (Dyer, 1994), it traces the influence of human capital antecedents, career orientations and the role of higher education and educational skills in developing and enhancing graduate entrepreneurship. Empirically, we show that there are persistent human capital differences amongst graduate entrepreneurs in the UK. We also find that higher education makes is important for initially in supporting graduate entrepreneurship but this support decays in value. The paper also points to early graduate entrepreneurs having non-pecuniary orientations.

INTRODUCTION

Entrepreneurship education has grown dramatically since the first MBA course at Harvard in 1947. Katz (2004) identifies that from this single course, there are now over 2,200 courses taught at 1,600 schools. Such developments have been replicated outside of the United States (Vesper and Gartner, 1997). The rationale for such developments is that there is a recognition amongst young people, universities and policy makers that there has been a shift from managed to entrepreneurial economies over the last thirty years (Thurik and Audretsch, 2000; Kirchhoff, 1994).

Graduate entrepreneurship is also likely to provide benefits both to the individual and society. For example, Blanchflower and Oswald (1998) argue that entrepreneurship increases innovation, job creation, competition in the market place, and the likelihood increased self-reliance and well-being. There is also international empirical evidence to suggest that having a university degree promotes venture performance (Honjo, 2004 (Japan); Cooper, Gimeno-Gascon and Woo, 1994 (US); Almus and Nerlinger, 1999 (Germany); Ranachandran & Shah, 1999 (East Asia); and Westhead, 1995 (UK)). It still remains unclear, however, if higher education acts as a successful transmission mechanism for the promotion of entrepreneurship soon after graduation. Prior research has either focused upon particular programmes (Charney and Lipecap, 2000; Peterman and Kennedy, 2003), attitudes towards entrepreneurship (Greene, 2002; Walstad and Kourilsky, 1999) or the general development of enterprise education (Kuratko, 2005; Katz, 2004).

This paper makes two contributions. The first is that it uses career socialization theory (Dyer, 1994) to explore the patterns of graduate entrepreneurship over a four year period post graduation. This is important because although a promising area of research, little research has been conducted using career socialization theory (Pittaway and Cope 2005; Feldman and Bolino, 2003). This theory suggests that the entrepreneurial option is potentially attractive to young people as career transitions have become more open-ended and fluid in developed economies (Statistics Canada, 1998; White, 1999).

The second contribution of this paper is to make empirical use of a large dataset of 4,369 UK graduates to explore the determinants of graduate self-employment. Our data allows us to empirically examine

the determinants of graduate self-employment immediately following graduation. We then consider the career outcomes of these initial entrepreneurs before examining the determinants of graduate entrepreneurship four years after graduation. Our specific interest, following on from career socialization theory is the human capital antecedents of individuals (e.g. parental background, schooling), the role of education and education skills and the career orientations of graduates.

The aim of this paper is to improve our understanding of the transitions that graduates make into entrepreneurship and what role higher education plays in supporting these developments. The paper is organized as follows. It begins by introducing career socialization theory in order to then derive testable hypotheses. It then explains the methodology of the study and the estimation procedure used. The paper subsequently presents the results and then concludes with a discussion of the findings and implications of the paper.

THEORY BACKGROUND

Career socialization theory has traditionally been sited in corporate organizational contexts with the aim of better understanding how people negotiate their way through corporate hierarchies (Arthur, Hall and Lawrence, 1989). Dyer (1994) suggests that the theory can be also applied to entrepreneurial careers. Dyer (1994), for example, argues that that there are 'four sub-theories' (p.8) central to developing an understanding of entrepreneurial careers. The first of these is consideration of the antecedents of career choice. This pivots around an understanding of "…the individual, social, and economic factors that influence individuals to found organizations" (Dyer, 1994: 8). The second element is a need to develop an understanding of the socialization experiences (e.g. education, work) involved in preparing individuals for entrepreneurship. Dyer (1994) argues that a third strand or 'sub-theory' is the career orientation of individuals . Here what matters are the values, orientations and intentions of individuals. The fourth strand of career theory is career progression. The interest here is how careers evolve over an individual's lifetime.

Despite a recognition that career socialization theory can enhance our understanding of entrepreneurship (Pittaway and Cope, 2005; Feldman and Bolino, 2003), the wider aspects of career theory have remained largely untested. One reason for this is that prior research in this area has focused on the process of translating individual intentions into perceived desirability, feasibility and action (Shapero, 1975; Krueger, 1993; Krueger and Brazeal, 1994; Peterman and Kennedy, 2003). Potentially, it could be argued that this emphasis plays down prior antecedents and socialization experiences. Second, there is a marked concentration on single events such as venture creation or on performance outcomes (e.g. venture growth, venture survival) rather than tracing entrepreneurial journeys (Fiet, 2001). Pivotal to the notion of careers is that there is the idea that individuals may assume differing choices over time. This raises the potential that entrepreneurship is not an end in itself but, potentially, just a transitory choice (Taylor, 1999). Indeed, where careers have been studied, these have tended to look at older individuals (Levesque, Shepherd and Douglas, 2002), for whom entrepreneurship represents a second career choice (Baucus and Human, 1994).

Determining how graduates approach their career is, however, just as likely to be influenced by prior antecedents, socialization and the motivations they develop over the course of their life. In terms of antecedents, career choices are likely to be impacted by the development of prior human capital (e.g. parental background, early schooling). Pivotal here is the development not just of general but also of specific human capital (Becker, 1993). Typically, this distinction turns on the suggestion that general human capital is usually easily transferable whilst specific human capital being more likely to be captured in particular career decisions (Gimeno, Folta, Cooper and Woo, 1997). Of the two, entrepreneurship studies have tended to give primacy to specific human capital as being the primary determinant of the entrepreneurial career decision. In short, specific 'know how' is seen as being of primary importance (Vesper, 1996).

