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Measuring the impact of enterprise education and entrepreneurship support in Higher Education: Can routinely collected data be of use?

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Abstract

The link between entrepreneurship education within Higher Education and business start-up is often assumed by policymakers and others charged with driving economic growth, however there is little supporting literature with few studies looking at impact measures relating to actual venture creation. This paper describes two routinely collected data sets in the United Kingdom (UK) that directly relate to graduate self-employment and business start-up over a five-year period: the Higher Education - Business and Community Interaction survey (HE-BCI), and the survey of Destinations of Leavers of Higher Education (DLHE). It explores whether the data can be used to assess impact. There is some evidence that HE-BCI may be affected by changes in data collection requirements, but it remains the most complete, extensive, and useful longitudinal data set on graduate business start-up. DLHE would appear to be the best source of data for measuring the impact of both enterprise education and start-up support initiatives at an institutional level.

Keywords: Enterprise Education; Entrepreneurship Education; Business Start-Up; Higher Education; Impact; Measurement

Introduction

For several decades, policymakers have highlighted university-provided enterprise education and graduate entrepreneurship as potential drivers to economic growth. In the UK, the National Committee of Inquiry into Higher Education (Dearing, 1997) recommended that universities consider the scope for encouraging entrepreneurship through innovative approaches to programme design. By 2000, business and entrepreneurial development had been listed as one of four strategic goals for British universities by Universities UK (Universities UK, 2000), with the UK Government introducing a significant third funding stream to higher education institutions with the aim of stimulating universities to reach out to business and the community called the Higher Education Innovation Fund (HEIF). The broad aim of this initiative was to add value to society and the economy through the transfer of knowledge and presented an opportunity for Higher Education Institutions (HEIs) to contribute to the development of entrepreneurial and enterprising staff, students, and graduates (Davis et al., 2002). University graduate entrepreneurship in the UK and Europe has since been seen as a vital source of competitiveness and a possible stimulus for economic growth and development of a future knowledge-based economy and is frequently featured in reviews such as BIS (2010), BERR (2008), and European Commission (2012, 2008 and 2006).

Perhaps surprisingly, despite the importance of the issue from a policy-maker point of view, little research is available concerning the assessment and measurement of enterprise education programmes and courses. (Fayolle, 2013; BIS, 2013).

The evaluation of entrepreneurship education programmes corresponds to both economic and academic challenges and stakeholders need to validate and assess the nature and the intensity of the social and economic impact (Fayolle et al., 2006). However, Fayolle et al. (2006) argue that venture creation cannot possibly be measured during or immediately after an enterprise education programme, since the venture creation process usually takes time. They note, citing Hytti and Kuopusjärvi, (2004), that the more delayed the measurement, the harder it is to isolate the role played by a single factor regarding its impact on a specific outcome such as venture creation. Fayolle (2013) argues that the goal of entrepreneurship education is not necessarily for all participants to create a business in the short-term, and thus the simplest and most obvious indicators are not generally the most appropriate. This may be correct in many instances, however, HEIs do provide support for actual business start-up and more complex measures may therefore be needed.

A systematic literature review conducted by Martin et al. (2013) concluded that entrepreneurship education and training is positively associated with entrepreneurship-related human capital assets such as knowledge, skills, positive perceptions of entrepreneurship and intentions to become an entrepreneur. It is also associated with entrepreneurship outcomes (new venture creation and entrepreneurial performance). However, lack of methodological rigour in some studies can lead to contradictory results. A report for the UK Government's Department for Business, Innovation, and Skills (BIS) (BIS, 2013) reviewed 77 documents related to the impact of enterprise education in the UK, Europe, the United States, and countries such as Tanzania and Hong Kong. According to BIS (2013), there is evidence of positive benefits that should be expected to lead to some students starting new businesses, however, these benefits cannot be conclusively attributed to

enterprise and entrepreneurship education. This is again due to questions of methodological rigour and particularly a lack of control groups in the studies conducted.

