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Welsh Graduate Mobility

A research report by

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Abstract

This research report explores Welsh graduate mobility. It seeks to establish the extent to which Wales retains its graduate labour in employment; to estimate the labour market outcomes for 'Welsh' graduates (i.e. those born in Wales) and to investigate whether and how these may change and what factors may become more significant over time. In so doing, the report focuses on analysing the location and employment outcomes of successive 'young' graduate cohorts since the 1992 expansion of Higher Education. It does this by augmenting the widely used graduate first destinations data produced by the Higher Education Statistics Agency (HESA) with detailed analysis of Labour Force Survey (LFS) and Annual Population Survey (APS) data to provide new insights into the patterns of and returns to graduate mobility. The report finds that whilst Wales is a net loser of graduates each year, notions of a clear and unequivocal 'brain drain' are too simplistic. Instead, we find complex patterns of graduate mobility which reflect the complex push and pull forces shaping graduate movements and their evolution with graduate life cycles. These findings have a number of implications for economic development and Higher Education (HE) policy.

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Executive Summary

This report documents the findings of research, commenced in 2010, into graduate migration from Wales. The research was funded by the ESRC's SKOPE Centre on Skills and Organisational Performance for the Knowledge Economy, based at Cardiff University and Oxford University. It was conducted in partnership with WISERD, the Wales Institute of Social and Economic Research, Data and Methods. After a comprehensive review of the available literature and evidence, the report focuses on establishing the extent to which Wales retains its graduate labour in employment, and on highlighting some of the key economic and social outcomes for 'Welsh' graduates (i.e. those born in Wales). These issues are becoming of increasing importance given the links between graduate human capital and regional economic performance, and the scope for the migration of highly skilled people ('brain drains') to undermine this. The implications for Wales of the UK's highly variable graduate economy may also be heightened by the differential fee policies for Higher Education (HE) being introduced by the devolved governments.

We first establish (in chapter 2) some of the key features of current debates around the nature and significance of graduate mobility:

- a region's ability to generate, retain and attract graduate workers is critically linked to the economic and employment opportunities it provides relative to other locations
- patterns of graduate mobility are strongly connected to previous patterns of migration for education
- these patterns evolve over time, influenced by the interplay of complex 'pull' forces of places where graduates grew up or studied, family formation, and the powerful 'push' of career opportunities.

We then set out (chapters 3-6) the findings of our quantitative analysis of the location, family formation and employment outcomes of successive 'young' graduate cohorts since the 1992 expansion of Higher Education, drawn from detailed analysis of Labour Force Survey (LFS) and Annual Population Survey (APS) data. The analysis provides new insights into the patterns of and returns to graduate mobility, finding that:

In terms of the extent to which Wales retains its graduate labour in employment:

- Wales is a net loser of graduates each year
- Wales has lower retention rates than the other devolved nations in terms of both the proportion of students who remain to study, and the proportion of graduates from Welsh HE institutions who subsequently gain employment within Wales.
- There is not an unequivocal 'brain drain' - Wales is a net importer of students, so is bound to export graduates. The post-1992 expansion of HE has raised the proportion of students studying locally. There is also some evidence of returners in the short-term (students returning home) and later in the graduate life cycle.
- Certain graduates are more likely than others to migrate - graduates who migrate from their home nation generally possess higher levels of educational attainment (such as postgraduate qualifications) and (particularly the case for Wales) degrees in STEM (Science, Technology, Engineering and Maths) subject areas.

In terms of the labour market outcomes for Welsh-born graduates:

- Migration has clear consequences - migration from Wales is associated with better jobs, higher earnings and higher rates of self-employment.
- Graduates from STEM subject areas generally exhibit better labour market outcomes and these outcomes are further improved among those who migrate.
- Within Wales, the main source of quality employment for non-migrant graduates is the public sector, which employs approximately half of post-1992 young graduates who were born and live in Wales.

- The most important pathways into the Welsh graduate labour force are the 'locals' (those who were born and studied in Wales) and the 'returners' (those born in Wales who studied elsewhere).

In considering how graduate mobility evolves over time, the qualitative analysis (chapter 7) illuminates the complex interplay of push and pull factors on graduate mobility and how they change with graduate life cycles. It shows that in Wales, as elsewhere, notions of a clear and unequivocal 'brain drain' are too simplistic and points to factors which enhance the pull of home for Welsh-born graduates who have commenced their careers elsewhere. As such, 'brain circulation' may be a more pertinent concept when considering the flows of graduate labour shaping regional economic development.

Overall, the research has highlighted the economic returns to graduate migration and how these are sensitive to the path dependencies and structures of regional economies, as well as to the path dependencies of mobile graduates themselves. Its findings have a number of implications for economic development and HE policy (discussed in chapter 8). A key issue is that encouraging the Welsh-born to study and stay in Wales is more likely to have an impact on graduate retention rates than seeking to keep students who come to Wales to study, or to attract graduates who have no prior Welsh links. The complex and rapidly changing nature of graduate mobility merits concerted ongoing research.

1. Introduction

Interest in the ability of cities and regions to retain their most highly qualified graduate labour is increasing in line with the growing understanding of the importance of human capital to local and regional economic performance. Indeed, there are strong arguments to suggest that variations in human capital lead to differences in invention, innovation and ultimately productivity across urban and regional economies (Martin and Sunley, 1998). Internal migration in Britain is typically dominated by the young, highly educated, start-of-career or early career professionals (Champion and Fielding, 1999). Evidence demonstrates that there are indeed strong economic returns to migration for the individual (Kodrzycki, 2001; Bond et al, 2006; Darchen and Tremblay, 2010). However, as regional specialisation has shifted to one structured on occupation rather than industrial categories, so only certain regions and cities can provide the high-flier career and training opportunities these migrants seek. This 'reinforces the virtuous cycle of growth of favoured regions and, in the zero-sum game geography of Britain's regions, a vicious one of the draining away of human capital in others' (Hoare and Corver, 2010; p. 480). For example, in its survey of 56 English towns and cities in 2006, the UK government's State of the Cities report found that all the worst performing cities in economic terms had increased the proportion of graduates in their workforces by less than the English average (Simmie et al, 2006).

Attracting and retaining graduates is thus critical to local and regional economic performance and as such, interest in the geography of graduate labour in the UK is growing. The research to date highlights a number of critical research themes. Firstly, a region's ability to generate, retain and attract graduate workers is critically linked to the economic and employment opportunities it provides relative to other locations (Faggian et al, 2007; Darchen and Tremblay, 2010). Secondly, patterns of graduate mobility are strongly connected to previous patterns of migration for education (Cowling and Pollard, 2008). Thirdly, it is increasingly evident that graduate mobility evolves over time (Hoare and Corver, 2010; p. 491). As graduates mature, long-term relationships and the suitability of their environment for family formation becomes more important to them (Bond et al, 2006). This suggests that graduate mobility over time is likely to be influenced by the complex and perhaps competing 'pull' forces of places where graduates grew up or studied, as well as the powerful 'push' of career opportunities. Furthermore, there are strong reasons to believe these push and pull factors are becoming both more complex and locally contingent. For example, changes in funding arrangements for students associated with the expansion of HE in 1992, such as the introduction of means-tested contributions towards tuition fees, the introduction of support for living costs solely via loans which were partly income assessed, and a different method of repaying loans, will have had an impact on students' choices about where to study and accordingly effects on subsequent graduate migration. A common strategy used by students concerned by HE costs is to live near or at the parental home, often limiting the choice of such students to less prestigious institutions (Reay et al, 2005). Such students are less likely to operate within the national graduate labour market (Furlong and Cartmel, 2005). In turn, rising university tuition fees and levels of student debt are prompting growth in the so-called 'boomerang generation' of students who return home after graduation for financial reasons (Owen, 2011). Furthermore, tuition fees are becoming more variable as differences emerge in HE policy agendas both across the devolved nations of the UK and within them (i.e. between universities).

These issues are particularly pertinent in relation to Wales. The notion of a 'brain drain' of graduate labour from Wales has become a focus of recent debate not least because of growing concern about the relatively poor performance of the Welsh economy. Indeed, looking at the way in which levels of economic activity are usually compared, by Gross Value Added (GVA) per head of the population, GVA per head in Wales in 2009 was £14,842, the lowest of any of the UK's twelve ('NUTS 1') regions. Over the 20 year period between 1989

and 2009, the 4 per cent annual average growth rate of GVA per head in Wales was the lowest achieved in the twelve regions, resulting in a widening gap between Wales and everywhere else (Davies et al., 2011; p.7). In turn, the Welsh economy exhibits high dependence upon the public sector for knowledge-driven development and graduate recruitment (Bristow, 2003; Local Futures, 2003; Wright, 2011). Whilst some evidence of graduate migration from the region exists, a detailed picture and analysis of the nature and scale of these flows over time has not yet emerged (Drinkwater and Blackaby, 2004, cf. Fevre, 2004; Tyers et al, 2006).

The purpose of this research report is to address this gap. As such, whilst the analysis undertaken draws upon comparison between the devolved nations, this report has a Welsh focus. The report has three main aims. The first aim is to undertake a thorough review of the existing international literature on graduate mobility and migration decisions and patterns to firmly establish the knowledge base and identify research gaps.

The second aim is to establish the extent to which Wales retains its graduate labour in employment, and to estimate the labour market and partnership/ family formation outcomes for 'Welsh' graduates (i.e. those born in Wales). This analysis also seeks to investigate whether and how these may change and what factors may become more significant over time. In so doing, the report focuses on analysing the location, employment and partnership outcomes of successive 'young' graduate cohorts since the 1992 expansion of Higher Education, a period which has seen radical change in funding arrangements for students. It does this by augmenting the widely-used graduate first destinations data produced by the Higher Education Statistics Agency (HESA) with detailed analysis of Labour Force Survey (LFS) and Annual Population Survey (APS) data to provide new insights into the patterns of and returns to graduate mobility. Overall, the LFS and APS enable consideration of how graduate mobility evolves over time by looking at successive graduate cohorts. This is the significant added value of our research which complements the HESA data. It should be stressed that the LFS and APS are the same data source (one quarterly, one annual), but since 2008 the APS has included a new variable which identifies country of highest degree. This enables us to refine our understanding by including not only Welsh-born and Welsh-working graduates, but also those who have gained their highest degree in Wales.

The third aim is to consider how graduate mobility over time is influenced by the complex and perhaps competing 'pull' factors of places where graduates grew up or studied, as well as the powerful 'push' of career opportunities. To consider this question, we supplement our quantitative data with qualitative research based on a small number of illustrative case studies of Welsh knowledge economy businesses which employ graduate 'talent'. This illuminates these 'push and pull' factors (rather than providing generalisable findings) in terms of the locational decisions of knowledge economy entrepreneurs and their employees.

As such, this research report contributes to the existing literature on inter-regional flows of graduates. It highlights the economic returns to graduate migration and how these are sensitive to the path dependencies and structures of regional economies, as well as to the path dependencies of mobile graduates themselves.