This may explain why international evidence suggests that entrepreneurship amongst young people hovers around 1-4% (see: Williams, 2004; Greene, 2002). In terms of antecedents, this may be due to the relative ly low stock of human capital that young people have built up. Outside of prior parental experience of entrepreneurship or early schooling, much of the empirical evidence suggests that younger people lack specific labour market experience to support the entrepreneurial choice. Being young also has the suggested disadvantage that they do not have the necessary time to build up savings or equity to support venture creation; a situation made worse because very many graduates emerge from tertiary education with debt levels that detract from their available pool of equity.

Moreover, higher education, at least from a human capital viewpoint, seems to have a limited role in developing graduate entrepreneurship. Typically, gaining a degree is seen as a form of general human capital, conferring transferable skills and attributes. Equally, it is not always seen as efficacious for entrepreneurship in that it provides status rather than skills (Dore, 1976); acts as a form of

'credentialism' which signals to potential employers of the apparent productivity of the individual; or actively impairs understandings of entrepreneurship (Kreuger, 1993).

One of the implicit assumptions underlying management and entrepreneurship education, is that higher education can have a formative influence on career choices. Indeed, from the perspective of the emerging literature on entrepreneurial learning, education may have an important contributory role in skill provision and career socialization. Equally, higher education sees an important role for itself in reducing the distance between education and career development and provides career resources to guide students. Minniti and Bygrave (2001) also argue that central to the entrepreneurial choice is the accretion of prior experiential knowledge whereby "knowledge is cumulative. What is learned in one period builds upon what was learned in an earlier period" (p.7). Mezirow (1991) and Harvey and Evans (1995) also suggest that entrepreneurship is path dependent whilst Cope (2005) argues that aspiring entrepreneurs need to consider the stock of their accumulated knowledge.

Career socialization theory also keys into a long running debate about how individuals arrive at the entrepreneurial choice. Moderating career choice is career orientation. Not everyone who has the same antecedents or is subject to the same socialization process will necessarily choose the entrepreneurial option. Hence, although there is little evidence of the importance of specific individual traits determining entrepreneurial choice (Gartner, 1988; Delmar, 2002), other research has pointed to the importance of orientations as being important determinants of entrepreneurial choice (Scheinberg and MacMillan, 1988; Birley and Westhead, 1994; Kolvereid, 1992, 1996).

This discussion of orientations, socialization and prior antecedents suggests that there is value in examining career progressions within a career theory framework. In terms of our interest, graduate entrepreneurship is likely to low but rise as individuals get older. Little, however, is known of the career journey faced by graduates. Specifically, what determines the entrepreneurial choice when an individual first emerges from higher education? And what are the longer term impacts of antecedents, socialization and motivations on entrepreneurial choices?

HYPOTHESES DEVELOPMENT

Here we present three exploratory hypotheses derived from the above theory background. The first revolves around the likely impact of prior antecedents on the entrepreneurship. Prior empirical research on entrepreneurship has identified that males, those whose parents were entrepreneurs and older individuals were all more likely to see entrepreneurship as a career choice (e.g. Le, 1999; Delmar and Davidsson, 2000). We, therefore, anticipate that these antecedents are also likely to be robust guides for the choice by some graduates just emerging from higher education to enter entrepreneurship. Indeed, the extant literature on youth and graduate entrepreneurship all point to the particular dominance of age (older individuals), sex (males) and ethnicity (whites) in the venture creation decision (Blanchflower and Meyer, 1994; Meager et al, 2003; van Praag, 2003; Greene and Storey, 2004; and Williams, 2004). There is also empirical evidence which suggests that parental background influences graduate entrepreneurship as not only deepens the specific human capital of individuals (Scott and Twomey, 1988; and Tackey, 1999; 2003) but also provides young people with role models (Hout and Rosen, 2000; Dunn and Holtz-Eakin, 2000). Such antecedents are also likely to determine entrepreneurial choices of individuals as they develop their chosen career. In seeking to trace the role of the antecedents, we offer the following hypothesis:

Hypothesis 1: *Individuals with higher levels of human capital will be more likely to choose entrepreneurship both following higher education and three years subsequently.*

Our second exploratory hypothesis argues that higher education can have an important role in socializing graduates towards entrepreneurship. Theoretically, knowledge acquisition revolves around the accretion of both tacit and explicit knowledge (Polyani, 1967) which in turn assists integration and adaptation to new situations (Weick, 1996). Usually, however, having a degree is seen as a general form of human capital that provides explicit rather than tacit (know how or non-codified knowledge) about careers (Davidsson and Honig, 2003). We argue instead that higher education can provide tacit or specific human capital to an individual. We have three reasons for this. One rationale for this is that developed countries over the last ten to twenty years have sought to reduce the distance between the world of work and higher education (Birley, 1985; Lundstrom and Stevenson, 2001; Davies, 2002). Hence, whilst some subjects may appear more focused around particular areas of knowledge (humanities) or more prone to public sector or not-for-profit outcomes (e.g. education), there have been wider attempts to improve the skills capacities of individuals. This emphasis on more vocational support is evident in the rise of entrepreneurship education not just to students who major in this discipline but also in the wider attempts by higher education to support graduate entrepreneurship (Greene, 2002). Indeed, the empirical international evidence on latent youth entrepreneurship suggests

that young people tend to view entrepreneurship as a favoured career outcome (Walstad and Kourilsky, 1999; Lundstrom and Stevenson, 2001, Greene and Storey, 2005).