It has been suggested by some commentators that the best way to evaluate training courses is to relate programme outcomes directly to objectives; for new business creation courses, such objectives should be primarily economic and include measures such as businesses started or saved, revenue generation and growth, job creation and retention, financing obtained and profitability (Storey, 2000; McMullan et al., 2001; c.f. Henry et al., 2004). Policy makers need to carefully consider and articulate the aims and objectives for training initiatives directed at new business creation, and training providers need to design programmes aimed at delivering these (Henry et al., 2004). Henry et al. (2004) also recommend that trainers employ appropriate approaches and measures to undertake effective evaluation.

Pittaway and Cope (2007) suggest that studies into graduate entrepreneurship should be multi-institutional and have more sophisticated models measuring factors specific to the graduate context. They recommend work that examines 'careers', drawing from career development literature and examining and longitudinal graduate careers in more detail. Pittaway and Cope (2007) further argue that while significant work has been carried out on institutional policies and strategies towards entrepreneurship education not enough studies have focused on the role of regional, national or supra-national education policy, nor on the link between wider national policies and institutional strategies. Most importantly here, they state that further study could be carried out on the key outputs of graduate employability and graduate entrepreneurship to further investigate the data in these areas before the development of more detailed empirical studies. This is the intention of the work presented in this working paper.

Mapping the provision of enterprise and entrepreneurship education in HE

The 2013 BIS impact report on enterprise and entrepreneurship education ^{Error! Bookmark not defined.} found that 91 Higher Education Institutions (HEIs) offered formal courses that led to a qualification or that were a constituent part of a qualification. Full qualifications in enterprise or entrepreneurship were offered by 34 HEIs, 80 offered credit-bearing modules; and 47 had embedded provision in their learning offer. Non-formal provision (including student enterprise clubs and societies) was provided by 80 HEIs. Only 12 HEIs reported that they did not provide any form of enterprise learning opportunity (BIS, 2013). No information was provided on the scale and scope of HEI-provided business start-up support for student and graduates.

The National Centre for Entrepreneurship in Education (NCEE) bi-annual mapping survey for 2012 reported data from 89 HEIs in England (Hannon and Shore, 2013). The scope of student and graduate entrepreneurship support was extensive with 99% of responding HEIs reporting activity through or additional to the curriculum. With respect to formal learning, 85% of respondents offered credit-bearing awards and modules in enterprise and entrepreneurship leading to academic qualifications, 50% of which were reported as provided by the HEI's Business School (Hannon and Shore, 2013). As the survey required a single named gatekeeper for data entry that historically had been identified from known Business School contacts, it is not unexpected that Business School provision is predominant in the results. Further activity may also be present from other areas of HEIs that the gatekeepers were not aware of but the survey still shows a good spread of curricular-based provision across the UK. Unfortunately, the 2012 survey was the last to be conducted and there are no known plans for future repeats.

The 2012 NCEE survey stated that 96% of responding HEIs provided extra-curricular support for enterprise and entrepreneurship – a substantially different figure to the 61% reported by BIS (2013) although the difference may be explained by BIS's exclusion of specific actual business start-up activity. Dedicated support for students and graduates in new venture creation was provided by 92% of 85 HEIs responding to a specific question in the NCEE survey (Hannon and Shore, 2012). These figures show that HEIs provide a good range of support for student entrepreneurship. However, the underlying engagement rate – the number of students actually engaged in curriculum-based enterprise education or extra-curricular entrepreneurship support- was 18%. This suggests that a large pool of potential entrepreneurs is still to be reached.

BIS (2013) concluded that participating students acquire relevant business related knowledge, skills and competences, and are more likely to change their attitudes (such as risk taking) and intentions (such as around being self-employed or being entrepreneurial). Although the BIS report suggested that evidence around the impact of enterprise and entrepreneurship education on actual business start-up is currently inconclusive, it adds support to the proposal that university-based enterprise education and start-up support programmes are required to overcome negative attitudes towards an entrepreneurial career and loss of potential entrepreneurs to the job market. It again must be noted that the BIS report did not appear to explore the work of HEI-based business start-up units where actual business start-up outcomes would most likely be seen.

Purpose of the paper

This paper will look at two nationally collected sets of data – Higher Education - Business and Community Interaction survey (HE-BCI) and Destinations of Leavers from Higher Education (DLHE). It will explore aspects of the two surveys that directly relate to graduate self-employment and business start-up to explore if they can be used to assess the impact of university-based enterprise and entrepreneurship education initiatives and provision of student and graduate business start-up support. Data collection methods will be described and an initial analysis of each data set will be described at national (HE-BCI) and individual institution (DLHE) levels.

