Student entrepreneurial propensities in the individual-organisational-environmental nexus

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Abstract

While there is a consensus that universities contribute to entrepreneurship and innovation, it is not clear how different educational environments contribute to different students' desires to start up a business, and it is even less clear how different universities contribute to entrepreneurship activities in a particular place. This study improves understanding of entrepreneurship education and the university-based entrepreneurship ecosystem at the individual, organisational and environmental levels by examining organisational contexts and individual students' social contexts, including motivations towards and perceptions of graduate start-ups. Applications of logit and ordered logit regression analyses to a unique student-level dataset across two universities in one city-region demonstrates the importance of the university, gender and a series of home and employment experiences as determinants of the propensity to start up a business, while economic factors change attitudes towards setting up a business.

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1. Introduction

Entrepreneurship is established as a major stimulant of economic growth and social transformation. The roles higher education institutions (HEIs) play in developing regional and national entrepreneurial and innovative environments have been attracting both policy and scholarly attention across the world (e.g. Lee *et al* 2004; Rothaermel *et al* 2007; European Commission 2015; Guerrero *et al* 2015). In recent years, studies on the role of universities have expanded from a narrow focus on entrepreneurship and innovation from commercialisation of research (such as spin-offs and licensing) to a broader range of university entrepreneurship activities, including student and graduate start-ups (Siegel and Wright 2015).

While we agree that universities contribute to entrepreneurship and innovation, it is less clear how different educational environments across diverse institutional contexts contribute to different students' desires to start up ventures, and less clear still how different universities contribute to entrepreneurship activities in a particular place. This study contributes to the understanding of university-based entrepreneurship ecosystems at the nexus of the 'individual and organisational' level. We focus on interactions between the 'organisational and environmental' levels (see Mosey *et al* 2017) through an examination of the multi-layered interactions between organisational contexts and individual students' social and pre-university contexts. We also analyse the students' motivations towards and perceptions of graduate start-ups in a broader socioeconomic environment.

This article locates universities' entrepreneurship education in broader institutional and local contexts, by adopting the concept of 'university-based entrepreneurship ecosystems' (Greene *et al* 2010). Here, graduates are seen to belong to a university-based ecosystem with the university exerting its own influence on the chances of graduate start-ups (Fetters *et al* 2010). Through their distinct university-based entrepreneurship ecosystem, graduates are embedded in 'social structures', which are bound by interactions within particular local contexts that affect their likelihood of engaging in entrepreneurship (Jack and Anderson 2002). Universities also belong to multi-level entrepreneurship and innovation ecosystems and attract resources from actors at local, regional, national and international levels.

Although there is a large number of studies in the entrepreneurship literature that aims to clarify the factors that shape both individual-level intentions to become an entrepreneur and intention-behaviour relationships (Liñán *et al* 2011; Kautonen *et al* 2015; Rauch and Hulsink 2015), the number of assessments of institutional and organisational contexts that influence the interplay of such processes remains in its infancy (Dodd and Hynes 2012; Dohse and Water 2012; Walter and Dohse 2012; Maresch *et al* 2016). The significance of contextual factors in shaping entrepreneurial activities has been noted (Leitch *et al* 2012; Bergmann *et al* 2016) but there is still limited understanding in this domain of the inter-relationships between various social contexts, such as individual student perceptions, social pressures, organisational-level factors and the propensity to be an entrepreneur.

This article sheds light on this area by connecting individual student motivations with the organisational contexts of university-based entrepreneurship ecosystems, which are conditioned by the characteristics of particular HEIs in a specific geographical area. We conducted a survey of students attending two universities with different organisational characteristics, located in one city-region in the UK, and used logit and ordered logit regression analysis to ascertain quantitative indicators of context-specific social factors that shape students' knowledge, skills, learning processes and their intention to start up a business.

The next section presents a review of theoretical frameworks, highlights knowledge gaps and embeds hypotheses that require testing, which are associated with social contexts, individual intentions and behavioural changes on one hand, and broader environmental and organisational contexts on the other. The subsequent section provides details of the method, data and organisational characteristics affecting two university-based entrepreneurship ecosystems. An empirical analysis then ascertains the importance of individual and contextual factors in shaping students' entrepreneurial propensities within a university-based entrepreneurship ecosystem. The final sections discuss these findings and theoretical contributions, and conclude with policy implications for universities, city-regions and national levels along with recommendations for further research.

2. Conceptual frameworks and hypotheses

The local economic impacts of graduate start-ups have been recognised and new student entrepreneurship programmes are growing rapidly (Astebro *et al* 2012; Wright *et al* 2017). HEI provision of enterprise and entrepreneurial knowledge could enhance student propensities to start up businesses and affect the development of a local economy's entrepreneurial ecosystem. Entrepreneurship education can change individuals' actions, enhance employability, augment propensities to start businesses, stimulate new entrepreneurial activities (entrepreneurs and 'intrapreneurs'), drive societal change, enhance social mobility and inclusion, and increase economic growth (European Commission 2015). Outcomes and mechanisms of entrepreneurial education and programmes are varied and the understanding of such processes in different organisational contexts is limited.

Operational definitions of enterprise and entrepreneurship education vary across universities and can include employability skills, social enterprise, self-employment, venture creation, employment in small businesses, small business management and the management of high-growth ventures (Pittaway and Cope 2007 p 480). We conceptualise entrepreneurship education broadly and follow Fayolle and Gailly (2008) in defining entrepreneurship education as activities that aim to foster entrepreneurial mind-sets, attitudes and skills, which cover a range of aspects such as idea generation, start-up, growth and innovation.

There are associations between students' entrepreneurship experiences at HEIs, student employability, and regional and national economic performance (Greene and Saridakis 2008; Gordon *et al* 2012). Actual processes and impacts of the mechanisms behind these associations, the extent to which and the conditions with which different types of entrepreneurial education programmes are effective, are not understood well. There have been debates on whether entrepreneurial intentions lead to actual entrepreneurial behaviours, and on the extent to which entrepreneurial education can be effective in raising entrepreneurial intentions (Souitaris *et al* 2007) and lead to behavioural change. The theory of planned behaviour (TPB) assumes that intentions

influence entrepreneurial behaviours and remains a valid analytical framework to study the relationships between entrepreneurship education, entrepreneurial intention and entrepreneurial behaviour.