Second, implicit in the rise of disciplines such as entrepreneurship and business studies is the sense that higher education can actively transmit tacit and specific human capital attributes through the provision of particular skills. Traditionally, higher education has provided generic skills such as research, numeracy and problem solving skills but there has also been an attendant rise in the provision of managerial, leadership, teamworking and entrepreneurship skill development (Lundstrom and Stevenson, 2001; European Commission, 2002). Third, part of the higher education experience may be the development of particular networks that foster entrepreneurial outcomes. Whilst individuals may have access to informal networks centered around their family and friends which may be invaluable to the graduate (Atlantic Canada, 2001), higher education offers access to other informal sources of support such as academics as well as more formal sources of support such as career advisory services. Repeated evaluations of the Small Business Development Centers in the United States (which are largely focused around US universities) argue that such forms of outside brokerage are important for developing the entrepreneurial choices (e.g. Chrisman and McMullen, 2004). Overall, our hypothesis here suggests, therefore, that:

Hypothesis 2: *Individuals who have acquired more vocationally orientated skills and have a network of support will be more likely to choose entrepreneurship both following higher education and three years subsequently.*

One evident feature of career choice is the role of career orientations. In the entrepreneurship literature, this has largely led to a focus upon intentionality and how this relates to entrepre neurial outcomes (Shapero, 1975; Krueger, 1993; Krueger and Brazeal, 1994; Peterman and Kennedy, 2003). In some respects, we share this concern in that we propose that those with more of a profile towards being financially rewarded would be more likely to choose entrepreneurship, although we also recognize that the entrepreneurial choice is often based on non-pecuniary (e.g. family, personal satisfaction) reasons (Westhead and Birley, 1994). Explicit in career theory is, however, the notion of career progression which suggests that there is a need to consider not just the immediate career choice but subsequent choices and the wider motivational drivers. For example, Dyer (1994) argues that "Family support for the entrepreneurial career can also have an impact on career choice" (p. 10). We, therefore, seek to augment our interest in pecuniary motivations with longer term values held by individuals. Again, we tentatively suggest that these may be distinguished between those that seem more focused upon pecuniary advantages (e.g. high financial reward) and non-pecuniary motivations that seek to tease out the role of values such as family and friendship. However, it is not altogether evident whether such a distinction pertains, since we are unaware of a study that has looked at wider career motivations amongst graduate entrepreneurs. Hence, although we suggest in the following hypothesis that an entrepreneurial outcome represents individuals following a dedicated career path, we recognize that entrepreneurship may be just another labour choice outcome. Given this, our third and final hypothesis remains tentative:

Hypothesis 3*: Individuals with a profile of pecuniary orientated values will be more likely to choose entrepreneurship both following higher education and three years subsequently.*

METHODOLOGY

Design and Sample

The data we use for our analysis is a representative study of UK individuals that graduated from UK higher education institutions (HEIs) in 1999. The aim of the study was to collect, through a postal questionnaire, information on the human capital, values, orientations, educational experiences and outcomes of graduates. From the 170 HEIs in the UK in 2003, a sample of 38 UK HEIs was first identified. These institutions ranged from internationally renowned institutions to higher education colleges and newer universities that were created out of the structural changes to UK HEIs introduced in 1992. Consideration was also given to the different geographical areas in the UK (e.g. Scotland, Northern Ireland) as well as the presence of collegial insititutions (e.g. University of Wales and London). Overall, compared to official statistics, these 38 HEIs were found to representative of the UK HEIs (Purcell et al, 2005).

Tracking young people is often extremely difficult given their relatively high level of mobility (Greene and Storey, 2004). The survey fieldwork began in October 2002/February 2003 with the design and piloting of the questionnaire. Following this, a questionnaire was sent to each of the 38 UK HEIs who subsequently mailed the questionnaire to 1 in 2 of their domestically-domiciled leavers. From the original 38,500 surveys sent out, 9,236 usable responses were received (24%). Because our interest is in the active population of the labour market, we subsequently further restricted our sample to those

that we had complete information on (no missing cases) and who were either in employment or entrepreneurship. Our final sample is 4,425 individuals.

Dependent Variables

We identify two principal periods of career activity. First, the 'initial' entrepreneurs are identified by identifying which of them was self-employed immediately following the completion of their course. We, given our interest in the active labour market population, subsequently contrast these with the employed to create a dummy variable (1=entrepreneur, 0=employed). This process was repeated four years later, when we asked individuals from the active labour market population to identify if they were an entrepreneur (1=yes, 0=employed).

Explanatory variables

Following on from career theory, we organize our sets of explanatory variables in terms of the hypotheses developed earlier. Our explanatory variables are, therefore, grouped around human capital antecedents, education and orientations. Table 1 gives information on the types of variables used, their expected sign (derived from the available literature on youth/graduate entrepreneurship) and the summary statistics for each of the variables. The summary statistics in Table 1 indicate that, indeed, the rates of initial entrepreneurship and current entrepreneurship are low with the initial rate being around 2.1% and that this rate rises, after four years, to 3.2% which is in line with prior research (Greene, 2002; Williams, 2004).