Higher education-business and community interaction survey – HE-BCI

HE-BCI is an annual survey that collects information on a range of university-led knowledge exchange activities, from the commercialisation of new knowledge, through the delivery of professional training, consultancy and services, to activities intended to have direct social benefits (HEFCE, 2015). All publically-funded HEIs are required by the Higher Education Funding Council for England (HEFCE) to return data. Returns are used as part of the Finance Statistics Return (FSR) - the main source of financial information on the total activities of all UK HEIs (HEFCE, 2015). Certain elements of the HE-BCI return are used to determine funding to HEIs through HEIF in order to support knowledge exchange activities that result in economic and social impact (HEFCE, 2011). Note that that HE-BCI data related to student and graduate entrepreneurship is requested but is not required and does not contribute to the HEIF funding formula.

HE-BCI collects information on graduate start-ups (also called graduate spin-outs) which are defined by HE-BCI as all new business started by recent graduates (within two years) regardless of where any IP resides (HESA, 2013a). Undergraduate start-ups can also be included, but only where there has been formal business/enterprise support from the HEI. Start-ups can have any enterprise structure (e.g. not for profit, partnership or sole trader) and use any business model but there must be some form of registration (e.g. with HMRC) before they can be included in the survey. The requirement for some form of registration was included for 2011/2012.

Data is collected by individual institutions under the six headings listed below.

1. Number created
The number of new companies created within the reporting period.
2. Number still active which have survived at least 3 years
The number of companies that have been active for three years or more.
3. Number of active firms
The total number of companies that are active, including those entered under 1 and 2 above, plus those companies which have been active for between one and three years.
4. Estimated current employment of all active firms (FTE)
5. Estimated current turnover of all active firms
6. Estimated external investment received
The figure returned here should include all investment received from external partners during the reporting period but exclude any investment from HEFCE/BIS third stream funds (such as University Challenge and the Higher Education Innovation Fund).

Data is collected annually for activity from between August and July and returned to the Higher Education Statistics Agency (HESA) in December each year. The results section below explores the national HE-BCI data sets for the most recent five years available at the time of analysis (2008 to 2013). The data sets include the returns for all HEIs on the six items listed above. Analyses were conducted to explore trends in graduate start-up statistics collected through HE-BCI. The potential of HE-BCI to provide information on the impact of university-provided graduate start-up support is discussed.

Results and Discussion of 2008-2013 HE-BCI Graduate Start-Up Data

Table 1 gives the totals returned under the six graduate start-up headings for each year from 2008 to 2013. Five of the six measures show an increase from 2008-2009 to 2012-2013. The sixth measure – estimated external investment – shows large fluctuations. Although the number of graduate start-ups created increases over the five years reported here, there was a reduction between 2010-2011 and 2011-2012 (Table 1). This decrease was noted by HEFCE in their report on the 2011-2012 data (HEFCE 2013; paragraph 70) but there

was no discussion or suggestions made for the reasons behind the fall in start-up numbers. We will return to this anomaly below.

HEFCE (2013 and 2014) notes that graduate start-ups are difficult for HEIs to track effectively because the data are only available when volunteered by beneficiaries. HEFCE reports on the HE-BCI returns do not provide information on the number of institutions providing data and do not provide average metrics; only totals are given. Finer-grained data at the institutional level is available however, and has been analysed here. Table 2 shows the number of UK HEIs that return data for each of the graduate start-up measures, and Table 3 the number of years each HEI made a return on each measure for the five years reviewed.

