

Under-employment of Scottish Graduates? (*)

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Abstract:

This paper examines empirically the extent of under-employment amongst Scottish higher education institutions (HEI) graduates. More specifically, micro-data data collected by the *Higher Education Statistical Agency* is used to calculate the rates of employment in so-called “non-graduate” jobs. Both undergraduate and postgraduate graduates are considered. Overall, the analysis suggests that under-employment is a serious problem, especially amongst undergraduate graduates. Around one-third of undergraduate graduates from Scottish HEIs, who are employed six months after graduation, are working in jobs that do not require the skills they obtained through their study. However, the rate of employment in non-graduate jobs appears to decline with age and experience. Evidence from one cohort of Scottish graduates suggests that despite this trend, around 20% of undergraduate graduates are still employed in non-graduate jobs 3½ years after graduation. It is important to stress, however, that the under-employment of Scottish HEI graduates is similar to that of UK HEI graduates more generally. In this sense, under-employment is not a “Scotland-specific problem”.

JEL Classification: I23, J24, J61, R23

Keywords: Scotland, under-employment, over-education, HEI graduates

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1. Introduction

Over the last 25 years, there has been a large increase in the number of young Scots participating in higher education (HE). This rising trend is illustrated in Figure 1, which shows the “age participation index (API)” for the academic years 1983/84 to 2008/09. This measure is an estimate of the percentage of 17 year olds who will participate in HE for the first time before their 21st birthday. In the academic year 1983/1984, the API was 18.9%. By 2001/02, it had surpassed 50%—the much championed target set by the Labour Government elected in 1997. However, since this peak, the API has declined. Although it increased in 2008/09 to 44.8% (undoubtedly driven by the unfavourable labour market conditions caused by the global recession), this is about the same rate as in the late 1990’s (Scottish Government, 2010a). Nevertheless, participation in HE is higher in Scotland compared to the other countries in the UK, with England, for example, having a considerable way to go meet the 50% target.