The report is now organised as follows. The next chapter provides a summary literature review of the recent debates on graduate mobility focusing particularly on the UK which has a highly uneven geography of graduate labour. Chapter three establishes the nature and scale of graduate mobility to and from Wales and how this relates to qualifications. Chapters four and five consider returns to migration, in terms of labour market and partnership/ family formation outcomes respectively, with chapter six focusing on the Welsh-born stock of working age graduates. Chapter seven sets out summary findings. The report then establishes some conclusions and draws out implications for higher education, economic development and skills policy in the region.

2. Graduate Migration – a Literature Review

2.1 Human capital, graduate mobility and the geography of economic performance

The creation and distribution of human capital has been recognised in economic geography as an important factor in the locational decisions of firms (Florida, 2002), and as a key driver of economic growth (Romer, 1990; Lange and Topel, 2004). Attracting and retaining graduates is increasingly understood to be particularly important to local and regional economic performance. This is partly an issue of scale and the very high levels of inter-regional mobility amongst university graduates entering employment, particularly in the UK. Internal migration in the UK is typically dominated by the young, highly educated, start-of-career or early career professionals (Champion and Fielding, 1999) and over 80 per cent of British graduates move away from their domicile location in order to enter employment (Faggian and McCann, 2009b). Thus, graduates 'possibly represent the greatest flow of human capital around a region or country at a given point in time' (Cowling, 2009; p. 5). However, it is also an issue of the quality of human capital which graduates have the potential to provide. Graduates are a primary source of talented human capital and the migration of graduate labour thus acts as a significant form of knowledge transfer between regions (Fogarty and Sinha, 1999; Florida, 1999; Faggian and McCann, 2009a).

Indeed, in a study of the interrelationships between flows of graduate labour and the innovativeness of British regions, Faggian and McCann (2009a) find that graduate inflows of human capital are significantly related to the innovation performance of regions. This leads them to conclude that 'explanations of the performance of 'knowledge regions' which focus primarily on local features are likely to be mis-specified' (p. 330). Indeed, as Perrons (2004) has observed, some high performing regions may not necessarily be 'learning regions' but rather may simply be localities that attract learned people. Faggian and McCann's (2009a) results imply that this argument is generally applicable across British regions. Furthermore, these flows of graduate human capital are exacerbating regional economic disparities in Britain as graduates typically migrate from peripheral regions to the 'inner region core' (HMT-DTI, 2001; 2003). As a result, many 'peripheral' regions in the UK (such as Wales, Scotland and English regions) are increasingly concerned with the nature and consequences of their loss of graduates to the inner region core (IRC) of London and the South East and East regions (see, for example, Institute for Employment Studies, 2004 in relation to the East Midlands; and Tyers et al, 2006 in relation to Wales).

Venhorst et al (2010) note that similarly distinct periphery-centre flows are also a characteristic feature of the migration of graduate labour in other countries, including Finland, Italy and the Netherlands. Similar patterns are also observable in Canada (Coulombe, 2006) and the United States (Hansen et al, 2003; Gottlieb and Joseph, 2006). A number of authors state this is in line with what Fielding (1992) refers to as the 'escalator effect'. According to this paradigm, central or core regions are able to attract human capital in disproportionate numbers. Within these regions workers then experience a degree of upward mobility that is stronger than elsewhere. Later on in their lives these workers then step off the escalator and cash in on their relative prosperity, for example by acquiring property in a more low-cost but high-amenity region. As such, 'brain drains' are clearly inter-regional as well as international phenomena.

Whilst the migration of graduate labour to certain regions is thus beneficial to their economic performance, Venhorst et al (2010) state that such 'brain drains' are not necessarily negative for peripheral regions. If the number of graduates exceeds local demand for graduates, out-migration might be beneficial for the individual graduate but also for the peripheral region, because graduates who were to stay in the region would become unemployed. The peripheral region also benefits from student expenditure during their studies. In addition,

there could be an indirect effect whereby the graduates who leave may act as ambassadors for the region if they enjoyed their period of study. Furthermore, they might even return to work in the region at a later stage of their career. There is no evidence presented by Venhorst et al as to whether this is in fact the case however. Nevertheless, their paper usefully points to both the complexity of graduate flows over time and the dangers of applying uncritical and unsophisticated notions of 'brain drain'. It is to the existing empirical evidence on UK graduate flows that this report now turns.

2.2 Existing UK evidence on inter-regional graduate flows

A number of recent studies have begun to illuminate some key features of the geography of graduate labour in the UK.

First and foremost, studies point to the uneven and varied employment geography of the graduate economy in the UK. London stands out as a magnet for graduates looking to pursue lucrative business careers. For example, using Annual Population Survey (APS) data, Wright (2011) finds that most young graduates (i.e. those aged between 20 and 29) live in London and the South East. Wales, Northern Ireland and the North East each have less than 5 per cent of the UK's young graduates. This is not surprising given the varied economic opportunities that exist across the UK regions. Indeed, a number of studies have illuminated the positive and cumulative link that exists in the UK between the relative economic buoyancy of a destination region and the scale of human capital inflows (Faggian and McCann, 2006; 2009a).

However, the national picture is more complex as city-regions and urban centres throughout the country have evolved as local and sub-regional knowledge economies, and hence as sources of 'intervening opportunities' for graduates. Thus, Cowling (2009) demonstrates how human capital (defined as the proportion of the population with at least an undergraduate degree) is concentrated in the UK's 100 largest cities (excluding London). Furthermore, Wright (2011) demonstrates that many cities and regions across the UK have experienced a growing share of the UK's young graduates over the past ten years. For example, Yorkshire and Humberside, the North East and the East Midlands all experienced an increase in young graduates as a proportion of their working age populations between 2001 and 2009. Many cities outside the South East, such as Leeds, Sheffield and Rotherham, have also witnessed large increases in the number of young graduates who live there.

Wright's analysis suggests it is increased public sector demand in the regions which appears to have driven the 'spreading out effect' of young graduates. Between 2000 and 2010, the percentage of young graduates working in the public sector increased faster than that of the workforce as a whole. Over the same time period, there was a decrease in the percentage of young graduates working in banking, finance and insurance (the most popular destination at the beginning of the decade). Young graduates in regions outside London and the South East are disproportionately employed in the public sector. For example, about 45 per cent of Wales' young graduates work in the public sector. The decade of public sector expansion from 1997 meant that young graduates took jobs in the public sector and were freer to live in parts of the country beyond London and the South East. The implications are that public sector cuts will threaten the ability of these cities and regions to retain graduates. Moreover, this points to the differing locational tendencies of the public and private sectors. The public sector of the knowledge economy acts as a decentralising force, whilst the private sector acts to centralise degree-level job opportunities (Graduates Yorkshire, 2007; Wright, 2011).

Secondly, a number of studies have highlighted that to properly understand the regional implications of these graduate movements requires fuller understanding of the capacity of regions to not only retain their graduates (many of whom they may have 'imported' as students), but also their capacity to attract or 'import' graduates who may have studied

elsewhere. In a study of the aggregate flows of graduates in Britain, Faggian and McCann (2009b) assert that the spatial patterns of the knowledge flows associated with any particular region will depend on the numbers which fall into each of five quite distinct types of sequential migration behaviour associated with students and graduates. These are characterised as: repeat migrants, return migrants, university stayers, late migrants and non-migrants. Repeat migrants are those students who move away from their domicile area in order to enter university and then as graduates, move to a third area which is neither the domicile or university location in order to enter into full-time employment. Return migrants are those students who move away from their domicile area in order to enter university and then as graduates, move back to their domicile area in order to enter into full-time employment. University stayers are those students who move away from their domicile area in order to enter university and then, as graduates, remain in the university location in order to enter into full-time employment. Late migrants are those students who remain in their domicile area in order to enter university and then as graduates move away to a different area in order to enter into full-time employment. Finally, non-migrants are those graduates who enter into full-time employment in exactly the same location as both their domicile and university area. A similar but slightly more detailed typology has also been developed by the Institute for Employment Studies (2004) in an analysis of the graduate labour supply in the East Midlands.

Using HESA data, Faggian and McCann (2009b) find that London has the highest graduate retention rate, or proportion of locally educated graduates who remain in the same NUTS 1 region (i.e. non-migrants and university stayers), with a graduate retention rate on average of around 70 per cent in the four year period from 1996-7 to 1999-2000. In addition, peripheral regions such as Scotland, Wales and the North East exhibit relatively high graduate retention rates. In Wales, for example, the retention rate averages 58 per cent over the same four year period. Except for London, almost all of the NUTS 1 regions are relatively very open to flows, with six out of the eleven NUTS 1 regions of Great Britain losing more of their locally educated graduates than those that are retained. They then proceed to look at regional net graduate flows, defined as the total number of university graduates that are in-migrating into a NUTS 1 region minus the total number of university graduates who are out-migrating from the region. This demonstrates that while the South East has a graduate retention rate of just under 50 per cent, it is the second NUTS 1 region of Great Britain after London for attracting graduates from elsewhere. Overall, it is therefore clear that graduates tend to flow from northern regions to southern regions and in particular to the regions of London and the South East, the inner region core. The analysis also shows that in 1999-2000, Wales experienced the largest net outflow of graduates.

A similar approach to categorising graduate flows is adopted by Hoare and Corver (2010) who have developed the 'HULT' model of Home to University to Labour Transitions, which conceptualises the different movements of students and graduates (discussed in more detail below). They use this model to conceptualise how each regional labour market has four separate pathways from which they can recruit graduates: the 'locals' pathways (students who study in their home region); the 'returners' pathways (students who study elsewhere and return home for employment); the 'stayers' pathway (students who remain in a region after moving there to study); and the 'outsiders' pathway (students who move away from their region of home and study experience). In an analysis of aggregate graduate flows for UK regions between 1998-99 and 2001-02 they find that only two regions – Scotland and Yorkshire and Humberside – approach overall balance between their net graduate outflows and inflows. They establish that 'the single, and emphatic winner region is London, which recruits about twice or more first-degree graduates as it provides home students to the system' (Hoare and Corver, 2010; p. 484). The remaining nine regions are consistently 'losers' with Wales, Northern Ireland and the East of England being overwhelming loser regions in all four years, in some of which they fail to recruit the numerical equivalent of three graduates for every four they send to university.

Other studies also point to Wales as a net loser of graduate labour. Using Labour Force Survey data, Drinkwater and Blackaby (2004) find that one in three Welsh-born people living in other parts of the UK have a degree, compared to less than one in four immigrants to Wales. This leads them to conclude that 'Wales is losing a disproportionate share of its younger and more educated people, even after controlling for other personal characteristics' (2004; p. 21). People leaving Wales are younger and more educated than migrants to Wales.

Using linked HESA 'Students in Higher Education' and DLHE ('Destinations of Leavers from Higher Education') datasets, Mosca and Wright (2010a) find that only 61.3 per cent of undergraduate graduates and 64.1 per cent of postgraduate graduates are employed in Wales. About a third of Welsh HEI graduates are employed in England. This compares to only about 2.1 per cent of undergraduate graduates of English HEIs working in the rest of the UK six months after graduation. The analogous estimates for Northern Ireland, Scotland and Wales are much higher at 4.3 per cent, 13.3 per cent and 36.3 per cent, respectively. While Wales has the lowest retention rate when compared to the other UK countries, when English regions are considered, Wales has a higher retention rate than all regions except for the North West and London (and also the North East in terms of postgraduate graduates). The region with the most similar retention rates is the North East. It is interesting to note that the share of graduates from Wales, Scotland and Northern Ireland moving to London is not excessively large. The highest rate is 5.5 per cent for postgraduate graduates who studied in Wales. This is supported by Faggian et al (2007a) who find that graduates from Wales and Scotland are less migratory than those from England reflecting cultural and institutional differences across these nations. Similarly, Tyers et al (2006) observe that the net outward migration of graduates from Wales is no greater than for many other UK regions. This suggests that a simplistic notion of 'brain drain' may be unhelpful not least because of the high degree of interconnectedness of Wales and England in terms of higher education and employment (Rees and Taylor, 2006).