Table 1: HE-BCI Graduate start-up measures

Year	Number created	Number still active which have survived at least three years	Number of active firms	Estimated current employment of all active firms (FTE)	Estimated current turnover of all active firms (£000s)	Estimated external investment received (£000s)
2008-2009	2048	1657	4008	7952	136,205	50,692
2009-2010	2357	1948	5064	9704	225,175	8,437
2010-2011	2848	2602	6413	11914	272,655	88,782
2011-2012	2726	2824	7036	13617	345,997	31,627
2012-2013	3502	3270	8127	15588	376,407	28,544

Assuming that a return reflects ability to collect the required information, Table 2 shows that increasing numbers of institutions have been able to put systems in place year on year for four out of the six measures. One exception is the number of graduate-start-ups created which shows a drop between 2010-2011 and 2011-2012 in parallel with the totals shown in Table 1. The sixth measure – external investment received – is relatively stable from 2010 onwards, but the number of institutions making a return is low compared with the other measures.

It is worth noting that 61% of institutions are currently able to provide data on the number of graduate start-ups created and the total number of active firms, but only 54% returned data on 3-year survival rate (Table 2). Closer inspection of the data shows this is because those unable to provide a figure for 3-year survival return the same figure for number created and total number of active businesses. The total number of active businesses may therefore be an underestimate and again underlines the issues institutions may have with on-going tracking of the graduate start-ups they helped seed.

Table 2: Number of HEIs returning data for each measure

Year	Number created	Number still active which have survived at least three years	Number of active firms	Estimated current employment of all active firms	Estimated current turnover of all active firms	Estimated external investment received	Total number of Universities in survey population
2008-2009	74 45%	65 40%	78 48%	74 45%	64 39%	32 20%	163
2009-2010	87 53%	75 46%	87 53%	81 49%	69 42%	37 23%	164
2010-2011	97 60%	78 48%	93 57%	82 50%	75 46%	43 26%	163
2011-2012	94 58%	83 51%	95 58%	85 52%	76 47%	41 25%	163
2012-2013	98 61%	87 54%	98 61%	86 53%	80 50%	42 26%	161

Percentages are provided for the number of returning institutions by the total population in a given year

Table 3 suggests that HEIs are best able to provide a return on the number of businesses created with around one third of all institutions (N=54) unable or choosing not to make a return in the 5-year review period, and a similar proportion (N=59) making a return in all five years. Institutions are least likely to return a figure for estimated external investment with only 16 HEIs providing a complete set of returns and 100 institutions not returning a figure in any year.

Table 3: Number of years that HEIs returned data

Number of years that a return was made by an HEI	Number created	Number still active which have survived at least three years	Number of active firms	Estimated current employment of all active firms (FTE)	Estimated current turnover of all active firms	Estimated external investment received
0	54	73	62	70	75	100
1	13	12	11	12	14	23
2	9	6	5	6	8	8
3	16	9	9	8	10	16
4	19	13	12	10	11	7
5	59	57	71	64	52	16

Using the figures presented in Table 1 and Table 2, we can calculate means for each graduate start-up figure per data-returning institution. The means provided in Table 4 confirm annual increases for the number still active that have survived three years, the total number of active firms, estimated current employment, and estimated turnover. The data for estimated external investment remains fluctuating. The mean number of graduate start-ups created remains relatively constant until 2012-2013 when it increased by 7 businesses (19%) from the previous year.

Table 4: Mean values for graduate start-up measures by year.

Year	Number created	Number still active which have survived at least three years	Number of active firms	Estimated current employment of all active firms (FTE)	Estimated current turnover of all active firms (£000s)	Estimated external investment received (£00s)
2008-2009	28	25	51	107	2,128	1,584
2009-2010	27	26	58	120	3,263	228
2010-2011	29	33	69	145	3,635	2,065
2011-2012	29	34	74	160	4,553	771
2012-2013	36	38	83	181	4,705	680

Although the 2011-2012 figure presented in Table 4 does not replicate the drop from 2010-11 suggested in Table 1, it could be argued that 'no change' is still lower than might be expected from the increases in four of the other measures recorded (excluding the reactive external investment).

Table 5: Comparisons of pairs of consecutive years for number of graduate start-ups created.