[Table 1 about here]

In terms of antecedents, and in line with prior research, we make use of key human capital proxies such as age (years), sex, ethnicity, parental background in entrepreneurship (dummies). We also seek to include the influence of pre-university education in terms of whether the individual attended a state school *(ref.)*, state grammar or fee paying school although we are unaware of previous studies that specifically look at these dummy variables.

The next set of variables considered are skills developed whilst at a HEI and the role played by network support mechanisms. In terms of skills developed during their HEI course, respondents were asked about to rank skill acquisition using a 3-point scale, where 1 means "not at all", 2 "some" and 3 "a lot". We then sought to factor analyze these skills. An initial test using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy test (KM0=0.74) suggested that factor analysis can be used to group variables with similar characteristics together (see Hamilton, 2004). We treat the communalities - the proportion of variance that is due to the influence of common factors - as all 1 suggesting that are no unique factors. The results from the principal-component factor model are presented in Table 2. The proportion of a variable's variance that is not shared with a factor structure - uniqueness – is generally below 0.5 suggesting that the variables are well explained by the factors. Using those variables with factors loading greater than 0.3 (see Hair *et al.*, 1979) we were able to extract the following three factors: the first factor which we call *leadership and managerial skills* was extracted from the questions on entrepreneurship skills, ability to work together, management skills and leadership skills. The second factor is called *practical and applied skills* was extracted from the questi ons on problems solving skills, numeracy skills, basic computer literacy and advanced software skills. The final factor which we call *communication and creativity skills* was extracted from the questions on written communication, spoken communication, research skills and creativity. The question on foreign language was found not to strongly belong to any of the above groups. Therefore, it was removed from the factor analysis and a variable taking the values 1 if the answerer was "some" or "a lot" and 0 otherwise was constructed and used in the model.

Complementing these factors, we also sought to examine the effects of different types of advice and guidance used by individuals on their decision to engage in entrepreneurship. We included dummies to indicate whether the individuals received a useful support from the university careers advisory service, job central/local career service, lecturers and academic contacts and family and social networks.

To measure career orientation, we focused on 8 long term values that may affect career trajectories such a s entrepreneurial decision. The individuals were asked to indicate from a scale 1 (unimportant) to 5 (very important) how important for them are the following: career development, high financial reward, own personal development and growth, job satisfaction and challenging work, partnership/marriage, being or becoming a parent, friendship networks and job security. The KMO test suggests that factor analysis may be considered (KMO=0.64). From the analysis presented in Table 3, we were able to identify three factors (based on variables with factors loadings greater than 0.3): the first factor describes "family and social values" incorporating the questions partnership/marriage, being or becoming a parent and friendship networks. The second factor which we call "personal development and satisfaction" loads most highly on the questions of own personal development and growth and job satisfaction. Finally, the last factor which was named "job and

financial values" incorporating the questions career development, high financial reward and job security. Uniqueness was found to be relatively low, and therefore we expect that variables are well explained by the factors.

[Tables 2 and 3 about here]

We supplemented these long term career values with career motivations by asking individuals about their personal ambition, fulfillment from work, work continuously through life, personal work breaks for family reasons, partner work breaks for family reasons and expect to change career several times. These questions were measured in a five-point scale from 1 (strongly disagree) to 5 (strongly agree). In this case the KMO test suggests that a factor analysis of the variables is not appropriate (KMO=0.51). For each question we then created a dichotomous variable, which takes the value 1 if the answer is 1 or 2 ("strongly agree" or "agree somewhat") and 0 otherwise.

Control Variables

HEIs around the world have differing profiles. To control for these differences between HEIs and other contingent factors that may influence entrepreneurship, our analysis includes eight control variables. One of these is the type of institution. In 1992, the UK HEI sector was reorganized to allow very many more HEIs to gain university status. One of the biggest changes was in terms of allowing former polytechnics to become universities. These post 1992 universities post were originally set up to provide more vocationally relevant higher education to students. In contrast, there are pre 1992 universities (typically collegiate universities such as London, Oxford and Cambridge, 'red bricks' (e.g. Manchester, Sheffield), or '60s universities' (e.g. Warwick, Stirling)) whose main role was once thought to be to 'train minds' rather than develop vocationally relevant skills. Such distinctions may be ultimately anecdotal because we are unaware of prior studies that specifically control for type of institution by contrasting pre and post 1992 HEIs with HE colleges.

Also pertinent here is the type of course undertaken by the 1999 graduates. In the UK there were three main higher education outcomes: Diploma in Higher Education (DipHE), First Degree *(ref.)* and Higher National Diploma (HND). Besides this there are a range of other qualifications available (Other). Again, there is little previous literature to guide the impact of these various qualifications on graduate entrepreneurship. A third control variable we used was the main subject undertaken whilst in HEI. Rosa (2003) suggests that subject choice plays an important in determining entrepreneurial choices. We classified subjects in broad groups (Law/Social Sciences, Mathematics /Computing/Natural, Medical and related, Arts/Humanities/Languages/Other *(ref.)*, Business studies, and Education and Interdisciplinary). Ultimately, given the prior evidence on the efficacy of entrepreneurship programmes (e.g. Charney and Libecap, 200) we anticipated that those undertaking a business studies degree would be more likely to follow an entrepreneurial career choice. Our fourth control variable was the education outcome from the HEI experience. We classified these in standard UK parlance: First Class (70% and over), Upper Second Class (60%-69%), Lower Second Class (50%-59%) and Third Class (40%-49%) (*ref.*). Dolton and Makepeace (1990) found that this had no impact on graduate entrepreneurship.