2.3 Understanding the determinants of graduate migration

Path Dependency: the links between migration to education and migration to employment

A number of studies have sought to illuminate the factors which determine the likelihood of graduates entering employment in their university region relative to their entering employment in other regions. It is increasingly apparent that patterns of graduate mobility are strongly connected to previous patterns of migration for education. An individual who has moved in the past has a considerably higher probability of moving in the future. Thus there is a critical form of 'path dependence' influencing graduate migration, as those who have moved to study are more likely subsequently to move to employment (Faggian et al, 2007b; Hoare and Corver, 2010; Mosca and Wright, 2010a). Indeed, the geographies of undergraduate origin, location of study and first employment are critically linked and as such, factors which shape the pathways from home to university, such as degree choice (found by Wales, 2010 to be affected by personal characteristics such as gender, ethnicity and prior academic achievement), quality of life, amenity attractions and social aspects are also likely to be important in shaping the available stock of graduate labour in a region (Hoare and Corver, 2010). However, it is also possible that the factors influencing an individual's choice of Higher Education Institution versus their subsequent labour market decisions might be quite different. Indeed, Cowling and Pollard (2008) find that attractive courses and high quality teaching are the most important influences on students' university choice at undergraduate level. Quality of life in the host city and the 'feel' of the university is also important (what they term 'the Brighton factor'). Criteria for selecting a university vary according to students' academic level and social background however. Undergraduates are

more concerned with social aspects of a university and city. Postgraduates and ethnic minority students look for research and teaching quality, and employment prospects.

The interdependencies of migration for education and migration for subsequent employment are also captured in Hoare and Corver's (2010) 'HULT' model of Home-University-Labour Transitions, which conceptualises the different movements of students and graduates into four separate pathways (as discussed above) and then applies this model to graduate mobility across UK regions. The analysis finds that there is a consistent geographical structure over all four cohorts studied (i.e. 1998-99 to 2001-02). Almost all regions consistently show greater rates of recruiting graduates with prior familiarity through home or study, and particularly both, although this does not necessarily mean that the locals pathway is the most important one for absolute graduate recruitment. London is the overwhelming 'winner' region in the competition to be the first destination of young graduates. It enjoys high conversion rates across the pathways and is the only region to depend most on the 'outsiders' pathway for its graduate recruitment.

Hoare and Corver find that 'locals' produce the highest conversion rates and 'outsiders' the lowest. The 'locals' pathway is the most significant source of Welsh graduate labour recruitment. Indeed, Wales is one of only four of the 12 regions which draw their largest single volume of graduate recruits from the locals pathway. By comparing the 'returners' to 'stayers' conversion rates, Hoare and Corver (2009) show that of the two labour recruitment 'pulls' exercised by any region – that of being at home (in the region of original domicile) and that of studying there – being at home is more powerful.

Faggian et al (2007b) have shed some light on the factors shaping the propensities to migrate of Welsh and Scottish students. They model the sequential migration behaviour of some 76,000 Scottish and Welsh domiciled students, from their domicile location to the location of their higher education and onto their employment location (using linked HESA 'Students in HE' and DLHE datasets for the graduating cohorts between 1996/07-1999/00). Overall, their results confirm that subsequent migration is related to previous migration and also that higher human capital individuals are more geographically mobile. Thus, the on-migration behaviour of an individual is generally associated with both the individual's previous migration history and the level of human capital acquired by the individual. On graduating from higher education, the dominant effect of human capital acquisition among the Welsh and Scottish students is therefore that it improves their ability to gain higher-quality employment in a much broader set of locations.

However, there are institutional differences between the two countries which mean that the mobility effects of human capital acquisition have to be interpreted carefully in the light of other economic, geographical and social influences. In particular, the probability that a Welsh-domiciled student will seek higher education in Wales is positively associated with a student studying any subject apart from medicine, being of white ethnicity, entering a higher quality of university (based on the 2001 Research Assessment Exercise, RAE, which ranks universities according to the quality of their research) and the number of universities in the student's domicile area. Meanwhile, the probability that a Welsh-domiciled student will seek higher education outside Wales is positively associated with studying medicine, the wage rate and activity rate and population density of the domicile area, and the population density and number of universities in the university area. This suggests that students from relatively buoyant urban areas in Wales will tend to seek higher education outside Wales and, in particular, in urban areas outside Wales, whereas students from weaker local economic environments will tend to seek higher education within Wales. The greater initial education migration propensity of Welsh-domiciled students relative to Scottish-domiciled students is probably best explained not only by the smallness of the Welsh higher educational system, but also the very marked differences between the secondary school educational systems of Scotland and the rest of the UK.

For the Welsh students who chose higher education in Wales, the on-migration distance is positively associated with their previous migration history, in terms of the distance of their migration from domicile to higher education. The on-migration distance is also positively associated with being male, having a class 2.1 degree, studying social sciences and the buoyancy of the employment location in terms of its activity rate, wage rate and population density. On the other hand, the on-migration distance is negatively associated with the RAE quality of the university and the wage rate in the university area.

For the Welsh students educated outside Wales, the distance of on-migration from higher education to employment is positively associated with their previous migration history. The average on-migration distance for this group is 102 km whereas for the Welsh-educated it is only 48 km. On-migration is most closely associated with the salary of the employment location, having a class 2.1 degree, studying at a higher-quality university, a greater distance between the university and London, and a higher population density and activity rate in the university area. On the other hand, the on-migration propensity is negatively associated with the activity rate and population density of the final employment location. One interesting difference between Wales and Scotland is attendance at higher-RAE quality universities is associated with reduced on-migration behaviour for Welsh-educated Welsh students. In contrast, in Scotland, attendance at higher-RAE quality universities by home students is linked to greater on-migration.

Graduate mobility – hysteresis or evolution?

Other studies support Hoare and Corver's (2010) finding of a degree of 'stickiness' in graduate mobility and assert that the first destinations of students and graduates are critical to shaping their subsequent locational decisions. For example, Faggian et al (2007b) find that the acquisition of job-specific and region-specific human capital engenders 'lock-in' effects (David, 1985) which tend to be localised both occupationally and regionally. This suggests that often individuals will tend to remain in the same region and in the same broad occupational groupings over a lifetime of working. Indeed, less than 1 per cent of the UK working population actually undertake inter-regional migration per annum and, even for unemployed workers, this figure is less than 2 per cent (McCormick, 1997). Thus, the vast majority of workers tend to remain in the same UK region and the same broad occupational groupings for very long periods. Faggian et al (2007) assume that graduates are aware of this general hysteresis effect, in that accepting employment in an area significantly increases the likelihood that they will actually continue to work both in that occupation and in that same particular area for a large part of their career.

However, a number of authors argue that graduate mobility changes and evolves over time. As Hoare and Corver (2010; p.491) observe, 'with ever more mobile labour forces, both spatially and between jobs, occupations and employers, any assumption that first destinations represent jobs and labour markets for life is clearly never less tenable than now'. Not surprisingly as graduates mature, long-term relationships and the suitability of their environment for family formation becomes more important to them (Bond et al, 2006). This carries important implications for those 'loser' regions capable of attracting graduate returnees at a later stage in their life cycle and suggests that graduate mobility over time is likely to be influenced by the complex and perhaps competing 'pull' forces of places where graduates grew up or studied, as well as the powerful 'push' of career opportunities.

To date, however, there has been only limited research on this. In a study in the US, Whisler et al (2008) make the general observation that 'households will relocate - at certain strategic times - from one region to another to take advantage of the place-specific consumption opportunities that are more available in that other region' (p. 62). They identify six distinct groups of the college-educated that reflect distinctive stages of the life course - recent graduates (separated into male and female); the young married; settled down middle-agers;

about to retire empty-nesters; and retired empty-nesters. They observe large differences in the mobility and locational choice of individuals according to their age (and life stage) and find a strong propensity for the young college-educated to agglomerate in a select group of urban centres. They conclude that human capital accumulation is a self-fulfilling process and assert that 'metropolitan areas that cannot, over a prolonged time, build an extensive college-educated workforce risk falling behind in today's knowledge economy' (pp. 89 -90).

A more recent study concerning the migration behaviour of the Scottish-born is of particular interest. Findlay et al (2008) find clear evidence that the size of the Scottish population of London and the South East has fallen significantly over the last decade because of the increased level of return migration to Scotland. Furthermore, the return migrants are mainly young graduates who are moving at the early stage, or in the middle, of their careers. This return movement, they argue, is not a product of reduced career opportunities for Scottish graduates in London and the South East. Rather, this reflects new developments in the mobility of the service class and the increased recognition that whilst some experience in the 'escalator region' is important, further mobility is socially, culturally and economically desirable when suitable opportunities arise. Thus where economic opportunities allow, it appears that there is evidence that young professionals are ready to move either to new international locations or to return to locations at lower levels in the urban hierarchy within their state of origin (see also Boyle, 2006 with respect to the return flows of skilled Irish migrants to Eire; and Kesselring, 2006; and Sklair, 2001 – all cited in Findlay et al, 2008 – for further discussions regarding the mobilities of the 'new service class'). In this regard, Findlay et al (2008) conclude that the Scotland of recent years should not be considered as a 'peripheral region' relative to its nearest global city, but as a set of lower order cities that relate through their changing global functions to the wider transnational economy.

To date, there has been limited analysis of return migration to Wales, although a study of the perceptions of those who graduated from Welsh universities in 2000 by Coombes et al (2003) suggests the pull of home may have equal force for Welsh graduates. The study, conducted in 2001, found that of those graduates in graduate level jobs outside Wales (total 504), 83 (16 per cent) were originally Welsh domiciled. Of these, 29 per cent stated the intention of returning to Wales within 1-2 years, 16 per cent in more than 2 years, and 47 per cent stated they would consider it in future, with only 8 per cent stating they had no intentions of returning. Of the 410 (81 per cent) who were not originally Welsh domiciled, only 3 per cent stated the intention of returning to Wales within 1-2 years, 3 per cent in more than 2 years, and 60 per cent indicated they would consider it in future, with 34 per cent stating they had no intentions of returning. Fevre (2004; p.2) suggests there may be a particularly strong pull of home for public sector professionals in Wales arguing 'it is easy to see why many public sector professionals might find Wales a very attractive place to live. They earn the same salaries that they would in congested metropolitan areas and they benefit from low house prices. They may also notice that they, rather than CEOs or professionals in legal, business and financial services, constitute the regional elite'.

Jobs or amenities?