	2008-2009 and 2009-2010	2009-2010 and 2010-2011	2010-2011 and 2011-2012	2011-2012 and 2012-2013
HEIs returning data both comparator years	69	82	87	85
Returning HEIs showing an increase	41	43	40	47
Returning HEIs showing no change	3	6	13	8
Returning HEIs showing a decrease	25	33	34	30
Additional start-ups returned by HEIs reporting an increase	535	721	374	978
Reduction in start-ups returned by HEIs reporting a decrease	-363	-341	-488	-250
Net change in number of graduate start-ups	172	380	-114	728

Table 5 investigates the data further, comparing the differences in numbers of graduate start-ups reported by institutions in consecutive years. The column showing the differences between 2010-2011 and 2011-2012 is highlighted. Only institutions making returns for both comparator years are included for each pairing. It can be seen that fewer institutions than might be expected showed an increase in 2011-2012, with more showing no

difference or a decrease than shown in other pairings. Of the four comparator year-pairings explored, only 2010-2011/2011-2012 showed a net drop in the number of graduate start-ups. Exploration of the underlying data showed that 3 of the 97 institutions who made a return in 2010-2011 made no return in subsequent years; 6 continued into 2011-2012 but stopped in 2012-2013, and a further 6 did not return in 2011-2012 but came back in 2012-2013.

The data reported above reveals an interesting pattern where institutions report increased outputs for graduate start-up activity and related survival, employability, and turnover statistics. However, for one measure - the number of graduate start-ups created - the increase is interrupted, from 2,848 in 2010-11 to 2,726 in 2011-2012. A bounce-back was experienced the following year, however with an increase of 28 per cent to 3,502 in 2012-13.

Related-samples Wilcoxon Signed Ranks tests looking at within-institution differences showed a significant difference (increase) in the number of graduate start-ups between 2009-2010 and 2010-2011 ($p < 0.05$) and between 2011-2012 and 2012-2013 ($p > 0.01$). There was no significant difference (decrease) between institutions returning data in both 2010-2011 and 2011-2012. The latter result is consistent with the observations made above that the average number of start-ups created per institution remained the same in 2010-2011 and 2011-2012 (Table 4).

As described above, the decrease in the total number of graduate start-ups created in 2011-2012 was noted by HEFCE (2013) but no suggestions for the reasons behind the reduction were made. Of particular note, there was no mention of the change in guidance in recording start-up numbers for 2011-2012. This change in guidance is important as institutions were required to ensure that the businesses counted had some form of registration (e.g. with HMRC) for the first time. The requirement to ensure registration adds an additional administrative burden on institutions and additional resources that had not been needed in previous reporting years. This may be reflected in the interruption of, or decrease in, two trends that had been showing an increase up to this point: the number of institutions making a return (Table 2) and mean return per institution (Table 4). 2011-2012 was also the first year in the current Higher Education Innovation Fund round (HEIF 5). Some institutions had their HEIF allocation reduced in Round 5, which may have additionally impacted either on their ability to deliver start-up support activity, or to collect data to the level of rigour required by the 2011-2012 change in reporting requirements.

What Can We Tell From Using HE-BCI Data?

HE-BCI collects information on actual graduate business start-up outcomes from a large number of UK HEIs; over half of the 161 universities surveyed in 2012-2013 returned data for five out of the 6 HE-BCI graduate start-up measures. The number of universities reporting graduate start-ups that they activity supported has increased from 74 in 2008-2009 to 98 in 2012-2013. There are increasing trends in all graduate start-up measures except estimated turnover; the turnover measure has the lowest number of HEIs returning data and is the most variable over the years reported here.

Only 54 out of 170 institutions did not provide any graduate start-up statistics over the last five years of HE-BCI data collection. It is not known if a zero return reflects a lack of start-up activity, a lack of engagement, or lack of ability in returning data. At least some of the institutions providing a zero return for graduate start-ups are known to provide graduate start-up support and thus the total graduate start-up support metrics published through HE-BCI are likely to be an under-estimate of the national picture. HE-BCI metrics also exclude graduate start-ups founded by graduates more than two years after graduations, and yet, several institutions provide support beyond this, often up to three or five years after graduation. This again suggests an underestimate of actual activity. External investment appears particularly difficult to measure with few Universities able to provide a sustained return and large fluctuations in reported figures. It should be noted here that, unlike other non-graduate-related HE-BCI measures, graduate start-up data is not included in the HEIF funding formula. There is thus no financial incentive for institutions to make a return, or to invest in setting up and maintaining robust data collection procedures.