The entrepreneurial decision is also likely to be impacted by three other control variables. First, there is burgeoning evidence that student debt which has been rising in the UK over the last ten years may represent an entry barrier to graduate entrepreneurship (Blanchflower and Oswald, 1998; Roberts, 2004). To control for this, we construct a dummy variable indicating whether or not an individual had a repayable student debt at the time they completed their studies (1=have no repayable debt, 0=otherwise). We are also able to identify if graduates are still in currently in debt four years after graduation. The latter was used when we examine the determinants of currents self-employment. Current entrepreneurship (three years hence) is also likely to be impacted by prior income. To control for this, we make use of interval coded information about first and current earnings. We then calculate the average gross annual earnings based on mid-points of the reported earnings bands for the first and last employment as a proxy for the income from the previous period. Our final control is a measure of initial entrepreneurship on current entrepreneurship (1 = initially in entrepreneurship, 0 = otherwise).

RESULTS

We organize our results largely around Table 4. This shows three separate probit models. The first of these looks at initial entrepreneurship amongst graduates whilst model two examines current entrepreneurship and model three examines current entrepreneurship, controlling for initial entrepreneurship.

In terms of model one, there are a number of expected marginal effects on initial entrepreneurship. Model one shows that older individuals, males and those with a parental background in

entrepreneurship are all more likely to become entrepreneurs immediately following graduation. This gives credence to Hypothesis 1 which suggested that human capital antecedents were an important determinant of graduate entrepreneurship.

There is also evidence to support Hypothesis 2. The factor leadership and managerial skills is both positive and significant indicating that the acquisition of the underlying teamwork, entrepreneurship management and leadership skills are important in determining initial entrepreneruship take-up. Moreover, other skills developed of a practical and applied nature (problems solving skills, numeracy skills, basic computer literacy and advanced software skills) is negatively associated with initial graduate entrepreneurship. Further evidence to support Hypothesis 2 is provided by the positive support for lecturers and academic contacts.

In terms of Hypothesis 3, model one suggests that there is unequivocal evidence to suggest that individuals enter entrepreneurship because of pecuniary reasons. Whilst there is little evidence of the importance of family and social values, more important is non-pecuniary motivations (personal development and satisfaction) rather than pecuniary motivations for initial graduate entrepreneurship ("job and financial values"). These results, however, are tempered by the negative result for fulfillment from work.

A number of control variables are also seen to be important. First, those from a medical or educational background are less likely to enter entrepreneurship. Whilst this may be expected in a UK context because individuals from these disciplinary backgrounds are likely to enter the public sector, what is more surprising is the non-significance of business studies. More surprising is that the older universities seem more likely to host graduate entrepreneurs. Of further interest is the non-significance of student debt. Model one highlights that repayable debt does not influence initial graduate entrepreneurship.

The non-significance of debt is also apparent in the models that look at current entrepreneurship (models two and three). Here, however, we see the continued persistence of human capital antecedents with graduate entrepreneurship again determined by age, sex and parental background. We note, again, the non-significance of White (ethnicity). We also see in model two that the type of schooling is positive with those who attended fee paying schools more likely to be current entrepreneurs. However, this effect was only statistical significant at the 10% level and eventually drops out in model three when we control for initial self-employment.

[Table 4 about here]

In terms of skills developed in higher education and sources of support none of the variables are significant. There is no indication here then for support for Hypothesis 2. Rather more persistent is the presence of job and financial values which, again, is negative. Supporting this is also the negative significance of fulfillment from work and work continuously through life. In addition to the positive sign for partner work breaks for family reasons, the sense is that Hypothesis 3 is not supported. Although there is some pull through the positive sign for personal ambition, it would appear that individuals that are currently entrepreneurs chose entrepreneurship for non-pecuniary reasons.

The evidence from the control variables in both models two and three are also both consistent and interesting. What they indicate is that individuals that have a DipHE qualification, from the science disciplines and education and with 2.1 or 2.2 class degrees are less likely to be current entrepreneurs. Again, both models evince the non-significance of business studies. Also, although the marginal effect is very small, average income is negatively signed. In contrast, those from HE colleges are rather more likely to be entrepreneurs. Finally, becoming an entrepreneur immediately following graduation has a large positive impact on current entrepreneurship.

From career theory perspective, the positive relationship between initial and current entrepreneurship is not unsurprising. However, in order to both gain further insights into the three hypotheses and to explore career progressions further, an investigation of the event history of initial entrepreneurs was considered. Our concentration here was in identifying individuals for whom we had complete event histories (4,020 individuals). We subsequently found that only 29% of those who were initial entrepreneurs remained in this state three years later. Hence, whilst prior entrepreneurship helps explain current entrepreneurship, there appears a reasonably high attrition rate. Furthermore, Tables 5 and 6 show the event histories in terms of up to seven changes of individuals who were either initial entrepreneurs (Table 5) or employed (Table 6). What Table 5 shows is that once the initial entrepreneurs switch out of entrepreneurs they may return for a period to entrepreneurship but, in the end, they end up in employment. A similar event history transition matrix for the initial employed shows that it is they who make up the bulk of the graduate entrepreneurs.