While there has been an array of recent empirical studies drawing on the TPB framework, there are inherent methodological difficulties in establishing the links between students' start-up activities and entrepreneurship education. It is acknowledged that there is little evidence of the effectiveness of entrepreneurship education on actual behavioural change (Rauch and Hulsink 2015). Part of the reason for these difficulties is that students' attitudes to entrepreneurial activities and entrepreneurial intentions are affected by a range of socio-economic background contexts, parental entrepreneurial and non-entrepreneurial experiences that guide and shape parental example and advice, as well as the students' own entrepreneurial and non-entrepreneurial experiences. Previous studies drawing on the TPB also indicate that social and subjective norms tend to contribute only a small amount to the intention to carry out different behaviours, as family and friends' beliefs cannot be influenced directly by the student's entrepreneurship education experiences (Ajzen 1991; Autio *et al* 2001; Liñán *et al* 2011; Rauch and Hulsink 2015).[2]

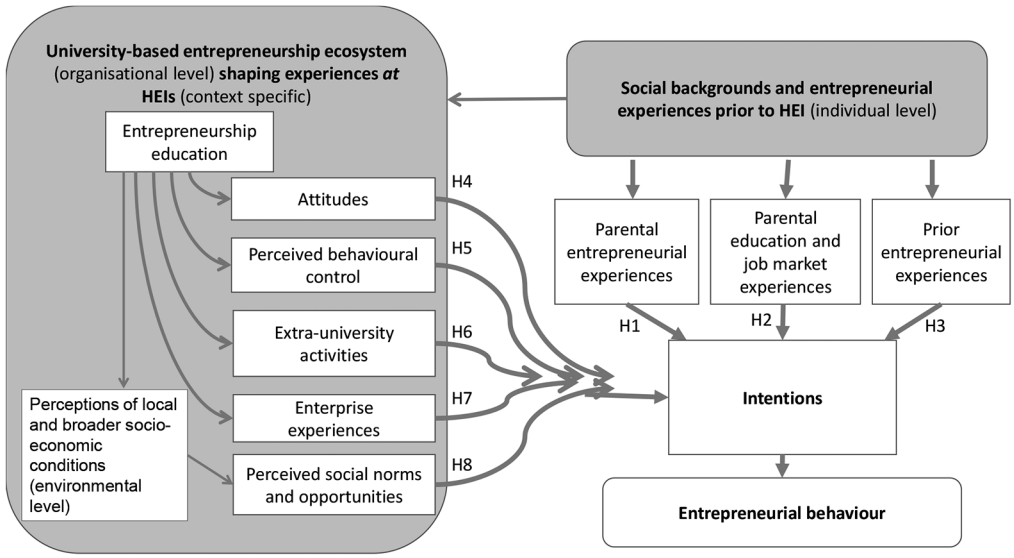
Meanwhile the significance of the contextual differences that condition the relationship between entrepreneurship education, entrepreneurial intentions and entrepreneurial behaviour continue to be debated (Maresch *et al* 2016). In order to focus more on the role of social context in 'allowing or restricting entrepreneurship,' we draw on the entrepreneurial ecosystem concept, which is closely connected to other recent 'systems of entrepreneurship' approaches (Stam 2015 p 1761). An entrepreneurial ecosystem is defined as an agglomeration of interconnected individuals, entities and governance bodies set in a given geographic area that collectively support entrepreneurial activity (Malecki 2011). While the entrepreneurial ecosystem and 'systems of innovation' concepts are highly relevant in terms of understanding the connection between different components within the defined system, it is difficult to differentiate the influences of interactions between different spatial levels.

Studies demonstrate that the development of 'university-based entrepreneurship ecosystems' is conditioned by a number of factors including the knowledge infrastructure, industry environments, knowledge and technology transfer systems, policies at national and local levels, and strategies adopted by individual universities and their leadership (Wright *et al* 2017). However, analyses of the university-based entrepreneurship ecosystems framework are often based on single cases of good practice embedded in a particular historical, social and institutional environment (Greene *et al* 2010), where the heterogeneity of individual social processes set in different organisational contexts tends to be understudied. Building on the technology entrepreneurship literature, Mosey *et al* (2017) argue that research opportunities are found at the nexus of the individual and organisational levels on one hand,

and of the individual and environmental levels on the other. This study aims to contribute to such research perspectives by focusing on the heterogeneity of social processes and the diversity of organisational contexts surrounding student entrepreneurship.

After reviewing the literature detailed above we are able to highlight gaps in our knowledge and summarise them as seven hypotheses presented in Figure 1. They combine factors at an individual level, the interface between individual and organisational levels, and the influence of wider external environments.

Figure 1: Hypotheses and paths



Our first set of hypotheses [H1, H2 and H3] is concerned with individual level factors, including students' prior experiences and parental influences. A student's upbringing will shape their entrepreneurial behaviour, with their career and entrepreneurial choices influenced by gender (Perry 2002; Blanchflower 2004; Kepler and Shane 2007; Minniti and Nardone 2007; Koellinger *et al* 2013), age, family, social and economic backgrounds, educational experience, and exposure to entrepreneurial activities including those relating to family experiences (Scherer *et al* 1989; Matthews and Moser 1995). It is noticeable that the literature has been inconclusive about the ways in which an individual's parental educational attainment and parental job market experiences affect a student's propensity to become an entrepreneur, although emulation would suggest that this effect should be positive. Therefore, any study on entrepreneurial intentions should commence from a re-examination of

these issues, to ensure either the external validity of results or to reveal differences and asymmetries. We hypothesise that:

H1: entrepreneurial behaviours of parents positively affect student entrepreneurial intentions

H2: lower parental educational attainment and poorer parental job market experiences increase the need for the student to enter more traditional occupations and reduce the intention to become an entrepreneur

H3: prior experience of starting up a business will positively affect student entrepreneurial intentions

A second set of hypotheses [H4 and H5] is concerned with the interplay between organisational and individual contexts, namely the roles of entrepreneurship education and students' broader experiences in the university-based entrepreneurship ecosystem throughout a student's life course (Nabi *et al* 2010; Bergmann *et al* 2016; Chou *et al* 2017). Entrepreneurial education and prior knowledge about the institutional environment for start-ups may play an important role in shaping the configuration of entrepreneurial intentions (Luthje and Franke 2003). The provision of enterprise and entrepreneurial knowledge and learning in higher education could be interpreted as entrepreneurship enablers (Thompson 2010) that enhance the propensity of a student to embark on the path towards starting-up a business, as it provides knowledge of the entrepreneurial institutional framework and of entrepreneurial competencies (Sanchez 2013). Greater knowledge of the entrepreneurial institutional framework and of the current economic situation should provide greater awareness about and stimulate intentions to become an entrepreneur (Liñán *et al* 2011).