As suggested above, 2011-2012 showed a decrease in returns for the number of businesses created which is likely to have been at least partially caused by a change in reporting requirements. A further major change is planned for 2013-2014 with potential for further disruption:

Recent years have also seen a greater interest, especially among graduates, in social enterprises (organisations that apply commercial strategies to maximize improvements in human and environmental well-being, rather than maximising profits for external shareholders). From next year (2013-14) HE-BCI will collect specific data on social enterprises, although it is likely that many have been counted previously (thus we may see an apparent drop in the

number of start-ups from both students and staff when the new category is introduced as such companies should not be double-counted).

HEFCE (2014)

There is a marked lack of explicit guidance on what constitutes a 'social enterprise'. Institutions are being asked to use their own discretion making direct comparisons difficult. Without clear and easy-to-use guidance, institutions may choose not to split out types of enterprise and continue to make a single entry for all types of start-up. There is also a risk that the additional administrative burden placed on an institution may result in a non-return.

Despite the issues discussed above, particularly a potential sensitivity to changes in reporting requirements, HE-BCI provides the most complete, extensive, and useful longitudinal data set on graduate business start-up available with reports available from 1999-2000 (HEFCE, 2015). The data cannot relate outcomes to specific interventions, but can be used to identify institutions with good returns that can be approached separately for detailed exploration. Further research is needed to look at the top institutions in more detail to explore best practice in provision of graduate start-up support activity, and how HE-BCI-related data is best collected and used as a direct measure of impact. Future research should also look to if and how businesses created by different institutions lead to different turnover and investment outcomes.

Destinations of Leavers from Higher Education - DLHE

First collected in 1994/95 as the First Destinations Supplement, the HESA Destinations of Leavers from Higher Education (DLHE) record has been collected annually from UK HEIs with a name change in 2002/2003. DLHE records are collected from successful leavers of the reporting institution 6 months after their completion of study; the data returned is therefore based on direct self-report from recent graduates. The data collection process is defined by HESA but managed locally by HEIs. It collects data on the personal characteristics of leavers, the details of their current employment and the courses they completed. Data collection opens at the beginning of March and institutions are required to return a full and verified set of data to HESA in May (HESA, 2014a).

BIS (2013) states that destination of leavers' surveys – including the DLHE - do not currently differentiate between types of full-time employment such as working for a company, working for an SME, self-employment, or starting a business. This is correct in terms of the statistical tables made available, however, data on self-employment are collected as described below and some information is available through HESA press releases and other public sources. For example, in 2010-2011, 5% of respondents reported that they were self-employed or freelance, primarily in associate professional and technical occupations (HESA 2012). In 2011-2012, 3.1% of respondents (7165 of 232,100) reported that they were self-employed or freelance, and 0.5% (1120 respondents) reported they were starting up their own business (HESA, 2013b). 2011-2012 was the first year that respondents were given two separate options for self-employment or preparing for start-up.

The 2012-13 DLHE surveyed 353,515 full-time qualifiers from a target population of 444,065 UK and EU domiciled leavers (response rate of 80%) and 93,390 part-time qualifiers from a target population of 126,265 (response rate of 74%) (HESA, 2014b).

Three questions were particularly pertinent to exploring graduate employment and business start-up in 2012-2013 and 2013-2014 (HESA, 2013c) These were:

1. Question 1 - All activities

The first question on the survey asked respondents to tick all the activities they were doing on the census date and then to indicate which of the ticked items was most important to them. The options provided were:

- Working full-time (including self-employed/freelance, voluntary or other unpaid work, developing a professional portfolio/creative practice or on an internship/placement);
- Working part-time (with inclusions as for working full-time);
- Due to start a job in the next month;
- Engaged in full-time further study, training or research
- Engaged in part-time further study, training or research
- Taking time out in order to travel
- Unemployed
- Doing something else (e.g. retired, looking after home or family)

2. Question 5 - Employment basis

This question asks respondents to note which of the options provided best describes the basis on

which they were employed on the census date. The options provided for 2012/2013 are given below with respondents being able to select one option only. Note that 'Starting up own business' was first added in 2011/2012.