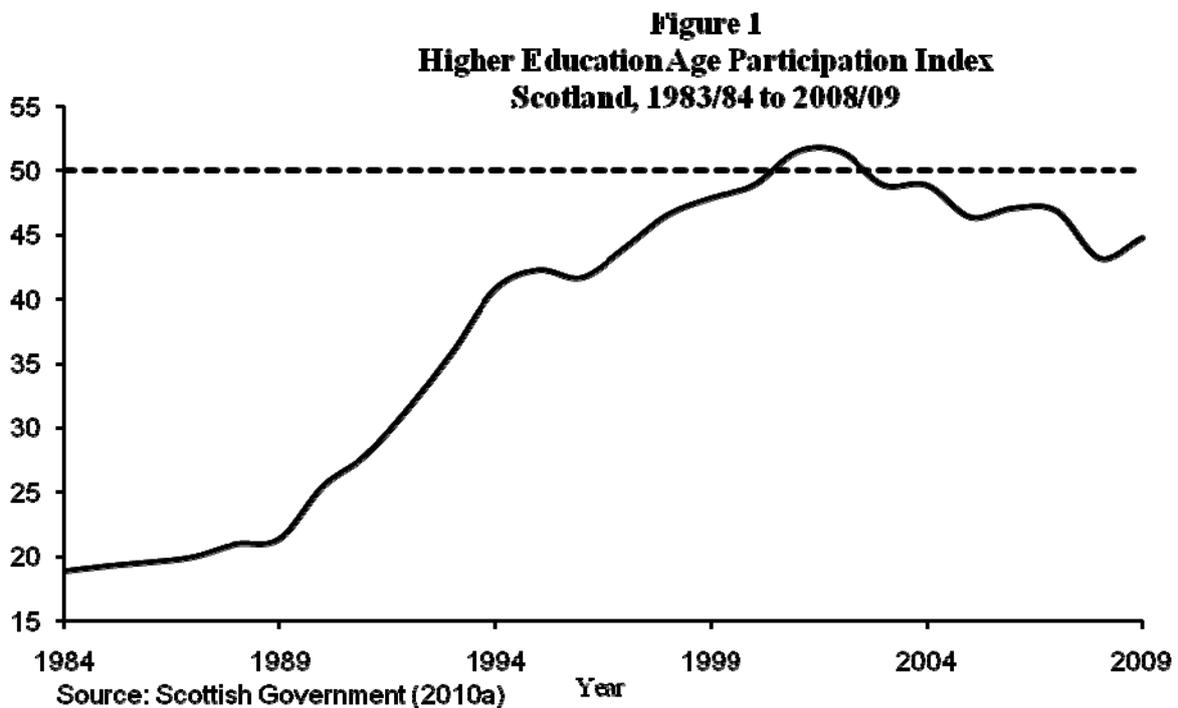
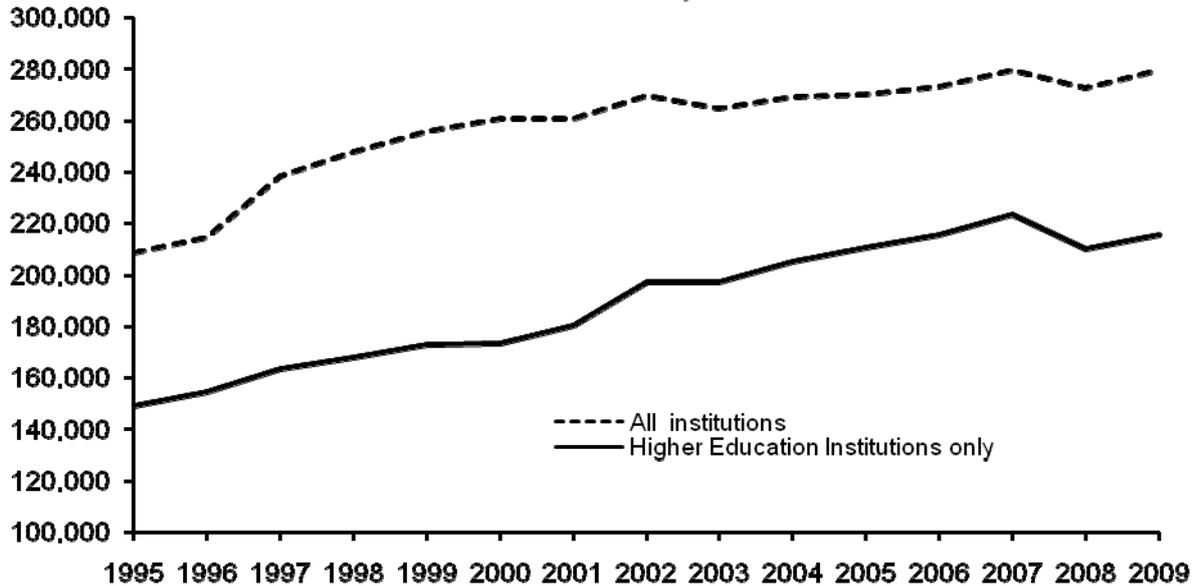


Figure 2
Number of Higher Education Students,
Scotland, 1994/95-2007/08



Source: Higher Education Statistical Agency (2009)/Scottish Government (2010b)

As Figure 2 suggests, this trend in participation has contributed to a steady long-term increase in the number of HE students studying in Scotland. The other factor contributing to this trend has been a sharp increase (particularly over the past decade) in the number of European Union and overseas students, along students from other countries of the UK, coming to study in Scotland (see Faggian, Li and Wright, 2009). It is important to note that in Scotland it is possible to study for higher education qualifications at certain colleges as well as the more traditional “higher education institutions” (HEIs), which are mainly the universities.¹ About 80% of HE students are attending HEIs, with most studying for degrees. On the other hand, the majority of those attending colleges are studying for qualifications below degree level (Scottish Government, 2010b). This difference is important to remember because the analysis carried out below is restricted to those studying at HEIs. In the period 1994/95 to 2008/09,

¹ The current Scottish HEIs are: University of Aberdeen, University of Abertay Dundee, University of Dundee, Edinburgh College of Art, Edinburgh Napier University, University of Edinburgh, Glasgow Caledonian University, Glasgow School of Art, University of Glasgow, Heriot-Watt University, Queen Margaret University, Robert Gordon University, Royal Scottish Academy of Music and Drama, University of St Andrews, Scottish Agricultural College, University of Stirling, University of Strathclyde, UHI Millennium Institute and University of the West of Scotland. There are currently 35 colleges that award higher education qualifications: Aberdeen College, Adam Smith College, Angus College, Anniesland College, Banff & Buchan College, Barony College, Borders College, Cardonald College, Carnegie College, Central College of Commerce, Clydebank College, Coatbridge College, Cumbernauld College, Dumfries and Galloway College, Edinburgh's Telford College, Elmwood College, Forth Valley College, Glasgow College of Nautical Studies, Glasgow Metropolitan College, James Watt College, Jewel and Esk Valley College, John Wheatley College, Kilmarnock College, Langside College, Motherwell College, Newbattle Abbey College, North Glasgow College, Oatridge Agricultural College, Reid Kerr College, South Lanarkshire College, Stevenson College, Stow College and West Lothian College.

the number of higher education students studying in Scotland increased from around 208 thousand to 280 thousand—an increase of 35%.