Entrepreneurship education can be seen as a key factor that motivates an individual to become an entrepreneur, as it gives extra credence to an individual's tenacity to become an entrepreneur (Liñán *et al* 2011). Studies (Walter *et al* 2012; Bergmann *et al* 2016) show that organisational factors, such as the existence of entrepreneurship education courses and quality of entrepreneurship qualification programmes, have positive impacts on students' entrepreneurial intentions. Here we draw on the TPB framework and hypothesise that entrepreneurial education, as organisational factors, will affect students' intentions and entrepreneurial behaviours:

H4: entrepreneurial education enhances student attitudes to setting up a business

H5: entrepreneurial education enhances students' perceived behavioural control, which enhances the students' attitudes towards setting up a business

Building on the antecedents of entrepreneurial intention and behaviour discussed above, we now move to discuss a variety of university-based channels to enhance entrepreneurial intentions, namely, the effect of curricular and

extracurricular activities on entrepreneurial motivation (Arranz *et al* 2017). Arranz *et al* (2017) show that curricular and extra-curricular education have an unbalanced impact on university students, and that formal courses and extracurricular activities have moderating roles in the formation of entrepreneurial intentions and other competences. Extra-university activities, such as work placements, volunteering and internship experiences and activities at business incubators, information centres and financial aid, can be more influential than formal courses in shaping students' entrepreneurial intentions:

H6: extra-university activities, such as internship and volunteering, positively affects student entrepreneurial intentions

H7: gaining enterprise experience as part of extracurricular activities positively affects student entrepreneurial intentions

Finally, we explore the relationships between entrepreneurial intentions, university-based entrepreneurship ecosystems and the broader external environment. The relationship between unemployment and self-employment has been studied extensively and recognised as complex and multi-faceted (Storey 1991; Thurik *et al* 2008; Horta *et al* 2016). In terms of perceptions of the external environment and social norms, we posit that entrepreneurial intentions reflect existing opportunities in the labour market:

H8: positive (negative) perceptions of the current economic situation enhance (deter) student attitudes towards setting up a business.

3. Methodology

In order to test these hypotheses within a spatially-defined entrepreneurial ecosystem, we targeted a sample of students studying at two universities, with different organisational characteristics, in one city-region. An online questionnaire was developed to collect data that would contribute to improving the understanding of students' experiences, perceptions and attitudes towards entrepreneurship, their entrepreneurial activities and education experiences, and their perceptions of skills and knowledge gained through their university's programmes. We also collected quantitative data from publicly available datasets and qualitative data from nationally standardised institutional documentations to capture the characteristics of the each of the universities' entrepreneurship ecosystems.

The two HEIs clustered within one UK city-region were chosen for convenience, which was the location of the researchers at the time: the University of Bristol (hereafter UoB) and the University of the West of England, Bristol (hereafter UWE). The online questionnaire was chosen as the survey was targeting existing students, and it was deemed to be one of the most widely accessible channels to reach out to a variety of students.[3] The final sample is in excess of 1,000 students at each HEI and represents undergraduate and

postgraduate, as well as full- and part-time students. Survey participants were spread evenly across undergraduate and postgraduate studies, across disciplines and gender. Students in the sample demonstrate a wide range of entrepreneurial orientations.

Some questions relate to demographic factors (family backgrounds, experiences and attributes) and entrepreneurial experiences prior to university enrolment. Other questions capture information on experiences of entrepreneurship education, including the exposure to knowledge of the entrepreneurial institutional framework and extracurricular activities. Further questions capture information on changes in entrepreneurial intentions, including attitude changes to entrepreneurial orientation since enrolment in the degree (i.e. perceived behavioural control), perceptions of skills needed for entrepreneurial success, and perceptions of the challenges associated with becoming an entrepreneur. We were also able to collect data relating to the changes in perceptions about entrepreneurial opportunities (i.e. perceived social norms) that relate to the financial crisis, as this dataset was collected between March and May 2011. Data collected are quantitative and either continuous (e.g. age), ordered categorical (e.g. Likert scale for the degree of usefulness of enterprise skill programmes) or dichotomous (e.g. gender).

The two universities have different strengths and strategies regarding enterprise education and academic entrepreneurial activities, which mirror their historical foci, developments and asymmetries in teaching and research activities, that reflect part of the HEIs characteristics and shape part of the aggregate city-region entrepreneurship ecosystem. In order to present organisational-specific characteristics of the two university-based entrepreneurship ecosystems, we focus on their i) entrepreneurial performance as measured by income; ii) balance of outputs of entrepreneurial activities, and iii) organisational strategies. Quantitative organisational data were collected from the Higher Education Business and Community Interaction Survey (HE-BCI) and the Higher Education Innovation Funding (HEIF) strategy documents (2011–2015) submitted to the Higher Education Funding Council for England (HEFCE) in July 2011. These were used to describe the organisational characteristics.

Regarding the student-level data, as the objectives of the research are to identify both factors that enhance the desire to start up a business soon and factors that change attitudes towards starting up a business, regression analyses were chosen as an appropriate statistical method to identify associations between these quantitative data. Entrepreneurial orientation, specifically whether the student has the desire to start up a business soon, is a dichotomous variable (yes/no; as outlined in more detail in Table 7) while our measure of the change in attitudes towards starting up a business since starting university is categorical and expressed using a Likert scale. Appropriate econometric approaches are therefore an ordinary logistic and an ordered logistic regression, respectively.

4. Capturing the university-based entrepreneurship ecosystems: organisational contexts

University-based entrepreneurship ecosystems may be defined by organisational capabilities, resources and, ultimately, the entrepreneurial knowledge provided by the university, with characteristics associated with both research and teaching missions. Such ecosystems affect forms of university entrepreneurship and innovation activities, and determine the entrepreneurial competences of graduates and institutional capacity to generate student start-ups (Beyhan and Findik 2017; Marzocchi *et al* 2019).

UWE is classified as a new university and gained university status in 1992, while UoB is an old university, which received its royal charter in 1909. Both universities emphasise the importance of entrepreneurship education as part of their knowledge exchange strategies. UWE's strategy emphasises that it supports student employability and enterprise education along with business engagement activities including placements and internships, curriculum design and continuing professional development (CPD) (UWE 2011). UoB states that an increase in resources 'will be used to develop and deliver student enterprise, including the appointment of a second Entrepreneur in Residence, new graduate level Enterprise consultants, continued growth for our Basecamp student business support and an internship programme targeted at placing students and recent graduates in growth oriented SMEs' (UoB 2011).

In terms of the forms and outcomes of university entrepreneurship activities, UoB has high academic spin-off numbers while UWE has high numbers of student start-ups with external investment (see Appendix Tables III–V), which demonstrate different institutional attributes and strategic foci. Briefly, UoB has foci and strengths in research commercialisation and academic staff spinouts, and has developed SETSquared, which is an incubation mechanism for technology-based start-up companies across five universities in the south of England. UWE has a strong record in student start-ups rather than academic spinouts and has strong links with local small and medium enterprises, including a large number of student internships (Jones-Evans 2014). UoB identified access to education, technology transfer and research collaboration with industry as the three areas to which it perceives it is making a contribution in economic development, whereas UWE identified access to education, graduate retention in the local region and developing local partnerships as three areas to which it was contributing (HESA 2011).