[Tables 5 and 6 about here]

DISCUSSION AND CONCLUSIONS

The aim of this paper has been to make use of career socialization theory to explore and examine the nature of transitions into graduate entrepreneurship. Career socialization theory has in the past tended not to be fully used. Indeed, prior research has tended to focus upon intentionalities and how these impact upon desirability, feasibility and subsequent action. Whilst this remains an important element of understanding entrepreneurial transitions, the wider concerns of career socialization theory can be somewhat lost. Equally, there is a sense that prior research has not fully considered the nature of transitions, preferring instead to concentrate on specific outcomes such as venture creation or performance.

This paper has attempted to use a more fully rounded approach to career socialization theory by not only considering motivations but given equal weighting to the importance of prior human capital antecedents and the skills developed and support utilized from their higher education experience. In terms of human capital (Hypothesis 1), this paper merely confirmed a long line of theoretical and empirical evidence which suggests both for younger and older adults that entrepreneurship is skewed by your age, sex and parental background.

Higher education does not seem to 'correct' these entrepreneurial imbalances evident in the wider post education populations. What, however, does emerge is that the initial entrepreneurs do seem to be impacted by the nature of the skills they developed and academic contacts. Essentially, development of leadership and management skills does seem to influence initial entrepreneurship. Whilst this evidence may be seen as encouraging, it does also tend to support the notion that higher education can and does support the development of specific rather than just human capital skills (Vesper, 1996). Theoretically, higher education should not, at least initially, be seen as a badge or a form of credentialism. What is also clear from the results is that the influence of skills developed and support decays over a three year period. From a career theory perspective, therefore, the evidence suggests that higher education provides short run specific skills but that these dissipate once individuals are in the labour market (Hypothesis 2).

Further empirical evidence suggested that overall initial entrepreneurs where attracted to entrepreneurship because of non-pecuniary motivations (Hypothesis 3). These motivations become even more pronounced when current entrepreneurship is considered. What emerges is a sense not that entrepreneurship represents a valued choice but a response to non-pecuniary motivations. Indeed, because we examine not only initial and current entrepreneurship but also career progression transitions, what also emerges from the results is that entrepreneurship as a transitory choice rather than a fixed career trajectory for the majority of those who initially enter entrepreneurship. This points to an advantage of a career socialization approach since it allows researchers to consider entrepreneurship within a wider context of career choices available to individuals.

This paper also points to three implications. First, reassuringly it suggests for higher education professionals that academics and a higher education experience can and does develop individuals to actively take up entrepreneurship, albeit even if these specific skills and contacts are prone to decay over a three year period. A second implication of this paper for practitioners and policy makers is that there are limits to what higher education can do to encourage entrepreneurship. One reason for intractability is that human capital antecedents such as age and sex are persistent both in initial and current graduate self-employment. Higher education professionals and policy makers may suggest, therefore, that there is a need to work harder on developing entrepreneurship amongst women and those with little or no exposure to entrepreneurship. The third implication of this paper suggests that this may an onerous exercise. One reason for this is that it was noticeable that those who undertook a business studies course were not prone to consider graduate self-employment. This is a rather pessimistic finding. Furthermore, the evidence points to the modest survival rate amongst the graduate self-employed and that once out of self-employment, people do not readily return. Designing programmes to support and enhance entrepreneurship amongst graduates may result in high wastage levels since those that show propensity and willingness to enter entrepreneurship do not end up with this as a persistent career choice.

Our results, however large and representative our data are of UK higher education, remain contingent on the UK experience. Future research is necessary to explore other geographic areas to see if the career patterns of graduates resemble our evidence. Equally, there remains considerable doubt about which forms of specific higher education skill development supports the entrepreneurial choice. Honig (2004) suggests that the main form of enterprise skill development internationally is through the vehicle of business planning. This paper gives no insights into whether this form of support is critical, whether graduates pick up other forms of skills (e.g. enterprise awareness training) (Gibb, 1996) or, as Ghoshal (2005) suggests, young people develop specific skills in spite of their higher educational

experiences. Further research is also necessary to extend our understanding of the career progressions of graduates. Our event horizon is four years and what we found was that graduates who entered self-employment tended to do so for non-pecuniary reasons with the sense being that self-employment was a largely a transitory labour market choice. Given that there is strong evidence that being a graduate does enhance future venture performance, further research is needed to investigate when in a graduate's career progression this finding begins to become apparent.

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Table 1: Summary Statistics

	Mean	Expected Sign	Evidence
Human Capital Antecedents			
Age	27.857	+'	Dolton & Makepeace, 1990; Tackey, 1999; Blanchflower & Meyer, 1994; van Praag, 2003; Williams, 2004; Bates, 2005
Age2		-'	
Female	0.641	-'	
White	0.958	+'	
Parents self-employed	0.251	+'	
Type of school (State comprehensive/Sixth form college)			
State grammar school	0.199	?	
Fee paying school	0.121	?	
Other	0.046	?	
Higher Education			
Skills Developed			Gibb, 1996; Charney and Libecap, 2000; Peterman and Kennedy, 2003
Problems solving skills	2.184	?	
Written communication	2.588	?	
Spoken communication	2.289	?	
Foreign language skills	1.230	?	
Numeracy skills	1.957	?	