A number of studies suggest that a region's ability to generate, retain and attract graduate workers is critically linked to the employment opportunities available relative to other locations. For example, Venhorst et al (2011) find that graduate migration in the Netherlands is primarily dependent on the spatial distribution of suitable jobs and is thus structural in nature, with large flows of graduates towards the economic centre of the country. An opportunity-rich labour market is thus key in attracting and retaining graduates. Whilst this may be difficult for local policy-makers to influence, they also demonstrate that graduates are becoming less migratory, and that this can be explained by economic developments in the various regions. In short, graduates are retained as regions do better.

Similar evidence is available for the UK where the strong structural pull of the inner region core on graduate labour has provided for a very positive and cumulative link between the relative economic buoyancy of a destination region and the scale of human capital net inflows (Faggian & McCann 2006; 2009b). Similarly, graduates will remain in their local (domicile) region if the local economy is strong whereas those regions in which there is a clear disequilibrium between the education sector and local graduate labour market conditions will experience a high rate of either graduate in- or out-migration (Faggian and McCann, 2006). Reduced outward migration is also positively associated with a high proportion of jobs accounted for by the public sector (Faggian and McCann, 2009b).

This evidence tends to be affirmed by studies of graduate perceptions. Drawing on a survey of 650 final year students at Sussex University, Cowling and Pollard (2008) conclude that over 53 per cent of graduates end up away from their home town and tend to be attracted to cities with larger populations and a higher share of professional employment. They also find that graduates want to gain experience and qualifications in order to secure their desired long-term employment and seek employers who provide stimulating work and opportunities for training and development. Although salary is important, the reputation of the company and its location are also significant. This is echoed by Coombes et al's (2003) study of the preferences of graduates from Welsh Higher Education institutions when seeking employment. They conclude that the most important factors for graduates are job satisfaction and career development prospects. When choosing locations to search for employment, wage levels, cost-of-living and commuting distance from home were identified as important factors, with quality of place factors less influential. Thus whilst graduates had positive perceptions about the quality of life in Wales (such as access to and quality of the countryside, and the relatively low cost of living), they raised concerns about the quality of jobs and relative wage levels in their chosen fields and the lack of graduate level employment and career development opportunities available.

Evidence from North American cities and metropolitan regions presents a more mixed picture about the relative importance of economic opportunities and broader quality of place or amenity attractions as determinants of the migration decisions of graduates. Richard Florida's seminal work on the 'creative classes' and the economic geography of talent (2002), has provided an important stimulus to this debate. Florida's thesis identifies the underlying factors that shape the locational decisions of certain categories of professional labour, and asserts that metropolitan areas presenting characteristics such as a high level of tolerance, cultural diversity and a large choice in terms of social activities are most attractive to the highly mobile, creative classes of young graduates. According to Florida (2002), this type of human (or creative) capital tends to choose locations (metropolitan areas) where their creativity can flourish.

The thesis has been criticised by some as reversing the causality between amenities and skilled people i.e. it is more likely that skilled people precede the creation of amenities rather than follow them (see, for example, Storper, 2010). Furthermore, evidence on the relative importance of amenities in attracting particular kinds of labour remains mixed. Thus, for example, in a study of the resurgence of US cities after the year 2000, Glaeser and Gottlieb (2006) find that cities have become more attractive places to live for the highly skilled due to rising incomes and education levels which have increased demand for urban amenities such as museum, restaurants and concerts. In a study in the US as to what influences why people choose to stay in one location rather than move to another, Mellender et al (2011) find that quality of place, and in particular the physical environment, plays an important role.

In contrast, in a study of the destinations chosen by migrant engineers in the US between 1994 and 1999, Scott (2010) finds that local employment opportunities have a dominant impact on the destinations chosen by engineers of working age and that amenities play virtually no role. Darchen and Tremblay's (2010) study of the work and location preferences

of Canadian science graduates has similar findings. The study concluded that career opportunities are more important than factors relating to the quality of place or the 'people climate' (understood as that mix of lifestyle and amenity elements that make a region more attractive).

Other studies suggest migration decisions may reflect a complex mix of both economic and amenity attractions. Storper (2010) observes that since skills groups are sorted among US cities according to different specialisations (e.g. finance workers in New York, directors and producers in Los Angeles), it becomes difficult to prioritise the role of employment opportunities as opposed to amenities, since amenities are a highly aggregated and much less geographically distinct category than employment. In short, whilst many places have restaurants and art galleries, few have high level investment banking industries for example. Similarly, in a study of the distribution of human capital (defined as the proportion of the population with at least an undergraduate degree) across the UK's 100 largest cities (excluding London), Cowling (2009) found that the attraction of new inflows of graduate talent is associated with a broad set of attributes, including a preference for larger cities per se, the presence of a large stock of existing graduate talent, and high levels of provision of public services and good housing.

2.4 Graduate migration – differences between graduates

Existing research suggests that as well as understanding the different motives influencing graduate migration decisions, it is also important to acknowledge that graduates themselves are a diverse group with different needs and locational requirements. As Mosca and Wright (2010a; 2010b) observe in a study of the movements of UK undergraduates and postgraduates, migration is a selective process with graduates with certain characteristics having considerably higher probabilities of migrating. Characteristics that appear to be important include subject studied, type of institution attended, age at graduation and class of degree. Thus, according to Mosca and Wright, the probability of migrating declines sharply after the age of 30. Furthermore, science graduates, social science graduates and those with interdisciplinary qualifications are associated with a higher probability of migration than arts and humanities graduates. Those who graduate from a 'specialist' HEI (such as an art or music college) have a higher probability of being a national mover. In addition, compared to being a graduate of 'old universities', graduates of Russell Group universities have a higher probability of migrating, while graduates of 'post-1992 universities' have a lower probability of migrating. They also find some clear differences in probability of migrating by country of domicile and country of study, and also observe that the higher the class of qualification obtained, the higher the probability of migrating. Finally, the results suggest that the probability of migrating has declined slightly for the more recent graduate cohorts included in the analysis.

In a similar study, Faggian et al (2008a) observe that in Scotland, the most mobile graduates are typically of the highest quality (see also Faggian et al, 2007b). Mature graduates and those with a higher human capital (a 2:1 or first class honours degree) tend to move further, but are more 'focused' in these movements, whilst students studying Education, Maths and Engineering tend to be associated with a greater spread of movements. Faggian et al (2008b) have also found that more selective universities (i.e. the Russell or 1994 group) tend to produce more 'focused' out-migration movement. In a study of gender differences in UK graduate migration behaviour, Faggian et al (2007a) find some evidence that women are more mobile than men. Within this study, there is also evidence to suggest that graduates from Wales tend to be less migratory whilst those originally from Scotland are more migratory for all types of graduate migration. This, they argue, is reflective of some cultural and institutional differences between these countries and England.

2.5 Graduate demand

A number of studies have explored determinants of graduate demand. Brown (2004) cautions against assuming that it is the demand for knowledge and skills in the private sector that is driving the demand for university graduates. The reality is that the public sector has been a crucial source of job creation within Britain since the turn of the century. Hicks et al (2005) have undertaken a detailed analysis of public sector employment which found that within the UK, it accounts for one in five of all jobs. However, between 2001 and 2004 there was an overall increase of 368,000 additional jobs created in the public sector in the UK, compared to just 226,000 in the private sector. Similarly, Wright (2011) has found that there is a distinct geography to the public sector demand for graduates. Between 2000 and 2010 the percentage of young graduates working in the public sector increased faster than that of the workforce as a whole. Over the same time period, there was a decrease in the percentage of young graduates working in banking, finance and insurance (the most popular destination at the beginning of the decade). Young graduates in the North and the Midlands are disproportionately employed in the public sector and about 45 per cent of Wales' young graduates work in the public sector (supported by Fevre, 2004; see also Tyers et al, 2006). The decade of public sector expansion from 1997 meant that young graduates took jobs in the public sector and were freer to live in parts of the country beyond London and the South East. The implications are that public sector cuts will threaten the ability of these cities and regions to retain graduates.

A likely consequence is that many more highly qualified individuals will have to find jobs outside the 'traditional' areas of graduate employment, many of which are now approaching saturation point in terms of graduate penetration rates (Brown, 2004). This may often be at the expense of less well qualified people, who may be displaced into less attractive jobs. Thus increasing problems of over-education are flagged as the labour market fails to absorb the growing number of university graduates. Felstead (2004; 2009) observes that the Welsh economy has not upskilled sufficiently to keep pace with a rising supply of qualified labour. For example, he found that Wales has a six percentage point qualification gap at degree level (i.e. an excess of supply of those with a degree over demand), compared to a four point gap in the rest of the UK and a three point gap in London and the South East. Thus qualified Welsh workers are not being as used as effectively as they might be.

Elias and Purcell (2004) have produced the so-called SOC (HE) classification to specify employment using HESA DLHE data in terms of 'graduate' and 'non-graduate' occupations. This enables a more detailed analysis of graduate employment, teasing out general versus specific use of skills. Studies (such as Archer and Davison, 2008; and Glass et al, 2008) have found that employers see a degree as a proxy for achieving a certain level of competence. Employers expect graduates to have technical and discipline competences from their degrees but also require graduates to demonstrate a range of broader skills and attributes that include team-working, communication, leadership, critical thinking, problem solving and managerial abilities (Lowden et al, 2011: p vi).

Coombes et al (2003) undertook an employer survey (of 252 companies), sampled from the employers of the respondents to their graduate survey. Of these, and corresponding to the large proportion of graduates surveyed who were employed in South East Wales, a quarter were also located in this region. Almost 9 out of 10 employers surveyed had no preference for graduates from particular parts of the country. Only a small minority (5 per cent) expressed a preference for graduates from the immediate region. Some of the reasons given by employers for having a preference for local graduates were that they were more likely to stay for a longer period of time, that there were fewer relocation issues and that local graduates had more local knowledge. Welsh employers were more likely to have locational preferences when recruiting graduates than employers based outside Wales (at 16 per cent compared to 7 per cent). Almost 9 out of 10 employers based in Wales surveyed had no

preference for graduates from Welsh HEIs. Of the minority who did express a preference, the main reasons given were that there was a need to speak Welsh in the workplace, the graduates would be more inclined to stay in Wales, and that these graduates would have local knowledge.

Having reviewed the existing literature on graduate mobility and migration decisions and patterns, the report, focused on the Welsh-born, now goes on to consider the nature and scale of graduate mobility to and from Wales, returns to migration in terms of labour market and partnership/ family formation outcomes, how these may change and what factors may become more significant over time. This enables conclusions to be drawn regarding the implications for higher education, economic development and skills policy in Wales.