- Self-employed/freelance
- Starting up own business
- On a permanent or open-ended contract
- On a fixed-term contract lasting 12 months or longer
- On a fixed-term contract lasting less than 12 months
- Voluntary work
- On an internship/placement
- Developing a professional portfolio/creative practice
- Temping (including supply teaching)
- Other

3. Question 30: Higher Education experience for business

This question asks how well did the respondent's recent course and any extra-curricular activities they were involved in (including placements undertaken while you were studying) prepare them for being self-employed/freelance or for starting up your own business? Options are 'Very well', 'Well', 'Not Well', 'Not very well', or 'Can't tell'.

Question 1 results are those most commonly reported and self-employment cannot be extracted out. BIS (2013) were most likely referring to Question 1 statistics in their statement that self-employment cannot be separated out from other forms of full-time employment activity. Question 5, however, does explicitly allow respondents to state that they are currently self-employed or (for the first time in 2011-2012) in the process of starting up a business.

Question 30 was added in 2011/2012 in order to "understand how well the leaver feels that their overall HE experience provided them with the skills, competencies and knowledge for enterprise-related activities and establish a baseline from which BIS can measure changes as the enterprise education policy landscape develops".

Summary statistical tables are provided by HESA via their website, but do not contain breakdowns of responses for Question 5 and Question 30. Institutions have access to their own data, but not to the full statistical data set unless purchased from HESA who provide a bespoke service for the creation of data tables.

The following section will analyse institutional-level data for the University of Huddersfield in order to inform if and how DLHE data can be used to explore the impact of enterprise education and university-provided business start-up support. The University's data is available to all members of its staff via a system called Graduate Employment-Market Statistics (GEMS). GEMS was developed by the University of Huddersfield and is available under licence to other universities specifically in order to support the exploration of institutional DLHE data. Although it is possible to separate out different types of graduates, the full institutional dataset was used to produce the tables reported below. The data used here thus includes responses from all graduates from undergraduate and postgraduate programmes, full-time or part-time, and designated UK, EU, or overseas.

Results and Discussion of 2008-2013 DLHE data for the University of Huddersfield

Table 7 provides the total number and percentages of those reporting that self-employment or business start-up best described the basis on which they were employed six months after graduation from the University of Huddersfield. The percentage of those reporting themselves as self-employed increased until 2011-2012 when the business start-up option was included. The sustained increase in percentage for self-employment and start-up combined suggests that the latter was seen as a better description rather than reflecting an actual drop in self-employment activity. The Huddersfield data is comparable or higher than the national figures for 2010-2011 and 2011-2012 given above.

The DLHE data shows that the vast majority of self-employed graduates remain in the North of England 6 months after graduation. 66% are based in Yorkshire and the Humber with the majority of these in West Yorkshire in which Huddersfield is located (49% of all self-employed individuals). 14% set up in Greater Manchester and are included in the 20% based in the North West as a whole. Only 3% are based in Greater London. A proportion of these businesses are likely to have been supported by the Yorkshire and Humber ERDF-funded Graduate Entrepreneurship Project that was specifically designed to help graduates start-up and remain in the region.

Table 7: University of Huddersfield self-employment and business start-up returns for DHLE Question 5

Year	Self-Employment		Business Start-Up		Combined		Number of Respondents
	N	%	N	%	N	%	
2008-2009	70	2.8	-	-	70	2.8	2537
2009-2010	129	4.6	-	-	129	4.6	2812
2010-2011	165	5.1	-	-	165	5.1	3204
2011-2012	161	4.8	24	0.7	185	5.5	3372
2012-2013	179	5.4	35	1.1	214	6.5	3285

In 2011-2012, the status of self-employment was changed to a positive outcome, which means that it can be compared against other positive outcomes such as 'contracted to an employer'. Salary statistics can be separated out using GEMS for those reporting they have a full-time self-employed contract. The mean salary for those 'elected to state salary' providing information was £23,000 in 2011-2012 and £23,900 in 2012-13. These numbers are comparable or higher with the whole survey population that reported mean salaries of £23,300 and £21,800 respectively. Although a large number of self-employed individuals were not drawing a salary six months after graduation, 4 reported that they provided themselves with a salary of over £50,000 in each of the two years for which this data has been recorded.