It is often argued both by politicians and the media that there is an “over-education” problem in Scotland, with the higher education sector generating too many graduates for the economy to absorb. It is argued further that this over-education generates the undesirable outcome of “under-employment”. Under-employment is the employment of workers with skills in jobs that do not require those skills to perform the required work (see McGuinness, 2006). A textbook example would be a medical doctor who drives a taxi.

This paper examines empirically the extent of under-employment amongst Scottish higher education institutions graduates. More specifically, micro-data data collected by the *Higher Education Statistical Agency* (HESA) is used to calculate the rates of employment in so-called “non-graduate” jobs. Both undergraduate and postgraduate graduates are considered. Overall, the analysis suggests that under-employment is a serious problem, especially amongst undergraduate graduates and is a problem that does disappear with age and experience. However, that the under-employment of Scottish HEI graduates is similar to that of UK HEI graduates more generally. In this sense, it is not a “Scotland-specific problem”.

2. Data

The analysis is based on micro-data collected by HESA. More specifically, information is merged from two data-sets for five graduation cohorts of HEI students, covering the academic years 2002/03 to 2006/07. The first data-set is the *Students in Higher Education Institutions*.² This primarily consists of information provided by the HEI at which the individual studied. As is discussed in more detail below, variables include subject of study, level of study, class of qualification, mode of study, age, gender and place of domicile. The second data-set is the *Destinations of Leavers from Higher Education Institutions (DLHE)*.³ This data is collected through a questionnaire administered approximately six months after the student has graduated. Detailed information about employment and further study is collected. However, it is only collected for UK-domiciled graduates and not for EU or overseas graduates even if they stayed in the UK to work after graduation. The *DLHE* data is

² For background information and descriptive cross-tabulations see the following annual publication: *Students in Higher Education Institutions*, Cheltenham, and Higher Education Statistical Agency.

³ For background information and descriptive cross-tabulations see the following annual publication: *Destinations of Leavers from Higher Education Institutions*, Cheltenham, Higher Education Statistical Agency

also collected for UK-domiciled graduates who have moved abroad (see Mosca and Wright, 2010).

There is no agreed definition of what constitutes a “non-graduate job”. The definition that we use is based on research carried out by Elias and Purcell (2004). They examined each of the 353 unit groups of the 2000 Standard Occupational Classification (SOC) and classified each unit into the type of skills needed to do the required work. They arrived at a five-fold classification:

(1) *Traditional graduate*: the established professions, for which, historically, the normal route has been via an undergraduate degree programme (e.g. solicitors and doctors);

(2) *Modern graduate*: the newer professions, particularly in management, IT and creative vocational areas, which graduates have been entering since educational expansion in the 1960s (e.g. computer programmers and journalists);

(3) *New graduate*: areas of employment, many in new or expanding occupations, where the route into the professional area has recently changed such that it is now via an undergraduate degree programme (e.g. physiotherapists and sale managers);

(4) *Niche graduate*: occupations where the majority of incumbents are not graduates, but within which there are stable or growing specialist *niches* which require higher education skills and knowledge (e.g. nurses and hotel managers); and

(5) *Non graduate*: occupations for which a graduate level education is inappropriate (e.g. school secretaries and bar staff).

It is clear that categories (1), (2) and (3) are “graduate jobs”. In these occupations, the skills obtained through higher education are needed for both entry and to carry out the required tasks. It is also clear that (5) are “non-graduate jobs” (e.g. the bartender with the marketing degree). However, it is not at all clear with respect to (4). Essentially these are jobs that traditionally did not need higher education with the skills needed to carry out the tasks of employment gained mainly through on-the-job training. One can also think of these jobs as being those that hire both individuals with and without higher education. In the analysis below, we assume that a graduate is in a non-graduate job only if their occupation is included in (5). If it is the case, that a large share of the occupations in (4) are in reality non-graduate

jobs, then the estimates of under-employment presented below are likely to be lower bounds with the actual level being higher.