3. Graduate Migration Between the Home Nations

Chapter Summary

- Wales exhibits low retention rates compared to other devolved nations in terms of both the proportion of HE students who remain in Wales to study, and in terms of the proportion of graduates from Welsh HEIs who subsequently gain employment within Wales. However, retention rates in Wales are relatively high compared to most English regions. Despite the inter-connectedness of Wales to the English labour market, migratory patterns do reflect the position of Wales as a devolved nation.
- Although the majority of Welsh-born graduates received their highest degree from a Welsh HEI, this percentage has fluctuated over time, reflecting changes in funding arrangements for HE. The proportion of Welsh-born graduates obtaining their highest degree from a Welsh HEI has risen from just over half in the mid 1990s to two thirds by the end of the last decade.
- England has been a net recipient of post-1992 graduates, with a net inflow equivalent of 1.5 per cent of the post-1992 UK young graduate population. Thus by definition, the other devolved regions of the UK are net exporters of young graduates. Northern Ireland is the largest net exporter of graduates. Although rates of migration among Northern Ireland graduates are relatively low, Northern Ireland does not attract graduates from other parts of the UK following completion of their studies..
- Graduates who migrate from devolved nations generally possess higher levels of educational attainment, as measured by their number of passes at GCSE, than those who remain living within their region of birth. This qualification gap is relatively high in Scotland and narrow in Wales.
- Graduates who migrate from devolved nations are more likely to possess a postgraduate qualification. The scale of this differential is relatively even across the devolved nations of the UK, at approximately 6-7 percentage points.
- Higher Education Funding Councils have placed considerable emphasis on the importance of STEM subjects (Science, Technology, Engineering and Mathematics) as strategically important but vulnerable areas of study. Across each of the devolved regions of the UK, migrant graduates are more likely to possess degrees in STEM subject areas. This differential is widest within Wales.

3.1 Introduction

This chapter provides a statistical portrait of the extent and nature of graduate migration between the home nations of the UK. Previous research in the area of graduate migration has tended to focus on destination data collected by the Higher Education Statistics Agency (HESA). Although this information is unrivalled in terms of its coverage of the graduate population, it does have a number of limitations. Most significantly, this destination data generally collects information on graduates at a point only 6 months following graduation. The full extent of graduation migration is unlikely to be captured within such a short period of time. To provide additional insight, this chapter explores the contribution that can be made to our understanding of graduate migration from national statistical sources, namely the Labour Force Survey (LFS).

The remainder of this chapter is structured as follows. Section 3.2 provides an overview of evidence as to the extent and nature of graduate migration from previous studies that have utilised data from HESA. Section 3.3 goes on to provide a brief description of the LFS, the largest regular household survey conducted in the UK and the main source of data used for the analysis contained in this report. Section 3.4 then looks at the entire graduate population of working age, examining where graduates born within each of the home nations undertook their studies and how these patterns have changed over time. The analysis then turns to an examination of graduate migration among the graduate population who completed their studies since 1992, a period characterised by a significant expansion in the numbers attending Higher Education (HE). The analysis considers both the extent and direction of migration (Section 3.5) and the relative characteristics of migrant and non-migrant graduates measured in terms of their educational attainment (Section 3.6) and their subjects of study (Section 3.7).

3.2 Graduate Migration – A View from HESA

HESA collects information on both the characteristics of applicants to HE and also information on the labour market destinations of graduates. The main advantage of the HESA data is the very large sample sizes derived from these data collection exercises (universities are closely monitored in terms of the completeness and quality of data submitted to HESA and often invest considerable resources in completing these returns) enabling the patterns of graduate migration to be studied in detail. These datasets have been utilised in previous analyses of graduation migration (see for example Mosca and Wright, 2010a; Hoare and Corver, 2010) and will therefore only be considered briefly here.

Turning first to home to university flows, Mosca and Wright (2010a) find that although the majority of undergraduates (on degree and non-degree courses) stay in their country of domicile to study, there is a considerable amount of movement, particularly so for Wales-domiciled students. This analysis is confirmed with recent data from HESA which provides information on country of domicile by country of study for full-time first degree students for 2009/10. Table 3.1 reveals that Wales' low retention rate of home students is pronounced compared to England and Scotland. Almost a third of Wales-domiciled undergraduates study in England. In terms of absolute flows of students, the high base of English-domiciled students means that despite only 3 per cent of this group coming to Wales to study (25,220 students), this equates to nearly three-quarters of the number of Wales-domiciled students staying in Wales to study (at 34,950), or 42 per cent of all full-time first degree students studying in Wales (at 60,620). The outflow of Wales-domiciled students to study in England (15,170) is roughly a third less than the inflow of English-domiciled students (25,220) coming to Wales to study.

Table 3.1: Country of domicile by country of study for full-time first degree students (% & number), 2009/10

Country of domicile	Country of study (% and numbers)								Total Students
	Wales		England		Scotland		Northern Ireland		
	Number	%	Number	%	Number	%	Number	%	
Wales	34,950	69.1	15,170	30.0	405	0.8	20	0.0	50,545
England	25,220	2.9	818,245	95.3	14,815	1.7	410	0.0	858,690
Scotland	140	0.1	4,775	5.0	89,680	94.8	40	0.0	94,635
Northern Ireland	310	0.8	8,065	19.9	3,930	9.7	28,200	69.6	40,505
Total Students	60,620		846,255		108,830		28,670		1,044,375

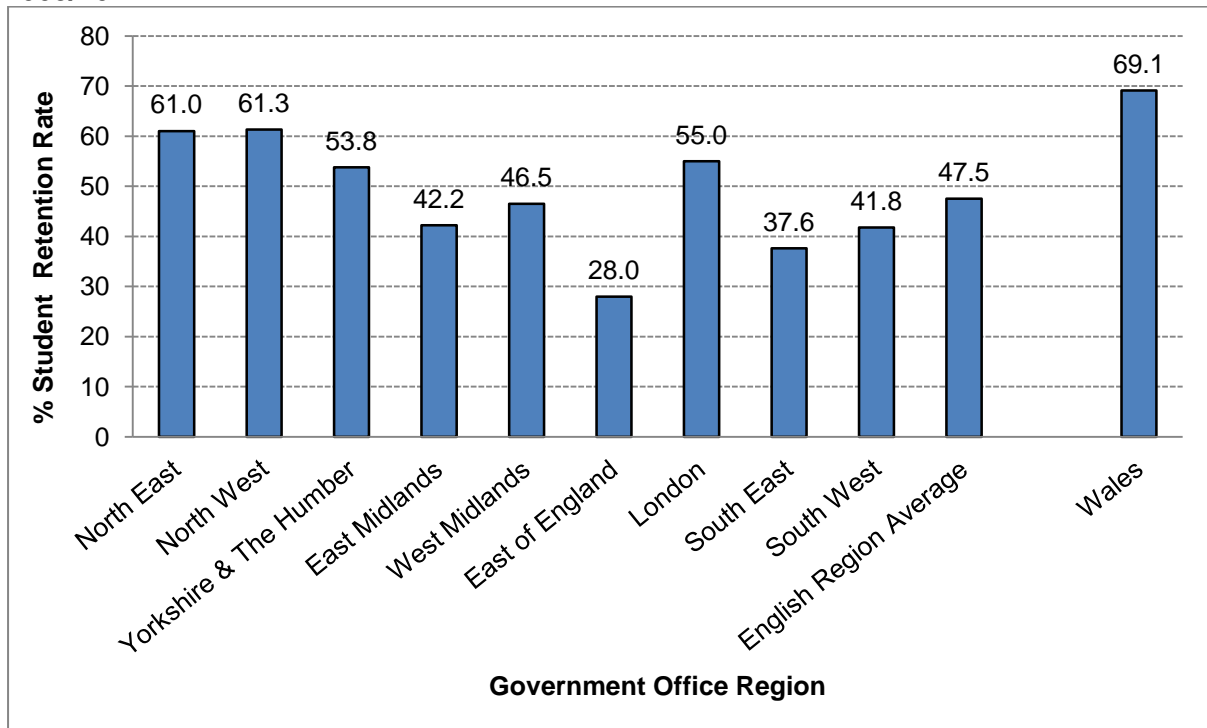
Source: Adapted from HESA 'Students in Higher Education' 2009/10, table 7b.

Though Wales has a lower retention rate than other parts of the UK, a significantly higher proportion of Welsh residents remain in Wales for HE than is average across the English regions. Regional data available from HESA presented in Figure 3.1 demonstrates that for 2009/10, the Welsh retention rate was 22 percentage points higher than the English regional average, equating most closely with the rates for the North East and North West of England. The relatively large number of universities in Wales given the size of the Welsh population, and possibly a stronger desire among Welsh students to remain in Wales during the course of their HE studies, contributes to higher proportion of 'home' domiciled students remaining in Wales than that which is typically observed across the regions of England.

A similar situation is observed if we now consider the first employment flows of graduates following university. Figure 3.2 also reveals that Wales is a 'loser region' in terms of (full-time first degree) graduates entering employment, with a net flow of graduates out of Wales (Hoare and Corver, 2010). This finding is not surprising given the extent to which Wales imports students to its universities from other parts of the UK. It is also noted that whilst the Wales retention rate of graduates is lower than the other home nations, it is higher than that observed among a majority of English regions, with only London and the North West retaining a higher proportion of their undergraduates. Whilst Wales has relatively low retention rates, both in terms of the home to university transition and the university to work transition, analysis of HESA data by WG suggests that the net flow of graduates out of Wales in 2008/09 equated to approximately 600 people. Whilst approximately 1,700 graduates from Welsh HE Institutions (HEIs) found work outside Wales, 1,100 non-Welsh graduates found work in Wales¹.

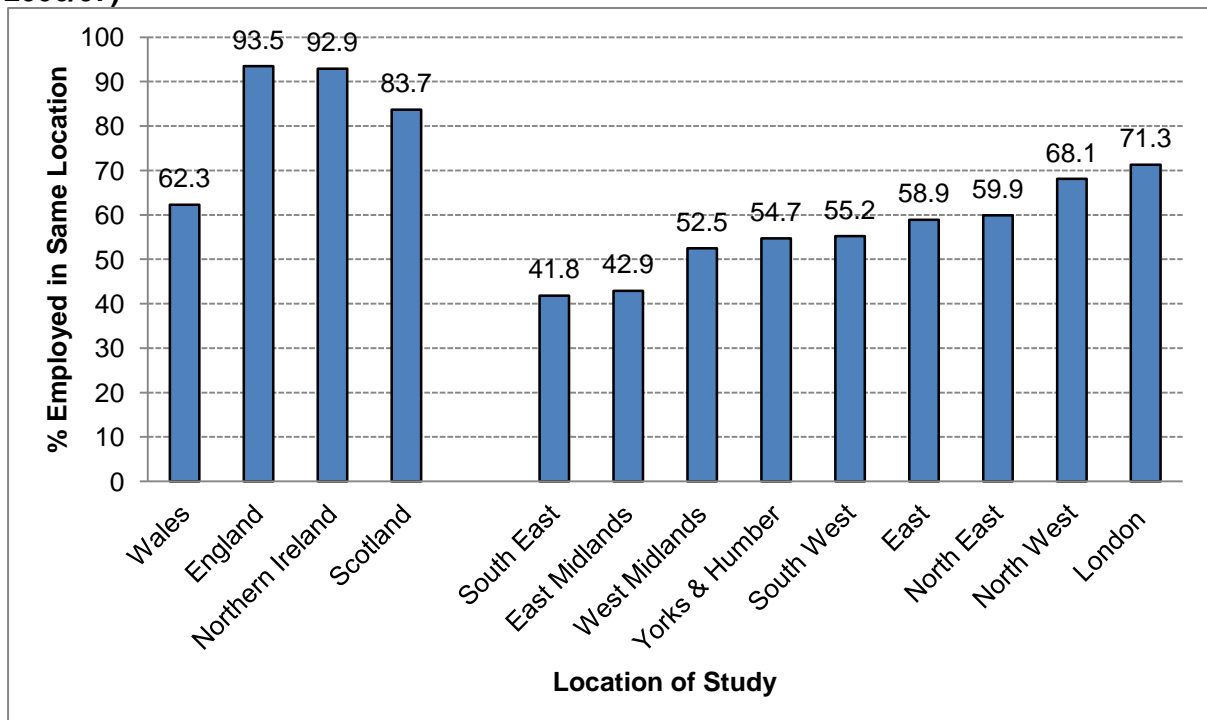
¹ WAG Statistical Bulletin, SB 78/2010, using HESA 'Destinations of Leavers from Higher Education' (DLHE) data

Figure 3.1: Region of Domicile Retention Rate for full-time first degree graduates, 2009/10



Source: Adapted from HESA 'Students in Higher Education' 2009/10, table 7b.