Both universities provide a variety of entrepreneurial and enterprise support, including business competitions and both curricular and non-curricular entrepreneurial activities and student entrepreneur societies. Both universities have enterprise support targeting STEM areas, creative sectors and social enterprise, and run a series of enterprise support programmes with their in-house student incubators.

5. Survey findings

The analysis presented below highlights the relative importance of the interplay between individual perceptions, social and contextual factors in shaping entrepreneurial propensities, and perceived behavioural changes towards business start-ups. Descriptive statistics of the sample of respondents are presented in Tables 1–7. Sample sizes were 1,210 from UWE and 1,144 from UoB (total sample=2,354 students) once account has been made for missing observations. Full-time and part-time students are present in the sample and differences in part-time/full-time ratios at undergraduate and postgraduate levels are broadly in line with these universities' cohorts. Tables 2 and 3 reveal a gender bias and an age distribution that reflects the higher proportion of mature students at UWE.[4]

Table 1: Enrolment status of sample population

	UWE		UoB	
	Number	% of respondents	Number	% of respondents
UG Full-time	930	77	730	64
UG Part-time	46	4	11	1
PG Full-time	130	11	312	27
PG Part-time	88	7	70	6
UG Exchange student (< a year)	3	0	13	1
PG Exchange student	3	0	3	0
Other	10	1	5	0
Totals	1210	100	1144	100

Table 2: Gender of sample population

Gender	UoB (*N*=1144) %	UWE (*N*=1210) %	Total (*N*=2354) %
Male (*N*=903)	39.4	37.4	38.4
Female (*N*=1451)	60.6	62.6	61.6

Table 3: Age range of sample population

Age	UoB (*N*=1144) %	UWE (*N*=1210) %	Total (*N*=2354) %
17–21	52.3	45.9	48.9
22–26	31.6	30.1	30.7
27–31	8.0	8.6	8.3
31–35	2.5	5.0	3.7
36–40	1.5	3.3	2.4
41–plus	4.1	7.2	5.6
Total	100	100	100

A complex web of factors is behind a positive relationship between an individual's educational achievement and the educational level of their parents. Higher grades required to obtain a place at UoB relative to UWE are reflected in our sample, along with a greater proportion of UoB students' parents attaining tertiary education (Table 4). Table 5 shows a higher proportion of UK students attending UWE than UoB, reflecting a greater proportion of international students attracted to UoB, and Table 6 shows a greater proportion of UWE respondents studying applied disciplines than at UoB.

Table 4: Highest level of education of father and mother by institution

	Highest level	UoB %	UWE %
Father	primary	4.5	7.4
	secondary	29.3	47.1
	tertiary	66.3	45.5
Mother	primary	4.4	6.9
	secondary	33.2	51.6
	tertiary	62.4	41.6
	Total	100	100

Table 5: Region of origin of student sample population

	UoB %	UWE %	Total %
UK home	76.7	85.2	81.2
EU	8.6	7.2	7.8
International (non EU)	13.2	6.4	9.7
Other	1.6	1.2	1.3

Table 6: Frequency of respondents by Faculty and University

Respondents by Faculty/Division (*N*=2354)	% Respondents by Faculty/Division
UoB (48.6%)	
Arts	9
Engineering	8
Medical and Vet	5
Medicine and Dentistry	3
Science	13
Social Science and Law	11
UWE (51.4%)	
Business and Law	10
Creative Arts, Humanities and Education	14
Environment and Technology	11
Health and Life Sciences	14
Hartbury College	2
Other	1

5.1 Entrepreneurial attitudes

Our proxy for entrepreneurial orientation and the dependent variable in our regressions is a variable called "Start up soon," which is equal to 1 (one) if the student responded to the question "Are you interesting in starting-up a business sometime in the future?" with either "Yes, within five years", "Yes, within ten years" or "Yes, in the future, not decided when"; this variable is equal to 0 (zero) if the responded instead stated "No". We excluded from our analysis those respondents who indicated that they were "Unsure." Table 7 presents the breakdown of this variable split by university. Although similar proportions of students stated that they would not start up their own business (33 per cent for UoB, 29 per cent for UWE), there is a disparity between the HEIs with UWE students being 50 per cent more likely to want to start their own business within the next five years (13 per cent at UoB, 20 per cent at UWE). The distribution of attitude changes to entrepreneurial orientation since enrolment also shows an overall small positive change, with 16.6 per cent of respondents indicating that they were more positive towards entrepreneurial activities and with 6.5 per cent of respondents indicating that they were more negative towards entrepreneurial activities, both relative to before they commenced their degree.

Table 7: Entrepreneurial orientation

		UoB (*N*=1144)		UWE (*N*=1210)	
		Number	% of institution	Number	% of institution
Already started my own business		28	2	50	4
Yes, within five years	=1 for "Start up soon"	78	7	161	13
Yes, within ten years		74	6	81	7
Yes, in the future, not decided when		230	20	303	25
No	=0 for "Start up soon"	373	33	345	29
Unsure		361	32	270	22
Totals		1144	100	1210	100
Total intending at any time		410	36	595	49
My attitude towards setting up my own business has changed since I enrolled in my university degree					
I was initially very positive but now I am negative				14	1.4 %
I was slightly positive but now I am negative				51	5.1 %
My attitude has not changed				770	76.9 %
I was slightly negative but now I am positive				138	13.8 %
I was very negative but now I am positive				28	2.8 %

5.2 Entrepreneurial intentions

We augment understanding by investigating the likelihood that students express an intention to start up a business. This is achieved by undertaking a series of regressions as set out in Table 8. The dependent variable in each logistic regression is binary and corresponds to whether the student indicated that they will "start up soon" their own business.