One weakness of using the DHLE data to measure underemployment is that the employment is measured only six months after graduation. One view is that it takes much longer for graduates to establish themselves in the labour market. This suggests that more can be learned about under-employment by considering employment circumstances further along the career path. Data of this type has recently been collected as part of HESA's *Destinations of Leavers from Higher Education Longitudinal Survey* (HESA, 2007). In this survey the 2002/03 cohort of graduates were interviewed 3½ years later (i.e. in the winter of 2006/07). The descriptive analysis of this data carried out by National Centre for Social Research suggests there are key differences between what is observed six months after graduation compared to 42 months after graduation.

3. Findings

We consider two groups of graduates. The first are “undergraduate graduates”, while the second are “postgraduate graduates”. Research not reported here suggests that these two groups are considerably different and should be treated separately. This is not surprising given that postgraduate graduates are older on average, and it is almost always the case that postgraduate graduates have some form of undergraduate qualification. When the data is pooled across the five cohorts, the resulting sample size is over 400,000 individuals.

Table 1 reports labour market activity measured six months after graduation. Several points about this table are worth making. With respect to undergraduate graduates, the employment rate of Scottish graduates is 72.1%, which is very similar to the employment rate of UK graduates of 72.7%. However, the unemployment rate of Scottish graduates of 4.9% is slightly lower than the rate of UK graduates of 5.7%. The participation rate in further study is higher for Scottish graduates at 17.4% compared to 15.1% for UK graduates. The percentage of graduates who classify themselves as “not in the labour force” is higher at 6.4% for UK graduates compared to 5.6% for Scottish graduates. This category includes graduates who, for example, are caring for relatives or are too ill to work.

As Table 1 shows, the employment rate of postgraduate graduates is much higher than for undergraduate graduates six months after graduation. This is the case for both Scottish

graduates and UK graduates. The employment rate is 17.2 percentage points higher for Scottish postgraduate graduates (89.3%) compared to undergraduate graduates (72.1%). The gap is slightly smaller for UK graduates—the employment rate is 15.0 percentage points higher for UK postgraduate graduates (87.7 percent) compared to undergraduate graduates (72.7%). This higher level of employment is largely accounted for (in an arithmetic sense) by a much lower participation rate in further study and to a lesser extent by a lower unemployment and not in labour force rates. Although there are differences between Scottish and UK postgraduate graduates (e.g. the Scottish employment rate is slightly higher), it is not unreasonable to conclude that differences between the two groups are not massive.

Table 1		
Labour Market Activity (%)		
2002/03-2006/07 HEI Graduate Cohorts		
Place of Study	Scotland	UK
(a) Undergraduate graduates		
Employed	72.1%	72.7%
Unemployed	4.9%	5.7%
Further study	17.4%	15.1%
Not in labour force	5.6%	6.4%
Total	100%	100%
(b) Postgraduate graduates		
Employed	89.3%	87.7%
Unemployed	3.0%	3.1%
Further study	4.8%	5.1%
Not in labour force	2.9%	4.1%
Total	100%	100%

Table 2 reports the share of graduates in graduate jobs six months after graduation. It is important to stress that this share is of those who are employed. That is, to be included in the calculation of this “graduate-job rate”, the graduate must be working either full-time or part-time. In this sense, it is not directly comparable to the “employment rate” shown in Table 1.

With respect to undergraduate graduates, the graduate-job rate of Scottish graduates of 68.2% is higher than the rate for UK graduates of 65.4%. That is, for both groups of graduates, around one-in-three are in non-graduate jobs six months after graduation. By any account, this is a large share. The situation is different for postgraduate graduates. The graduate-job

employment rate of Scottish postgraduate graduates is 92.8%, which is marginally lower than the rate for UK graduates of 92.2%. That is, less than one-in-ten are in a non-graduate job six months after graduation. Even though there appear not be huge differences between Scottish and UK graduates, postgraduate graduates have a much higher probability of being in graduate jobs compared to undergraduate graduates.

Table 2		
Graduate-jobs Rates Six Months After Graduation (%)		
2002/03-2006/07 HEI Graduate Cohorts		
Place of Study	Scotland	UK
(a) Undergraduate graduates	68.2%	65.4%
(b) Postgraduate graduates	92.8%	92.2%
Notes: As a percentage of those employed.		