Figure 3.2: Region of Study Retention Rate for Employed Undergraduates (2002/03 – 2006/07)

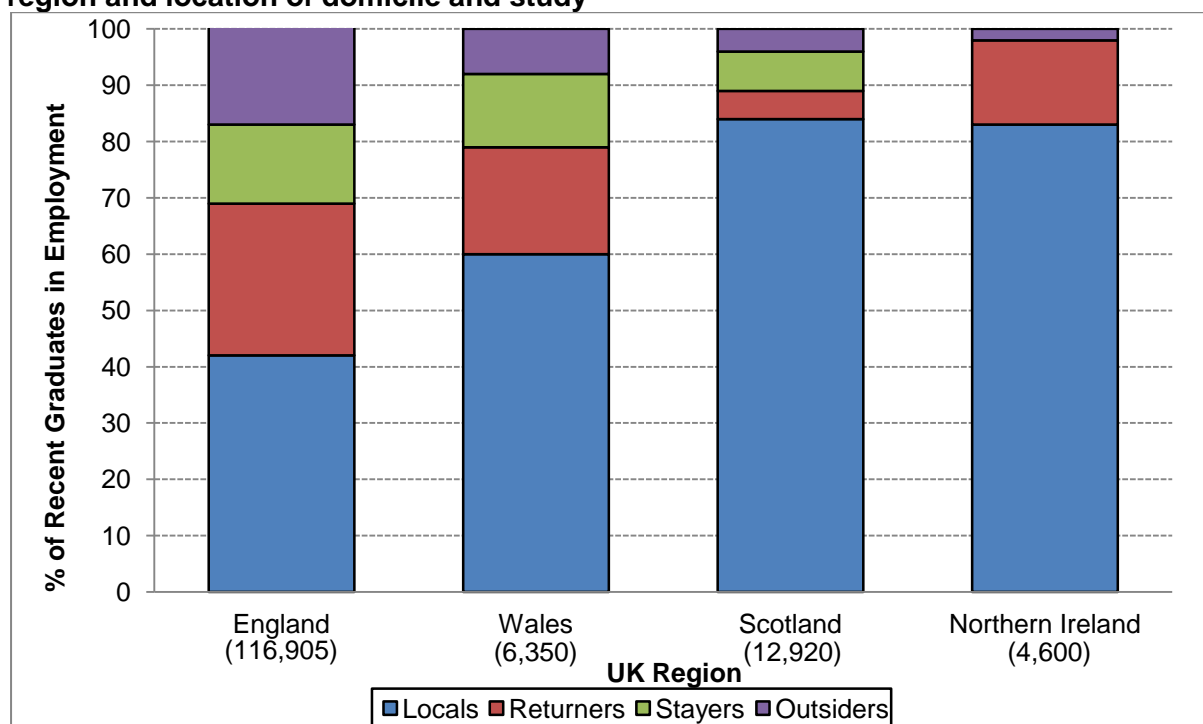


Source: Mosca and Wright (2010a), using HESA 'Destinations of Leavers from Higher Education' (DLHE) 2002/03-2006/07.

HESA data provide useful insight regarding the geographic 'pathways' followed by those who have attended a Welsh HEI. This is particularly pertinent given the large inflow of English students to study in Wales. Applying their HULT model (explained in chapter 2) to

HESA data, Hoare and Corver (2010) find that Wales is one of only four of the 12 'regions' (along with Scotland, Northern Ireland and the North East) which draws its largest single volume of graduate recruits from the 'locals' pathway. This is borne out by analysis of HESA data conducted using these 'pathways' on a more recent cohort (2005/06) of graduates in (full-time, paid) employment, shown in Figure 3.3. This confirms 'locals' as the most significant source of graduate labour recruitment for Wales (at 60 per cent of total employed graduates), compared to 'stayers' (at 13 per cent). Wales also exhibits a relatively high proportion of graduates who return to their region of domicile to work after studying elsewhere, with 'returners' comprising 19 per cent of total employed graduates for Wales six months after graduation in the 2005/06 cohort. Compared to Scotland and Northern Ireland, a relatively high proportion of recent graduates who are working in Wales had not previously studied in the country (at 8 per cent).

Figure 3.3: Graduates from 2005/6 who were working six months after graduation, by region and location of domicile and study



Source: 'Graduate Mobility: who goes to work in each region' (2008) prepared by HECSU for Prospects.ac.uk, using HESA 'Destinations of Leavers from Higher Education' (DLHE) 2005/06.

3.3 The Labour Force Survey and Graduate Migration

The main disadvantage of the HESA data is that the statistical returns undertaken by HEIs are largely collected from graduates at a point just 6 months following graduation through the Destination of Leavers from Higher Education Survey (DLHE), previously known as the First Destinations Survey (FDS). Given the relatively limited length of time that has elapsed since graduation, HESA data is not able to provide a full, longer-term picture of the migration patterns of graduates following their time in HE. The data also provide relatively little information on the personal characteristics of graduates, therefore limiting our understanding of the characteristics of graduates that are associated with migration and how migration can subsequently relate to a range of personal and economic outcomes.

To gain a better understanding of these issues, the analysis of this report largely focuses upon data from the UK Labour Force Survey (LFS). The LFS is the largest regular survey of households conducted in the UK, with individuals in some 60 thousand households being interviewed each quarter. Respondents to the LFS are asked detailed questions regarding

their levels of educational attainment, including whether or not they possess a degree and, if so, the year in which it was completed. In addition, the LFS asks a range of questions about the personal, household and labour market characteristics of respondents, which can help to provide a detailed picture regarding the lives of graduates since they completed their HE studies. While it is designed to provide accurate estimates of different demographic and labour market phenomena at a national and regional level, despite its large size the LFS is generally not designed to provide an accurate picture *within* a particular region for detailed sub-sets of the population such as graduates. To overcome the problems of small sample sizes that would inevitably be associated with the analysis of graduates from devolved regions, the analysis is largely based upon pooled LFS data for the period 2006 to 2010.

Boosts to the main LFS sample are also funded by devolved administrations within the UK in order to provide sufficiently large survey samples to facilitate regional analysis. The additional samples that are collected via the boosts to the LFS are contained within the data files of the Annual Population Survey (APS). In addition to the extra sample sizes that these datasets provide, these datasets also sometimes contain information from survey questions that are not available within the main LFS data files. Of particular interest in the context of analysing graduate migration in the UK is the availability of information on the country (within the UK) where the respondent's highest degree was obtained which has been included in the APS data files since January 2008. Information from both the LFS and the APS underpin the statistical analysis included within the remaining chapters of this report.

The remainder of this chapter provides an overview of graduate migration from Wales and the other devolved nations of the UK drawing upon data from the APS, HESA and the LFS. Data from the APS is firstly used to consider the characteristics of the total 'stock' of UK graduates; that is everyone in the population of working age who holds a degree, with particular emphasis being given to where graduates from devolved regions undertook their degrees. Our attention then turns to understanding the characteristics of young graduates who completed their studies since 1992. Young graduates are defined as those who were aged 25 or below at the time of their graduation. Whilst expansion in the numbers of people participating in Higher Education has increased steadily over several decades, 1992 represents a watershed in terms of participation in HE, with many former polytechnics gaining university status. It is the period since 1992 which has exhibited a large increase in the numbers of people participating in HE and therefore represents a period which may be expected to affect the opportunities of young graduates.

3.4 The Stock of UK Graduates and Graduate Migration

Issues of graduate migration will be closely related to the issues surrounding choice of where to study. Those who choose to study outside their region or country of birth may simply not return following graduation, having developed a preference for living in the region in which they studied or possibly choosing to migrate to a location elsewhere in the UK following graduation rather than returning home. Even among those who do return to the area in which they were brought up, studying elsewhere in the UK may well be expected to be associated with an increased likelihood that such students will migrate again at some point in the future, with such graduates already having expressed a willingness to migrate. Within the UK, changes in funding arrangements for students associated with the expansion of HE (discussed in chapter 2) have also had an important impact upon the choices of students about where to study. Table 3.2 uses APS data to show changes over time in the country where UK born graduates of working age resident in the UK obtained their degrees. The time periods that are identified in the table have been selected in order to try and reflect the different phases of HE expansion and funding arrangements. The percentage obtaining their highest degree from a particular country within the UK is reported by country of birth. The different graduating cohorts have been identified using the age that the respondent stated that they left full-time education.

Table 3.2: Country of Highest Degree (%) by Country of Birth Amongst UK Born Graduates of Working Age

	Time Period Left Full-time Education					
	Pre-1975	1975-91	1992-96	1997-2004	2005-10	Total
English-born						
England	92.2	91.5	92.3	92.3	92.4	92.0
Wales	3.7	4.2	3.6	4.2	5.0	4.1
Scotland/Northern Ireland	3.2	3.4	3.4	2.8	2.3	3.1
Non-UK	0.9	0.9	0.7	0.6	0.3	0.7
Welsh-born						
England	39.9	42.7	46.1	38.3	33.0	40.4
Wales	56.8	55.2	52.2	59.9	66.4	57.7
Other	3.2	2.1	1.8	1.8	0.6	1.9
Scottish-born						
England	17.0	13.9	12.9	13.0	9.3	13.6
Scotland	80.8	84.5	85.0	85.7	89.3	84.8
Other	2.1	1.5	2.0	1.3	1.4	1.6
Northern Irish born						
England	29.1	28.7	25.3	22.2	21.1	25.6
Northern Ireland	57.6	60.8	57.5	58.7	62.3	59.8
Other	13.4	10.5	17.2	19.1	16.6	14.6

Source: Annual Population Survey 2008-2010

Table 3.2 shows that the overwhelming majority of English-born graduates obtained their highest degree from an English HEI. Although this is not surprising given the relative importance of English HEIs to the UK, the percentage has remained remarkably stable over time at around 92 per cent. The proportion of the English-born graduates obtaining their highest degree in Wales has increased slightly over time, reaching 5 per cent in 2005-10. In contrast, the percentage with degrees from Scotland/Northern Ireland has fallen since the mid-1990s. Moreover since 2004, the percentage of English-born students with degrees from Welsh HEIs is more than double that for Scottish and Northern Irish HEIs combined, whereas it had been roughly even for English-born people graduating in the mid-1990s. Therefore, there is a considerable cross-border movement of students between England and Wales, as is also shown in the HESA data. Only a very small fraction of English-born graduates received their highest degree from outside the UK, and this has also declined over time.