Table 8: Ordinary logistic regression: desire to start up a business[a]

	(1)	(2)[b]	(3)[c]	(4)[d]	(5)[e]	(6)	
N	1715	1715	1715	1715	1642	1642	
						UoB	UWE
UWE	1.708***	1.787***	1.806***	1.901***	1.360**	–	0.236
	(0.177)	(0.191)	(0.200)	(0.216)	(0.200)		(0.426)
Bristol University				Control variable			
Male	2.173***	2.180***	2.180***	2.172***	2.299***	2.038***	1.334
	(0.227)	(0.229)	(0.231)	(0.234)	(0.318)	(0.393)	(0.378)
Female				Control variable			
Undergraduate	0.749**	0.747	0.738*	0.775*	0.608***	0.517***	1.456
	(0.094)	(0.094)	(0.094)	(0.101)	(0.101)	(0.113)	(0.508)
Postgraduate				Control variable			
Full time	1.271	1.259	1.249	1.307	0.974	0.689	1.812
	(0.225)	(0.223)	(0.223)	(0.237)	(0.232)	(0.204)	(0.880)
Part time				Control variable			
Dad: Tertiary education	–	0.634	0.645	0.627	0.611	0.346*	2.582
		(0.176)	(0.183)	(0.185)	(0.235)	(0.222)	(2.053)
Dad: Secondary education	–	0.568*	0.572**	0.567**	0.682	0.333*	3.386
		(0.153)	(0.157)	(0.161)	(0.250)	(0.212)	(2.614)
Dad: Primary education				Control variable			
Dad: Routine	–	–	1.303	1.434	1.879	4.382**	0.316
			(0.433)	(0.482)	(0.795)	(2.985)	(0.592)
Dad: Unemployed				Control variable			
Mum: Lower supervisory and technical occupations	–	–	0.279***	0.267***	0.214**	0.100	2.685
			(0.124)	(0.125)	(0.148)	(0.232)	(0.204)
Mum: Unemployed				Control variable			
Gained enterprise experience while spending time as an intern	–	–	–	1.848***	1.429*	1.201	1.974
				(0.328)	(0.289)	(0.290)	(0.936)
Gained enterprise experience: started up own business before university	–	–	–	3.277***	4.116***	3.006**	1.675
				(0.910)	(1.449)	(1.576)	(1.191)
Start up business skills	–	–	–	–	3.218***	3.020***	1.135
					(0.266)	(0.401)	(0.196)
Family member owns a business	–	–	–	–	1.696***	2.093***	0.683
					(0.241)	(0.436)	(0.200)
Constant	0.779	0.913	0.690	0.626	0.059***	0.042***	0.195
	(0.137)	(0.254)	(0.282)	(0.258)	(0.053)	(0.032)	(0.249)
Log pseudo-likelihood	–1124	–1120	–1110	–1091	–731	–718	
Wald chi^2	79.39***	84.86***	99.95***	129.28***	421.55***	435.14***	

Notes: [a] Dependent variable in all these regressions is "Start up soon". Odds-ratios are presented with robust standard errors in parentheses. ***, ** and * signify statistical significance at the 1%, 5% and 10% levels respectively. [b] Mother's education was also included from this regression onwards, but remained consistently statistically insignificant. [c] All dad job occupation variables were included from this point onwards with *Dad: Unemployed* as the control variable, with all non-reported variables being consistently statistically insignificant throughout. Also included from this regression onwards were all the job descriptions of the mother; in this case all jobs descriptions were statistically insignificant throughout except for *Mum: Low sup job*, with *Mum: Unemployed* as the control variable. [d] Also included from this regression onwards were *Gained enterprise experience in full time work*, *Gained enterprise experience in part time work while in education* and *Gained enterprise experience in a formerly organised program*, all of which remained statistically insignificant throughout. [e] Also included in this regression were issues related to the benefits of going to university, including *Qualifications are important*, *Personal Development is important*, *Advancement of career opportunities*, *Academic Knowledge*, *Technical knowledge* and *Management skills*, all of which were not found to be statistically significant.

Column 1 indicates that males were nearly 2.2 times more likely to want to start up a business than females, and UWE students were 1.7 times more likely to want to start up a business than UoB students. This could be associated with the particular nature of the university-based entrepreneurship ecosystem, with greater emphasis placed on vocational and applied programs in newer HEIs. There is only weak evidence that full-time students are more entrepreneurial than part-time students and that postgraduates are more entrepreneurial than undergraduates, suggesting that entrepreneurial guidance should be available to all students across all levels and modes of study.

Columns 2 and 3 introduce family factors and suggest a greater desire to start up a business if the father has primary education as their highest level of education. If the father has secondary education then the student is about (1/0.568 =) 76 per cent more likely *not* to want to start up a business, and if the father has a tertiary education then this effect is tapered slightly, suggesting either a plateauing of the father's educational effect or even a U-shaped effect. Further research is necessary here. Note that neither mothers' educational attainment nor fathers' occupational status seem to affect students' entrepreneurial aspirations. Relative to the mother being unemployed, if a student's mother is in a lower supervisory or technical occupation, then the student is likely to have greater entrepreneurial aspirations. These findings are in line with the suggestion that students are more likely to have the perception that they need to rely on their own employment initiatives (including entrepreneurial expertise) rather than rely on the value of educational credentials as a ticket to a good job, if they have relatively poorly educated parents and/or a mother in a relatively poor employment position.

5.3 Prior experiences

Prior vocationally-relevant experiences were categorised as being either "full-time work experience", "part-time work experience", "informally-arranged internships" (e.g. organised on student's own initiative), "formal internships" (e.g. placement year provided as part of degree programme) or "experience in running their own business". Column 4 of Table 8 shows that students who had arranged an internship informally were 1.8 times more likely to intend to start their own business. Column 5 provides evidence that students who had experience of running their own business were 3.3 times more likely to intend to start a business than those who did not have such experience. Both of these results are sensitive to the inclusion of perceived benefits of going to university, as included in Column 5, with students who suggested that going to university to obtain skills in order to start up their own businesses being 3.2 times more likely to want to start up a business than those who did not go to university for this reason. The lack of statistical significance of a range of further entrepreneurial-related activities could reflect a broad interpretation of entrepreneurship and a lack of a perceived relevance of education for starting up a business. Finally, students who have a family member who owns a

business are 1.7 times more likely to want to start up their own business than those who do not have such a family member.

The analysis above suggests that entrepreneurial orientation is developed *prior* to attending an HEI and is associated with only certain family backgrounds, hence there is support for hypotheses H1–H3. Prior activity associated with starting a business is most strongly associated with an intention to start a business after leaving university. There is also an indication that those students who show initiative in arranging work experience and internships are more likely to want to start a business, and this effect may be associated with prior entrepreneurial orientation, peer groups and/or university guidance.

5.4 Differences between universities

Throughout Columns 1–5 in Table 8, there is statistical evidence that students studying at UWE are significantly more likely to want to start up a business than are students attending UoB. To explore this further we interacted the UWE dichotomous variable with all explanatory variables, to establish whether we can identify the underlying reasons for this difference.[5] These results, presented as simple odds ratios in both parts of Column 6, show that once the interaction terms are included in the model, the UWE dichotomous variable becomes not statistically different from the UoB dichotomous variable, but there are also no individually statistically significant effects that explain the original difference.

Nevertheless, the magnitudes of the odds ratios point to important differences between UWE and UoB cohorts. For instance, students who want to start a business at UoB are more likely to be postgraduate and part-time, with fathers in a routine job and having primary education only, whose mother is unemployed, and who has a family member who owns their own business; the opposite student characteristics are likely to be associated with a UWE student who wants to start a business.