Table 3 show the graduate-job employment rates broken down by place of domicile. As was discussed above, place of domicile for the vast majority of graduates is the country where they completed their secondary schooling. With respect to undergraduate graduates, the graduate-job rate for Scotland-domiciled graduates is 76.7%, which is lower than the rate for “rest of UK domiciled” graduates of 70.9% (i.e. those who completed their secondary schooling in England, Northern Ireland or Wales). However, the opposite is the case for postgraduate graduates—the graduate-job rate for Scotland-domiciled graduates is 93.5%, which is higher than the rate for “rest of UK-domiciled” graduates of 89.5%. For both groups, the graduate-job rate is substantially higher for postgraduate graduates compared to undergraduate graduates.

Table 3		
Graduate-jobs Rates Six Months After Graduation by Place of Domicile (%)		
2002/03-2006/07 Scottish HEI Graduate Cohorts		
Place of Study	Scotland	
Place of Domicile	Scotland	Rest of UK
(a) Undergraduate graduates	67.7%	70.9%
(b) Postgraduate graduates	93.5%	89.5%
Notes: As a percentage of those employed.		

It is often argued that graduate-job rates calculated six months after graduation are meaningless since it takes individuals much more time to establish themselves in the labour market. We do not prescribe this to view since there is too much systematic variation across observable characteristics such as class of degree, type of institution attended, subject studied and age at graduation, for this to be universally the case. Unfortunately space does not allow us to present statistical findings in support of this conclusion.

It is clear however that employment and graduate-job rates both increase as the graduate ages. Evidence in support of this is presented in Table 4. This table shows the employment rates and graduate-job rates measured at six months and 42 months after graduation for the 2002/03 cohort of HEI graduates. For Scottish undergraduate graduates, the employment rate increases from 73.0% at six months to 88.5% at 42 months. Likewise, the graduate-job rate increases from 63.3% at six months to 80.0% at 42 months. In our view, there is considerable underemployment amongst graduates of Scottish HEIs even 3½ years after graduation, with one-in-five being employed in non-graduate jobs. The situation is very similar when the UK is considered as a whole. We believe that an under-employment rate of around 20% cannot be explained away by life cycle considerations.

Table 4				
Employment Rates and Graduate-jobs Rates Six Months and 42 Months After Graduation (%)				
2002/03 HEI Cohort				
Place of Study	Scotland		UK	
	Employed	Graduate-job rate¹	Employed	Graduate-job rate¹
(a) Undergraduate graduates				
6 months	73.0%	63.3%	73.4%	66.1%
42 months	88.5%	80.0%	88.1%	78.3%
(b) Postgraduate graduates				
6 months	87.3%	90.3%	89.3%	93.0%
42 months	92.9%	91.4%	92.7%	92.9%
Notes: As a percentage of those employed.				

Table 4 shows the situation is less pronounced for postgraduate graduates. Both employment and graduate-job rates are higher at 42 months compared to six months after graduation. As was found earlier, both rates are higher for postgraduate graduates than for undergraduate graduates. At 42 months after graduation, both employment and graduate-job rates are over 90%. The situation is again similar for Scottish and UK post-graduate graduates. However, even 42 months after graduation, 8.6% of Scottish and 7.1% of UK post-graduate graduates are employed in non-graduate jobs. Although this is considerably less than what was found for undergraduate graduates (c. 20%), it is not an insignificant share, remembering that most postgraduates have at least two higher education qualifications.

4. Concluding Comments

Are over-education and under-employment problems in Scotland? The estimates presented in this paper suggest that this is true, especially for undergraduate graduates. Around one-third of undergraduate graduates from Scottish HEIs, who are employed six months after graduation, find themselves in jobs that do not require the skills they obtained through their study.

The rate of employment in non-graduate jobs does appear to decline over time, as individuals age, gain more work experience, and obtain more information about the way in which labour markets operate. However, even 3½ years after graduation, underemployment amongst Scottish undergraduate graduates is still a problem. Evidence from one cohort of Scottish graduates suggests that around 20% are still employed in non-graduate jobs 3½ years after graduation.

It is important to stress that the situation in Scotland is very similar to the UK as a whole. The estimates presented in this paper do not indicate huge nor systematic differences between Scotland and the UK as whole. Some might find this surprising given the differences in the education systems between Scotland, England and Northern Ireland, most notably the higher rates of HEI participation of Scottish young adults.

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