Basic computer literacy	2.190	?	
Advanced IT or software skills	1.594	?	
Research skills	2.532	?	
Creativity	2.009	+'	
Entrepreneurial skills	1.335	+'	
Ability to work together	2.229	+'	
Managerial skills	1.632	+'	
Leadership skills	1.667	+'	
Sources of support			Blackburn, 1997; Chrisman and McMullen, 2004
The university careers advisory service	0.446	-'	
Lecturers and academic contacts	0.216	+'	
Job centre/local careers service	0.117	-'	
Family and social networks	0.435	+'	
Career Orientation			
Long-term values			Birley and Westhead, 1994; Tackey, 1999
Career development	4.277	+'	
High financial reward	3.834	+'	
Own personal development	4.475	?	
Job satisfaction/creative/challenging work	4.611	?	
Partnership/marriage	1.607	?	
Being or becoming a parent	2.114	?	
Friendship networks	1.513	?	
Job security	4.224	-'	
Career motivations			Tackey, 1999; Feldman and Bolino, 2003
Personal ambition	0.750	+'	
Fulfillment from work	0.534	?	
Work continuously through life	0.530	?	
Personal work breaks for family reasons	0.467	?	
Partner work breaks for family reasons	0.265	?	
Expect to change career several times	0.387	?	
Controls			
Type of Institution (Post 1992 HEI)		?	
HE college	0.068	?	
Pre 1992 HEI	0.445	?	
Type of course (First degree)		?	
DipHE	0.029	?	
HND	0.023	?	
Other	0.026	?	
Subject area(Arts/Humanities/Languages/other)			Charney and Lipecap, 2000; Rosa, 2003; Peterman and Kennedy, 2003
Law/Social sciences	0.157	?	
Mathematics/Computing/Natural sciences/Engineering	0.228	?	
Medical and related	0.097	?	
Business studies	0.120	+'	
Education	0.064	-'	
Interdisciplinary	0.013	?	
Degree class (3 class and pass)		?	Dolton & Makepeace, 1990
1 class	0.089	?	
2(i) class	0.495	?	
2(ii) class	0.277	?	
Student debt			Blanchflower and Oswald, 1998; Roberts, 2004
No student debt after graduation	0.226	-'	

No current student debt	0.362	-'	
Average income	18,883	-'	Rosa, 2003; Meager et al, 2003
Initial Entrepreneurship	0.0207	-'	Shutt and Sutherland, 2003; Williams, 2004
Current Entrepreneurship	0.031 9		

Table 2: Skills developed in 1999 Course

Variables	Varimax Rotated Factors			Uniqueness
	1	2	3	$1-h^2$
Problems solving skills	0.253	**0.472**	0.009	0.713
Written communication	-0.012	-0.014	**0.768**	0.409
Spoken communication	0.315	-0.029	**0.637**	0.494
Numeracy skills	0.125	**0.709**	-0.220	0.434
Basic computer literacy	0.064	**0.802**	0.177	0.321
Advanced IT or software skills	0.112	**0.762**	-0.016	0.407
Research skills	-0.018	0.071	**0.651**	0.571
Creativity	0.233	0.022	**0.541**	0.653
Entrepreneurial skills	**0.609**	0.162	0.087	0.595
Ability to work together	**0.636**	0.207	0.227	0.502
Managerial skills	**0.862**	0.084	-0.017	0.249
Leadership skills	**0.861**	0.057	0.080	0.249
Variance	2.51	2.04	1.86	
Percent of variance	20.92	16.96	15.49	
Cumulative percent of variance	20.92	37.87	53.36	

Table 3: Long term values

Variables	Varimax Rotated Factors			Uniqueness
	1	2	3	$1-h^2$
Career development	0.101	0.508	**0.624**	0.342
High financial reward	0.005	-0.002	**0.858**	0.265
Own personal development	-0.014	**0.830**	0.106	0.300
Job satisfaction/creative/challenging	-0.051	**0.832**	0.027	0.305
Partnership/marriage	**0.828**	-0.027	-0.024	0.314
Being or becoming a parent	**0.849**	0.032	-0.010	0.278
Friendship networks	**0.518**	-0.322	0.004	0.629
Job security	-0.292	0.096	**0.574**	0.577
Variance	1.77	1.75	1.47	
Percent of variance	22.16	21.91	18.33	
Cumulative percent of variance	22.16	44.07	62.40	

Table 4: Marginal Effects of Probit Estimates for Initial and Current Entrepreneurship