5.5 Changing attitudes to setting up a business

We proceed to identify factors that change students' entrepreneurial orientations. The questionnaire administered to UWE students included supplementary questions designed to explore this issue, thus the following analysis refers to UWE respondents only. We asked respondents whether their attitudes towards setting up a business had changed since they enrolled in their degree, as described on the bottom of Table 10. This variable has an ordered Likert response and we apply ordered logistic regression with corresponding results shown in Table 9.

Column 1 indicates that although attitudes did not change more for males than females or more for full-time relative to part-time students, attitudes did change with undergraduates being 1.5 times more likely to state an improvement in their entrepreneurial attitude while attending the HEI relative to postgraduates, thereby supporting H4. Perhaps postgraduate programmes are

Table 9: Ordered logistic regression: changing attitudes to setting up a business

	(1)	(2)[a]	(3)[b]
N	1001	1001	969
Male	1.189	1.192	1.086
	(0.186)	(0.193)	(0.182)
Female		Control variable	
Undergraduate	1.453*	1.476*	1.622**
	(0.313)	(0.321)	(0.367)
Postgraduate		Control variable	
Full time	1.226	1.254	1.124
	(0.320)	(0.330)	(0.307)
Part time		Control variable	
Perceives the current economic situation encourages them to start up a business	1.868***	1.860**	1.747**
	(0.450)	(0.453)	(0.441)
Perceives the current economic situation neither encourages nor discourages them to start up a business		Control variable	
Perceives the current economic situation discourages them to start up a business	0.669**	0.683**	0.726*
	(0.111)	(0.114)	(0.125)
Think communication skills are needed to become an entrepreneur	–	1.327*	1.433**
		(0.216)	(0.246)
Biggest challenge to becoming an entrepreneur is identifying markets	–	–	1.195**
			((0.107)
Believes UWE education has helped them develop the competences to address challenges of being an entrepreneur	–	–	1.777***
			(0.170)
Cut 1	–3.925	–4.167	–2.868
	(0.371)	(0.642)	(0.744)
Cut 2	–2.330	–2.571	–1.245
	(0.286)	(0.597)	(0.702)
Cut 3	2.070	1.865	3.422
	(0.281)	(0.593)	(0.716)
Cut 4	4.025	3.862	5.514
	(0.331)	(0.617)	(0.742)
LR chi^2	27.88***	36.50***	80.08***
Log likelihood	–773.27	–768.96	–712.42

Notes: Odds-ratios are presented with robust standard errors in parentheses. ***, ** and * signify statistical significance at the 1%, 5% and 10% levels respectively.

[a] Also included in this regression onwards are *Motivation*, *Team work*, *Negotiation skills*, *Management skills*, *Finance skills*, *Market knowledge*, *Technical competency* and *Innovative capacity*. None of these were found to be statistically significant at the 5% level.

[b] Also included in this regression are the importance of entrepreneurial challenges associated with *finance*, *having a business idea*, *being competitive in the market*, *working as a team* and *acquiring management skills and knowledge*. None of these were found to be statistically significant at the 10% statistical significance level.

viewed as less relevant to entrepreneurship, or perhaps the students' entrepreneurial tendencies were already affected during their undergraduate studies, with less-entrepreneurial students selecting to move on to postgraduate study.

The economic situation of 2011 (recovery from a deep recession) affected students' attitudes towards entrepreneurial activities. Students who stated that the economy encouraged them to start up a business were 1.8 times more likely to state that their attitude *improved* and students who stated that the economy discouraged them to start up a business were 1.49 (= 1/0.669) times more likely to state that their attitude *deteriorated*, both relative to the economy having a neutral effect. This could reflect perceptions of the probability of achieving projected returns, as emphasised by McCann and Folta (2012).

Students' perceptions of skills needed for entrepreneurial success were included in Column 2. Out of a wide variety of potentially important skills and competencies included in the regression (see the notes to Table 9) only one statistically significant factor was identified by the students as being important in changing their entrepreneurial orientation: communication skills. Students who thought that "communication skills were needed to become an entrepreneur" were about 1.4 times more likely to have experienced an improvement in their attitudes towards setting up a business relative to those who did not experience this improvement.

5.6 Challenges associated with becoming an entrepreneur

Respondents were asked whether their entrepreneurial education had helped them to develop the skills necessary to overcome business challenges. Out of a list (see the notes to Table 9), only one potential challenge was reported as being important: if the student suggested that their biggest challenge to becoming an entrepreneur was identifying markets, then they were 1.2 times more likely to have experienced an improvement in their attitudes to setting up their own business. There could be several reasons for this finding: first, the student may have improved their knowledge of markets at their HEI, which would be evidence to support H8. Second, their entrepreneurial education may have increased their recognition of the importance of identifying markets and the students who are most alert to this issue could be those who are more inclined to want to start up a business. In that case, this may be an area for further education and the desire to better understand how to identify markets. Moreover, students who believed that their entrepreneurial education helped them develop competencies to address the challenges of being an entrepreneur were 1.8 times more likely to have experienced an improvement in their attitude towards setting up their own business, which is evidence to support H5.

5.7 Extracurricular and extra-university activities

The number of students who responded to our questions about extracurricular and extra-university activities varied, and hence these issues are addressed separately. Roughly 75 per cent of students indicated that they did not find extracurricular and extra-university activities useful for their future career, as shown in Table 10. There is only one activity which more than 30 per cent of students did suggest was useful: *short/intensive programmes on entrepreneurship and enterprise skills,* while

one-to-one drop in sessions on enterprise advice were also perceived as being useful. This suggests universities' promotion of entrepreneurial and enterprise extracurricular skills can be effective, thereby supporting H7.

Table 11 highlights that the vast majority of extra-university activities were perceived as being much more useful than extra-curricular activities, which supports H6. The two most useful activities were *volunteering in enterprise activities* and *enterprise activities in the private sector*; the perception of the usefulness of the latter was found to be equally helpful, irrespective of whether the activity was locally- or internationally-focused, whereas the former seems to have been more useful if it had a domestic focus. The perceived usefulness of learning from friends or through buying or selling on the internet were both low.

This analysis shows that student entrepreneurial propensities are influenced by a variety of demographic attributes, educational levels, parental education, parental occupational backgrounds, family influences, previous work experiences (including having already started up a business) and affiliation to a particular HEI. Importantly, the analysis relates university experiences to student entrepreneurial propensities, implying a strong role for university-based entrepreneurship ecosystems to shape and stimulate the student propensity to start up a business. Student background characteristics, self-selection into courses providing start-up business skills and already having experience in running a business do collectively explain part of the differences between the universities in students' propensities to start-up businesses.