Table 8 gives the breakdown of responses to the question of how well the University prepared graduates for self-employment. In the absence of national benchmark statistics, it is difficult to gauge how the pattern shown for Huddersfield compares with other UK HEIs. However, 38.5% of all 3360 respondents regardless of career intention in 2011-2012, and 40.4% of 3660 in 2012-2013 saying that the University prepared them 'very well' or 'well' feels a positive outcome at this stage.

Table 8: Number and percentage of responses to Question 30 referring to how well the University prepared graduates for self-employment

Question 30 Response	2011-2012		2012-2013	
	N	%	N	%
Very well	545	16.20	666	18.20
Well	749	22.30	812	22.20
Not very well	451	13.40	463	12.70
Not at all	511	15.20	495	13.50
Can't tell	1104	32.90	1224	33.40
Total respondents	3360		3660	

What Can We Tell From Using DLHE Data?

At an institutional level, DLHE provides an extremely rich set of information on graduate destinations that can be explored in terms of self-employment and preparation for business start-up six months after graduation. Some examples of the types of analysis that can be carried out at an institutional level are provided above, however, finer grained analyses at the academic school and course level can also be conducted which could be used to look at specific curriculum or co-curricular initiatives. Although not reported here, analysis at the academic school level for the University of Huddersfield has been carried out and will be used to assess impact linked to specific courses. The results will also be used to plan focused enterprise and entrepreneurship education initiatives, for example, where preparation for self-employment is currently considered low, or where unexpectedly large numbers of graduates go into self-employment.

The annual DLHE survey looks at destination outcomes 6 months after graduation, but a regular longitudinal DLHE survey is also carried out, revisiting a sample of DLHE respondents 3 years 6 months after graduation. Graduates from 2008-2009 were re-surveyed and a report prepared in 2013 (HESA, 2013d), however, the summary statistics provided do not include a break down by contract type. It is hoped that this will be included in future longitudinal DLHE survey analyses.

Interestingly, in 2012-2013 the University of Huddersfield returned a figure to HE-BCI of 21 newly created start-ups founded by students or graduates up to two years from graduation. These businesses were known to the Enterprise Team business start-up unit and confirmed as being formally registered with HMRC or companies house. Meanwhile, for the 2012-2013 DHLE collection, 179 of our graduates reported they were self-employed and 35 that they were preparing to start a business 6 months after graduation. This anomaly is currently being explored but adds further evidence to the suggestion made above that HE-BCI reported

graduate start-up statistics is an underestimate of the true levels of actual student and graduate business start-up activity.

Conclusions

This paper set out to explore whether routinely collected business start-up and self-employment data could be used to measure the impact of enterprise education and university-led business start-up support. The answer in the main would be ye, however, different data sets have different strengths and weaknesses and in-depth knowledge of each is necessary in order to understand meaning. The overall picture is complex and there is a risk that the data as a whole will confuse rather than inform.

DHLE would appear to be the best source of data for measuring the impact of both enterprise education and start-up support initiatives at an institutional level, although its ability to provide national benchmarking is still unclear. DHLE data is self-reported and it is not known if those reportedly self-employed are registered in any formal way. It relies on graduates being able to interpret definitions of and distinction between self-employment and exploring business start-up. It also only captures destinations after 6 months of graduation and survival rates are unknown.

HE-BCI can be used to explore national trends in graduate business start-up patterns and the potential impact of policy drives and changes, such as the reduction and removal for HEIF funding for some institutions in 2011-2011. It also provides an opportunity to benchmark against national institutions over an extended time period however; it is subject to changes in data collection protocols that require additional resources that may not be easily available. The changes are implemented to inform national agendas, but each change will make longitudinal comparisons difficult. Without explicit definitions and instructions, there is a risk that institutions will interpret graduate start-up or social enterprise in different ways and that some may be more rigorous than others in checking for registration. There are also likely to be differences in institutional ability to collect data beyond the start-up support unit.

What is clear from this work is that UK universities play an important role in promoting self-employment and business start-up as an appropriate graduate career route, and in providing business start-up support tailored to the student and graduate experience. Evidence of the type impact called for by Storey (2000) for example is available however further research and more in depth analysis is required to fully understand the potential of each data source and to inform the design of better systems.

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