Covariates	Initial		Current		Current	
	ME	Std.err.	ME	Std.err.	ME	Std.err.
Human Capital Antecedents						
Age	0.0017*	0.0009	0.0048**	0.0020	0.0053**	0.0022
Age2	-0.0000	0.0000	-0.0000*	0.0000	-0.0001**	0.0000
Female	-0.0124**	0.0043	-0.0141**	0.0053	-0.0093**	0.0046
White	-0.0006	0.0063	0.0022	0.0077	0.0050	0.0061
Parents self-employed	0.0076**	0.0038	0.0116**	0.0048	0.0083**	0.0043
Type of school (State comprehensive/Sixth form college)						
State grammar school	-0.0042	0.0029	-0.0034	0.0042	-0.0020	0.0040
Fee paying school	0.0057	0.0049	0.0098*	0.0067	0.0085	0.0061
Other	-0.0011	0.0053	0.0054	0.0095	0.0080	0.0097
Higher Education						
Skills Developed						
Leadership and managerial skills	0.0028*	0.0015	0.0016	0.0021	0.0010	0.0019
Practical and applied skills	-0.0027*	0.0016	-0.0021	0.0022	-0.0014	0.0020
Communication and creativity skills	0.0003	0.0015	-0.0008	0.0020	-0.0006	0.0018
Foreign language skills	-0.0052	0.0027	-0.0015	0.0047	0.0007	0.0046
Sources of support						
The university careers advisory service	-0.0005	0.0027	-0.0064*	0.0036	-0.0053	0.0033
Lecturers and academic contacts	0.0058*	0.0039	0.0026	0.0043	0.0009	0.0038
Job centre/local careers service	-0.0021	0.0036	-0.0035	0.0049	-0.0027	0.0046
Family and social networks	0.0005	0.0027	0.0037	0.0037	0.0030	0.0033
Career Orientation						
Long-term values						
Family and social values	0.0002	0.0014	-0.0002	0.0019	0.0001	0.0017
Personal development and satisfaction	0.0035**	0.0015	0.0026	0.0020	0.0013	0.0018
Job and financial values	-0.0042**	0.0014	-0.0100**	0.0020	-0.0079**	0.0018
Career motivations						
Personal ambition	-0.0026	0.0037	0.0148**	0.0035	0.0137**	0.0032
Fulfillment from work	-0.0076**	0.0029	-0.0128**	0.0038	-0.0111**	0.0035
Work continuously through life	-0.0002	0.0027	-0.0063*	0.0038	-0.0061*	0.0035
Personal work breaks for family reasons	0.0020	0.0032	0.0065	0.0044	0.0051	0.0040
Partner work breaks for family reasons	0.0052	0.0037	0.0097**	0.0051	0.0076*	0.0046
Expect to change career several times	0.0011	0.0027	-0.0027	0.0035	-0.0022	0.0032
Controls						
Type of Institution (Post 1992 HEI)						
HE college	0.0013	0.0060	0.0155*	0.0106	0.0137*	0.0098
Pre 1992 HEI	0.0057**	0.0032	0.0002	0.0040	-0.0016	0.0037
Type of course (First degree)						
DipHE	-0.0070	0.0040	-0.0145**	0.0031	-0.0122**	0.0030
HND	0.0073	0.0134	-0.0118	0.0050	-0.0112	0.0040
Other	0.0000	0.0078	-0.0071	0.0067	-0.0072	0.0057
Subject area(Arts/Humanities/Languages/other)						
Law/Social sciences	-0.0047	0.0028	-0.0079*	0.0039	-0.0063	0.0037
Mathematics/Computing/Natural sciences/Engineering	-0.0034	0.0034	-0.0092*	0.0043	-0.0077*	0.0040
Medical and related	-0.0116**	0.0022	-0.0075	0.0045	-0.0042	0.0048
Business studies	-0.0017	0.0036	-0.0069	0.0046	-0.0072	0.0041
Education	-0.0109**	0.0021	-0.0192**	0.0026	-0.0169**	0.0024
Interdisciplinary	-	-	-0.0026	0.0122	0.0013	0.0133
Degree class (3 class and pass)						
1 class	-0.0012	0.0059	-0.0082	0.0046	-0.0078	0.0040

2(i) class	0.0045	0.0052	-0.0144**	0.0058	-0.0149**	0.0055
2(ii) class	-0.0010	0.0051	-0.0208**	0.0042	-0.0191**	0.0039
Student debt						
No student debt after graduation	-0.0024	0.0029				
No current student debt	-	-	-0.0013	0.0036	-0.0014	0.0033
Average income	-	-	-0.0000**	0.0000	-0.0000**	0.0000
Initial Entrepreneurship	-	-	-	-	0.2070**	0.0462
Observations	4,369		4,346		4,326	
ÿ (d.f.)	130.36(39)		172.09(41)		249.45(42)	
Likelihood	-373.309		-512.075		-473.369	

**Significant at the 5% level. *Significant at the 10% level.

Table 5: Employment and Entrepreneurship Experiences of those who were initially Entrepreneurs

Occupation	Change 1	Change 2	Change 3	Change 4	Change 5	Change 6	Change 7
Employment	100%						
Entrepreneurship	0%						
Employment	83%	100%					
Entrepreneurship	6%	0%					
Employment	44%	67%	100%				
Entrepreneurship	11%	22%	0%				
Employment	100%	75%	100%	100%			
Entrepreneurship	0%	25%	0%	0%			
Employment	60%	100%	100%	60%	100%		
Entrepreneurship	0%	0%	0%	0%	0%		
Employment	0%	50%	50%	100%	100%	100%	
Entrepreneurship	100%	50%	50%	0%	0%	0%	
Employment	100%	100%	0%	0%	100%	100%	100%
Entrepreneurship	0%	0%	0%	0%	0%	0%	0%

Table 6: Employment and Entrepreneurship Experiences of those who were initially Employed

	Change 1	Change 2	Change 3	Change 4	Change 5	Change 6	Change 7
Employment	97.4%						
Entrepreneurship	2.3%						
Employment	85.7%	97.4%					
Entrepreneurship	0.8%	2.1%					
Employment	75.4%	85.4%	96.8%				
Entrepreneurship	0.6%	1.5%	1.9%				
Employment	61.1%	80.3%	83.8%	95.8%			
Entrepreneurship	1.0%	1.2%	1.7%	3.2%			
Employment	59.6%	73.5%	70.9%	76.5%	95.2%		
Entrepreneurship	1.3%	0.4%	1.7%	2.2%	3.0%		
Employment	55.8%	73.5%	73.5%	71.7%	77.9%	95.6%	
Entrepreneurship	0.9%	4.4%	4.4%	1.8%	1.8%	2.7%	
Employment	57.5%	73.6%	64.4%	72.4%	73.6%	70.1%	94.3%
Entrepreneurship	3.4%	0.0%	3.4%	1.1%	1.1%	0.0%	4.6%