6. Discussion and conclusion

The university-based entrepreneurship ecosystem enables student entrepreneurship activities in different ways in a variety of organisational contexts, through mechanisms such as pre-accelerators, accelerators, involvement of entrepreneurs in programmes and support mechanisms, as well as entrepreneurial education (Wright *et al* 2017). Recent studies on entrepreneurship education focus on a variety of contexts including different spatial levels and different forms of provisions and subject areas (Maresch *et al* 2016). This study contributes to a better understanding of the nature of university-based entrepreneurship ecosystems by highlighting the importance of interactions between social processes and university entry behaviours at an individual level, and contextual factors at an organisational level, studied across two universities in a single city-region environment.

The two, different, sets of university-based entrepreneurial ecosystems condition the nature of entrepreneurship education as enablers of student entrepreneurship. There are student-specific university entry characteristics and contextual differences filtered through their perceived behaviour control that make students select into different universities. These contextual backgrounds shape and are shaped by the student, and their entrepreneurial intentions are informed by and within each university ecosystem. Each university has a unique historically-influenced organisational structure and

Table 10: Percentages finding extracurricular activities useful

	Short/intensive programme on entrepreneurship and enterprise skills	1:1 drop in session on enterprise advice	Ideas and social networking challenge	Bizidea competition	Business incubator	Local enterprise network
Not useful (1)	32	32	30	36	37	43
(2)	12	18	20	15	17	12
Neither / nor (3)	20	21	24	24	21	19
(4)	19	18	16	15	14	12
Very useful (5)	17	11	10	12	11	14
(4) + (5)	36	29	26	27	25	26

Table 11: Percentages finding extra-university activities useful

	Local enterprise activity in private sector	Volunteer enterprise activities	International enterprise activity in private sector	International volunteer enterprise activities	Learning through media	Learning through friends	Buying and selling on Internet (e.g. eBay)
Not useful (1)	12	11	13	16	15	12	22
(2)	13	14	19	17	27	25	23
Neither / nor (3)	33	30	25	30	30	33	28
(4)	22	24	17	16	17	18	15
Very useful (5)	20	20	26	23	11	12	11
% (4) + (5)	42	44	43	39	28	30	26

set of policy contexts that shape and are shaped by different student needs, which in turn influence and are influenced by the university-specific entrepreneurship ecosystem (Greene *et al* 2010).

The findings highlight important interactions between contextual factors and social processes, which influence individual entrepreneurial intentions within the university-based entrepreneurship ecosystems (see Figure 1). Students' backgrounds, including their family experiences, differ significantly between the two HEIs, and these are key dimensions that influence entrepreneurial intentions prior to university (H1, H2 and H3). Analysis of the data reveals asymmetries: one asymmetry is found in terms of gender, while another is found in the nature and types of entrepreneurial support mechanisms across the HEIs. These conditions affect both the likelihood of a student being aspirational towards starting their own business and the related behavioural changes experienced at university.

Our findings reveal subtle differences between the two university cohorts, which lead to the conclusion that male, full time, undergraduate students in the teaching-intensive institution are slightly more likely to want to start a business, whereas students in the research-intensive institution are less likely to want to start a business if their father has secondary and tertiary education (H2). Students in the research-intensive institution whose fathers work in a routine job are more likely to want to start a business than their peers whose fathers are unemployed (H2). These demographic differences most probably existed prior to the student choosing to study at the respective academic institution and may have influenced their academic trajectory and achievement at school.

Three factors of entrepreneurial intentions identified in the theory of planned behaviour model (Azjen 1991) were analysed here. A demographic analysis demonstrated the heterogeneous nature of students across the HEIs, which corroborates the strong influence that social and subjective norms have in shaping the choice of university, programme of study as well as prior perceptions and experiences of entrepreneurial activities. Students' responses demonstrated that experiences of entrepreneurship education affect their attitudes towards entrepreneurial behaviour (H4) and may affect their perceived behavioural control (H5). In particular, students who believe that their university education helped them develop competencies to address challenges of becoming an entrepreneur were 78 per cent more likely to have experienced an improvement in their attitudes toward setting up a business, thereby demonstrating that entrepreneurship education enhances entrepreneurial attitudes and leads to stronger intentions to start up a business (H4).

These attitudes seem to be affected by their broader experiences of the university-based entrepreneurship ecosystems (particularly extra-university activities) and enterprise experiences including volunteering and work experiences (H6 and H7). In the post-2011 financial crisis context, students' attitudes towards entrepreneurship were affected by prior entrepreneurial experiences (H3). Moreover, the changing intellectual, economic, social and

cultural movements for entrepreneurship education and learning will also have been influenced by perceptions about the then-recent recession (H8), arguably leading to the growing interest in social, ethical and responsible entrepreneurship and the growing emphasis on the individual's active entrepreneurial learning rather than merely on supply side HEI initiatives.

As Morris *et al* (2017 p 68) argue, the 'impact of universities is a function of the social engagement of the student with the resource infrastructure (ecosystem)'. This study reveals that heterogeneities across university-specific student bodies, both with regard to their family backgrounds and their prior propensities to start up businesses, significantly influence the organisational effects of university-based entrepreneurship ecosystems on enhancing the propensity to start up businesses, even within a single city-region environment. University entrepreneurship ecosystems can have an important influence on students' entrepreneurial behaviours, which is conditioned by the interplay between individual and organisational levels, as well as between individual and environmental levels.

Greater understanding of the influence of individual backgrounds, experiences, motivations, learning needs and career patterns on entrepreneurial behaviours is imperative in order to design effective entrepreneurial education initiatives (Jack and Anderson 1999; Cooper *et al* 2004; Morris *et al* 2017). Such knowledge should be used to assist university academics and educators, as well as institutional leaders, in designing future entrepreneurship provision to meet growing and diverse students' demands and experiences within and across universities, as well as across the local economies in which they are situated. Our findings demonstrate that extra-university and extra-curricular activities influence the level of and enhance students' entrepreneurial aspirations towards starting a business. An important issue appears to be the need for universities to use outreach/engagement policies and activities to engage students with organisations, including utilising alumni networks and links to local SMEs as part of the local entrepreneurial ecosystem. Through learning-by-doing activities (e.g. internships), students can enhance the scope and effectiveness of their entrepreneurial and enterprise skills, including communication skills, and gain direct knowledge about local industrial environmental and institutional contexts.

A better conceptual framework that embeds the university-based entrepreneurship ecosystem into the local entrepreneurial ecosystem is needed. Universities can increasingly enable entrepreneurial ecosystems by providing entrepreneurial knowledge associated with both teaching and research, and by generating different forms of entrepreneurship activities (Marzocchi *et al* 2019). Different universities can enhance differentially the entrepreneurial ecosystems by interacting local, national and international environments, through activities relevant and fit for their own resources and strategies, as well as by responding to diverse demographic backgrounds and demands of their students and local businesses and communities.