The strong cross-border student movements between England and Wales are even more apparent when the position of Welsh-born graduates is examined. Although the majority of Welsh-born graduates received their highest degree from a Welsh HEI, this percentage has fluctuated over time. Around 57 per cent of Welsh-born graduates received their highest degree from Welsh HEIs in the first period (pre-1975), but this percentage fell as the UK HE system expanded. By the mid-1990s, just over half of Welsh-born students received their highest degree from a Welsh HEI. Since then, the percentage of Welsh-born graduates obtaining their highest degree from a Welsh HEI has risen, with two-thirds appearing in this category after the introduction of top-up fees (in England) in 2004. Scottish, Northern Irish and non-UK HEIs account for only a small and declining percentage of the highest degrees awarded to Welsh-born graduates. In contrast, a high proportion of Welsh-born graduates continue to receive their highest degree from an English HEI, although this has also been

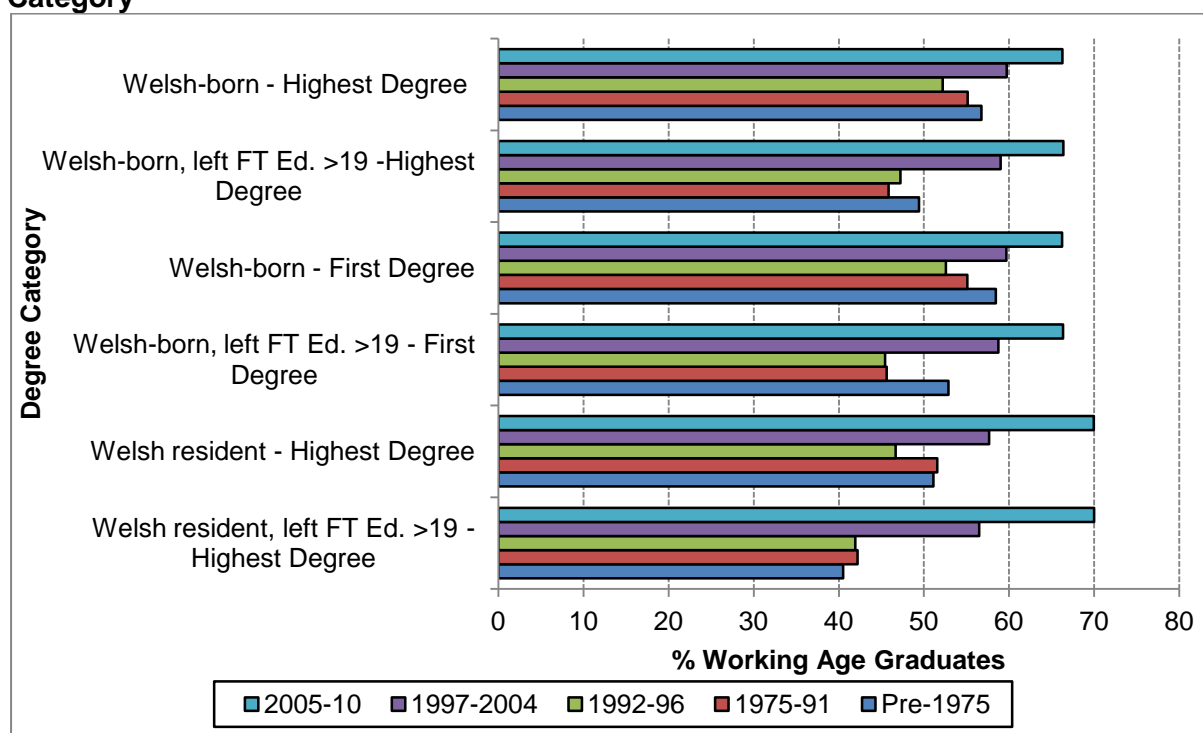
declining. In particular, almost half of the highest degrees awarded to Welsh-born people graduating in the mid-1990s were awarded by English HEIs, but this has fallen to a third since 2004.

Scotland's more distinct education system appears to produce very different outcomes in terms of where its native born students obtain their degrees. Overall, around 85 per cent of working age Scottish graduates living in the UK obtained their highest degrees from Scottish HEIs. This percentage has also been rising, reaching almost 90 per cent in the period since 2004. Correspondingly, the percentage of Scottish-born graduates with degrees from English HEIs has fallen, from 17 per cent for those leaving full-time education before 1975 to less than 10 per cent in 2005-10. The percentage of graduates with degrees from English HEIs has also declined over time in Northern Ireland, but over 20 per cent of graduates born in Northern Ireland graduating in the most recent period continue to obtain their highest degree in England. The percentage in the 'other' category is also quite high in Northern Ireland. This category is dominated by non-UK countries (presumably the Republic of Ireland) in the earlier periods but has been increasingly influenced more recently by graduates from Scottish HEIs.

In order to examine Welsh graduate migration in more detail, Figure 3.4 reports the percentage of graduates receiving degrees from a Welsh HEI over time. This information is reported for several different groups. The first of these is Welsh-born graduates who left full-time education in each of the different periods. This provides the same information as the middle row for the group of Welsh-born graduates reported in Table 3.3. The second group takes account of the fact that a relatively high proportion of Welsh-born graduates may have obtained a degree by studying part-time. We exclude these people by restricting the age when the respondent left full-time education to at least 20. Equivalent categories are then constructed for Welsh-born graduates whose highest degree is a first degree, in order to detect whether there is much difference between where undergraduate and postgraduate degrees are obtained. Finally, the percentage receiving their highest degree from a Welsh HEI is reported for these two categories of graduates who reside in Wales (which include graduates born outside Wales).

It can be seen from Figure 3.4 that there are a number of similar patterns across the groups in terms of the percentage of graduates from a Welsh HEI. In particular, the proportion of recent (post-2004) graduates with a degree from a Welsh institution is over two-thirds for each of the categories. It is highest of all for Welsh residents at around 70 per cent. The figure therefore implies that it does not make much difference whether we consider first or highest degrees, or whether or not we exclude part-time students from the analysis, especially in the period after 1997. There is however greater variation in the percentage of graduates from Welsh HEIs in the earlier periods. This particularly relates to the difference between Welsh-born and Welsh resident graduates of all ages compared to the equivalent groups who left full-time education after the age of 19. For example, the percentage of Welsh-born graduates with a highest degree from a Welsh HEI was about 10 percentage points higher when all graduates are included, compared to restricting the group to just those leaving full-time education after the age of 19. A similar differential is also apparent for Welsh residents leaving full-time education either before 1975 or between 1975 and 1991. This discrepancy is likely to reflect that fact that more mature, part-time students are more likely to graduate from a Welsh HEI.

Figure 3.4: Percentage of Working Age Graduates with a Degree from Welsh HEI, by Category



Source: Annual Population Survey 2008-2010

3.5 Migration Among Post-1992 Young Graduates

We now turn to the Labour Force Survey (LFS) to provide a picture of migration and graduate migration between the home nations of the UK. The LFS asks respondents about the country in which they were born and their current region of residence, enabling respondents who are no longer living in their country of birth to be identified. The analysis is restricted to those respondents who were born in the UK. In considering the relative circumstances of migrants and migrant graduates, we separately distinguish the three most prosperous regions from the rest of England; London and its two major commuting regions, the East and South East. These three regions are subsequently referred to as the Inner Region Core (IRC). Simple comparisons of the relative circumstances of graduates between England and the other devolved regions of the UK would be confounded by the unique economic circumstances and opportunities for graduates that exist within the IRC. In understanding the relative characteristics of migrants and the returns to migration, it is therefore more informative to make comparisons that distinguish between the IRC and elsewhere. This approach is taken throughout the remainder of the report.

In this section, our attention now turns to patterns of migration exhibited by post-1992 graduate cohorts. Table 3.3 considers migration between the home nations for the non-student population who were under the age of 45 at the time of the LFS. We focus on this age group because it is this group that has been most affected by the expansion of numbers participating in Higher Education in the UK since 1992. For the purpose of our analysis, we define a 'young graduate' as someone who was aged 25 or under when they completed their degree. Taking 1992 as the year in which expansion in HE numbers began, a 'young graduate' who was aged 25 at the time of graduation could potentially be aged 44 at the time of their LFS interview if their information is being extracted from the 2010 LFS data. In practice, a relatively small proportion of our sample of young post-1992 graduates extracted from the 2006 to 2010 Labour Force Surveys are aged over 40 at the time of their interview.

Among the non-student population under the age of 45, 15 per cent of those who were both born and live in Wales possess a degree or higher degree. However, 44 per cent of Welsh migrants under the age of 45 at the time of the survey report that they possess a degree. The higher levels of educational attainment exhibited by this younger group of people who were born in Wales are particularly apparent among those who no longer live in Wales. The highest levels of educational attainment are observed among those born in Northern Ireland who live in Scotland, among whom 62 per cent report holding a degree or higher degree. This may reflect the relatively small sample size and/or the relative proximity of Scotland to Northern Ireland, making it a relatively attractive destination for Northern Ireland graduates.

One important limitation of the LFS data is that it is only possible to identify country of birth and it is therefore not possible to accurately consider the characteristics of English respondents who migrate within England. It can be seen in Table 3.3 that the proportion of English respondents living in the IRC who possess a degree is relatively small at 25 per cent. However, this group will comprise both those who were born in the IRC and those who migrate there from other parts of England. Among this latter group, it would be expected that levels of educational attainment measured by the proportion of such respondents possessing a degree would be similar to the levels of attainment exhibited by migrants from devolved nations. The inability to distinguish regional migrants within England means that the distinction between migrants and non-migrants cannot be accurately made for English graduates.

Table 3.3: Non-Student Population under the Age of 45 in Possession of a Degree/Higher Degree (%)

Place of Birth	Region of Residence					Migrant Summary		
	IRC	Rest of England	Wales	Scotland	Northern Ireland	Non-Migrants	Migrants	Total
England	25.0	16.4	28.6	34.9	24.7	19.4	31.1	19.7
Wales	55.9	37.4	14.6	38.8		14.6	43.9	19.8
Scotland	48.9	28.5	27.5	15.6	22.8	15.6	35.7	18.4
Northern Ireland	50.3	43.6	32.9	61.5	18.0	18.0	48.8	22.0
Total	25.8	16.8	17.7	18.1	18.3	18.9	36.4	19.7

Source: Labour Force Survey 2006-2010

It has therefore been established that migrants leaving a region are more likely to possess a degree than those who remain living in their region of birth. Table 3.4 considers patterns of migration among young graduates who completed their studies since 1992. It can be seen that over 95 per cent of English-born graduates remain in England. The retention of graduates is lowest within Wales, where 38 per cent of Welsh-born graduates who have completed their studies reside elsewhere in the UK. This retention rate is markedly lower than that observed within Scotland (75 per cent) and Northern Ireland (74 per cent). The relatively low retention rate estimated for Wales is consistent with findings from HESA data. However, as noted above, the LFS does not record information on region of birth and it is therefore not possible to establish how the Welsh graduate retention rate compares to those observed across the regions of England.