Greater understanding of entrepreneurship and enterprise education experiences, graduates' demographic profiles and graduate destinations can inform education and training development strategies in city-regions and lessons can be transferred to other localities, albeit with the knowledge that such lessons need to be tailored to universities' student bodies. This study shows that the two universities in Bristol attract both young and mature students with a variety of experiences, both from the UK and beyond and, as is the case for many city-regions with important university campuses, a significant number of graduates remain in the city-region after their studies, including those who start up their own businesses. Better understanding of university students' entrepreneurial intentions and the context of the local economy could augment collaborations between local development policy-makers and complement the strengths of different universities.

This study has limitations in the conceptual models and nature of the data collected as the survey gathered students' perceptions (rather than realisations) of the value and benefits of entrepreneurship education and related activities. The links between entrepreneurial intentions and behaviour are complex and a longitudinal analysis is required in order to capture fully the mediation and moderation processes between intentions and behavioural change (Rauch and Hulsink 2015), as well as 'entrepreneurial time-scales' (Kwong and Thompson 2016) of potential entrepreneurs, and how entrepreneurial intentions change over time after the graduation (Carter and Collinson 1999), and with different objectives (Lourenço *et al* 2012).

Second, our analysis is time-bound and highlights important associations rather than pure causal relationships between intentions, entrepreneurship education experiences and behavioural changes. While an assessment of the long term impacts of university entrepreneurship education is beyond the scope of this research, future study needs to be conducted that is based on a longitudinal analysis during the university programme (Galloway and Brown 2002; Matlay and Carey 2007). Further analysis is required to fully understand students' experiences of university-based entrepreneurship ecosystem and identify if their perceptions of the effectiveness of entrepreneurial provisions evolve during their course of study. Graduate start-ups affect the local economy in terms of investment, job creation, innovation, economic dynamism, knowledge creation, consumer spending and growth. These directly affect the development of the local entrepreneurial and innovation ecosystems.

Future studies may build on the conceptual and methodological approaches taken here and use student-level data at different HEIs in multiple city-regions, controlling for the time-specific economic environment. The impacts that entrepreneurship education and other initiatives have on student start-ups and student entrepreneurship in general need to be integrated into broader entrepreneurial and innovation ecosystems. This would require joining up organisational thinking, organisational learning, innovation and local economic development strategies (Lindh and Thorgren 2016). There is also the need for

consistent data, collective knowledge and shared experiences of entrepreneurship education and related activities that can guide university educators, managers and leaders, as well as local and national policy makers.

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APPENDIX: ORGANISATIONAL PROFILES AND CHARACTERISTICS OF THE UNIVERSITY-BASED ENTREPRENEURSHIP ECOSYSTEMS OF UOB AND UWE

Table I: Students number by degree levels full time equivalent (2008/9)

HEIs	Postgraduate research	Postgraduate taught	First degree	Other first degree	Total
UoB	1,811 (10.7%)	2,086 (12.3%)	12,307 (72.8%)	701 (4.1%)	16,905
UWE	376 (1.6%)	3,008 (12.5%)	17,468 (72.7%)	3,170 (13.2%)	24,022

Source: HESA (2008/9)

Table II: Key financial indicators: income sources at the two HEIs (2008/9)

Financial indicators	UoB	UWE
Total income (£000s)	373,391	207,029
Percentage ratio of total funding body grants to total income	36.74%	35.71%
Percentage ratio of recurrent teaching grants from funding bodies for HE provision to total income	17.65%	32.86%
Percentage ratio of tuition fees and education contracts to total income	18.78%	30.95%
Percentage ratio of recurrent research grants from funding bodies for HE provision to total income	11.94%	1.33%

Source: HESA (2008/9)

Table III: Active and surviving firms (Source: HEBCI, 2008/9–2009/10)

Number of active firms

	Spin-offs with some HEI ownership		Formal spin-offs, not HEI owned		Staff start ups		Graduate start ups	
	2009/10	2008/09	2009/10	2008/09	2009/10	2008/09	2009/10	2008/09
UoB	20	21	7	6	2	1	2	3
UWE	1	1	1	1	14	11	41	30

Number still active which have survived at least 3 years

	Spin-offs with some HEI ownership		Formal spin-offs, not HEI owned		Staff start ups		Graduate start ups	
	2009/10	2008/09	2009/10	2008/09	2009/10	2008/09	2009/10	2008/09
UoB	17	16	7	6	1	1	2	3
UWE	1	1	1	1	9	5	15	13

Table IV: Employment and turnover of active firms (Source: HEBCI, 2008/9–2009/10)

Estimated current employment of all active firms (FTE)

	Spin-offs with some HEI ownership		Formal spin-offs, not HEI owned		Staff start ups		Graduate start ups	
	2009/10	2008/09	2009/10	2008/09	2009/10	2008/09	2009/10	2008/09
UoB	120	92	49	72	28	28	10	12
UWE	0	0	2	2	30	28	174	162

Estimated current turnover of all active firms (£000s)

	Spin-offs with some HEI ownership		Formal spin-offs, not HEI owned		Staff start ups		Graduate start ups	
	2009/10	2008/09	2009/10	2008/09	2009/10	2008/09	2009/10	2008/09
UoB	6,400	3,539	532	450	300	300	830	508
UWE	0	0	100	100	2,692	2,395	44,217	12,555

Table V: Estimated external investment received (£ thousands) (Source: HEBCI, 2008/9–2009/10)

	Spin-offs with some HEI ownership		Formal spin-offs, not HEI owned		Staff start ups		Graduate start ups	
	2009/10	2008/09	2009/10	2008/09	2009/10	2008/09	2009/10	2008/09
UoB	7,800	8,790	8,000	3,000	0	0	0	0
UWE	0	0	0	0	0	0	25	5,045

Endnotes

1. Corresponding author, Fumi Kitagawa: University of Edinburgh (Email: Fumi.Kitagawa@ed.ac.uk); Don J Webber: Swansea University; Anthony Plumridge: University of the West of England, Bristol.

2. However, these beliefs and norms may in turn influence a student's choice of university and hence the university-specific entrepreneurial education that they will experience. The interplay between choice of university and their beliefs and norms is not examined in this paper, but it could be an important area of research in terms of connecting individual and organisational factors.

3. The choice of online questionnaires is not without biases and limitations. It was developed initially at UoB and piloted with a small number of participants for validation. An identical set of questions was selected for use across the two universities, although UWE added a few questions for its own data collection purpose.

4. It appears that there is little difference between the responders and non-responders of our survey but a Faculty breakdown across the HEIs is problematic as they have different Faculty structures.

5. We thank an anonymous referee for pointing out this idea.

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