Table 3.4: UK Migration among Post-1992 Young Graduates

Place of Birth	Region of Residence					Total	Migration Incidence
	IRC	Outer UK	Wales	Scotland	Northern Ireland		
England	44.8	51.9	1.6	1.6	0.1	100	3.3
Wales	17.5	19.6	61.9	1.0	0.0	100	38.1
Scotland	13.5	10.5	0.6	75.0	0.4	100	25.0
Northern Ireland	7.6	11.1	0.4	7.4	73.5	100	26.5
Total	39.6	45.5	4.3	7.6	3.0	100	7.5

Source: Labour Force Survey 2006-2010

Whilst the proportion of English-born graduates who migrate from England is relatively small (4 per cent), the size of this pool of English graduates is relatively large. Despite its low retention rate of Welsh-born graduates, it remains the case that the number of graduates leaving Wales may be being offset by graduates moving into Wales from other parts of the UK. The net migration of graduates is considered in Table 3.5. It can be seen that England has been a net recipient of post-1992 graduates, with a net inflow equivalent to 1.5 per cent of the post-1992 UK young graduate population. By definition, the other devolved regions of the UK are net exporters of young graduates. The largest net exporter of young post-1992 graduates is Northern Ireland, with a net outflow equivalent to 0.9 per cent of the total UK population. Whilst levels of out-migration among Northern Ireland graduates were found to be relatively low (21 per cent), English-born graduates do not migrate to Northern Ireland in the same numbers as which they migrate to Wales and Scotland, contributing to relatively high levels of net out-migration from Northern Ireland. Again, this supports previous analysis of HESA data (see Figure 3.3), which indicates that graduates employed in Northern Ireland are largely those who were born in Northern Ireland and who either studied there or returned to live there following graduation. Very few graduates from elsewhere in the UK either stay in Northern Ireland following their studies in a Northern Ireland HEI, or move to Northern Ireland having graduated from an institution elsewhere in the UK.

Table 3.5: Net Migration among Post-1992 Young Graduates

Place of Birth	Region of Residence					Total	Net Flow (% live - % born)
	IRC	Outer UK	Wales	Scotland	Northern Ireland		
England	37.5	43.4	1.3	1.4	0.1	83.7	1.5
Wales	0.8	0.9	2.9	0.1	0.0	4.6	-0.4
Scotland	1.1	0.8	0.1	5.9	0.0	7.9	-0.3
Northern Ireland	0.3	0.4	0.0	0.3	2.8	3.9	-0.9
Total	39.6	45.5	4.3	7.6	3.0	100.0	

Source: Labour Force Survey 2006-2010

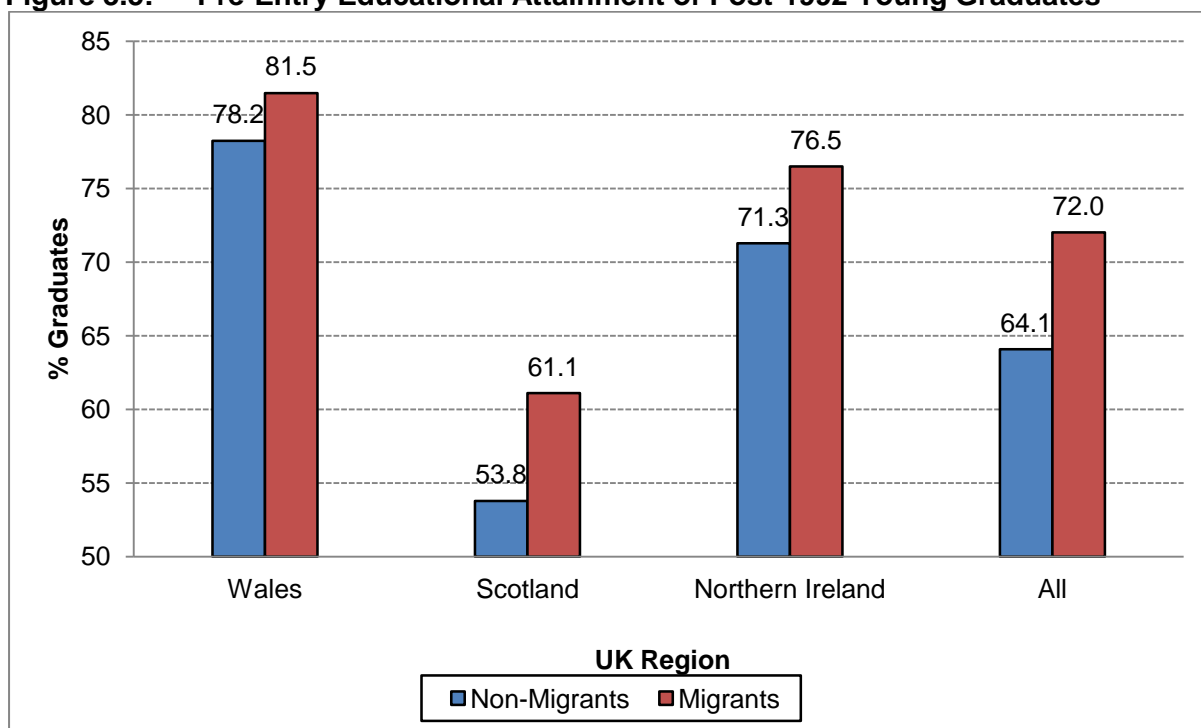
3.6 Graduate Migration and Levels of Educational Attainment Among the Post-1992 Graduate Cohort

The analysis of this chapter has so far focussed upon the number of graduates who migrate between the devolved nations of the UK. Our attention now turns to consider issues surrounding differences in the 'quality' of migrant and non-migrant graduates. Specifically, we consider the differences in the educational attainment of migrant and non-migrant graduates. In the analyses that follow, we deliberately exclude English graduates from the analysis. As discussed above, whilst an English-born graduate in the LFS can be identified as a migrant if they are observed to be living in one of the devolved nations of the UK, English graduates who migrate between regions within England cannot be identified. Such

difficulties in measurement will make it difficult to accurately compare the characteristics of migrant and non-migrant English graduates.

Figure 3.5 firstly considers the pre-entry level qualifications held by post-1992 young graduates. The LFS provides very limited information about the number of A-levels possessed by respondents, simply recording whether or not those respondents with A-levels possess one or more than one. As a very large majority of the post-1992 graduate cohort would be expected to have more than one A-level upon entry to university, this measure is not useful in terms of measuring the academic ability of students upon their entry into HE. To provide a more discriminating measure of educational attainment prior to commencing a degree, we instead consider information on the number of GCSE passes achieved by respondents. It should be noted that educational attainment based on this measure is not comparable across countries due to differences in qualification structures. In Scotland, this measure comprises the number of passes achieved at the Intermediate Level of Scottish National Qualifications. Scottish students tend to sit examinations in 8 subject areas at the age of 15 or 16 and as such the figures are not directly comparable to those for the other home nations. It can be seen that across each devolved nation, graduates who no longer live in that country are demonstrated to possess a higher number of GCSE (or equivalent) passes. This differential is widest among Scottish graduates.

Figure 3.5: Pre-Entry Educational Attainment of Post-1992 Young Graduates

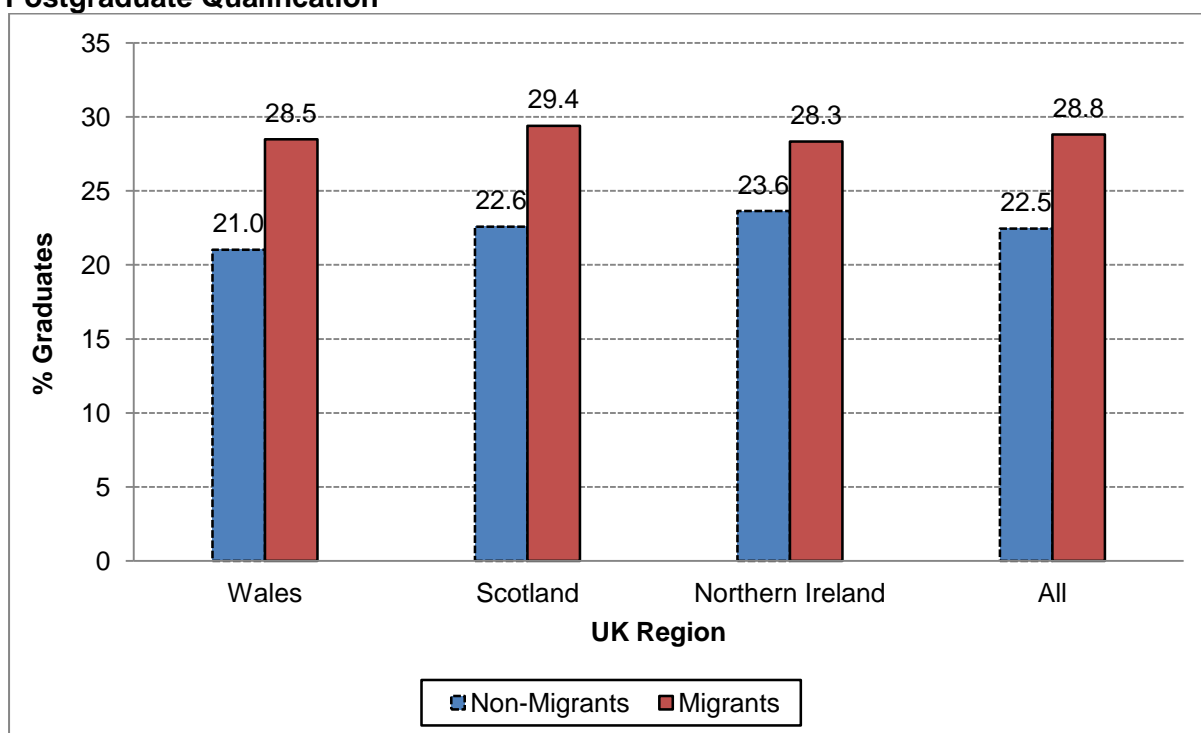


Source: Labour Force Survey 2006-2010

Figure 3.6 provides information on the proportion of graduates who go on to take postgraduate qualifications. It can be seen that graduates no longer living in their region of birth are more likely to hold a postgraduate qualification. This differential is approximately 6 percentage points among graduates born in the devolved nations. Comparisons of degree class are difficult to make across countries. Prior to 2007, the LFS only recorded details of the highest higher education qualification achieved. If respondents had gone on to undertake a postgraduate degree, details of undergraduate degree class would not be recorded. The situation is again further complicated by differences in the educational system in Scotland, where many undergraduates are awarded a Masters degree and therefore a higher proportion of Scottish graduates record that they achieved a pass for their

degree compared to other countries of the UK. Analysis undertaken (not presented) revealed that little difference emerged between migrant and non-migrant graduates in terms of degree classification. This is probably not surprising as all universities, whether they be traditional universities or ‘new’ universities formed during the 1990s, will award degrees of varying classifications. In the absence of information in the LFS about the type of institution attended (e.g. Oxbridge, Russell Group, post-1992), degree class may not be a very discriminating measure of ability compared to pre-entry qualifications.

Figure 3.6: Proportion of Post-1992 Young Graduates in Possession of a Postgraduate Qualification



Source: Labour Force Survey 2006-2010

3.7 Graduate Migration and Subject Studied Among the Post-1992 Graduate Cohort

The LFS asks graduates to provide information about the subject area they studied during the course of their degree programme. Responses provided by young post-1992 graduates are presented in Table 3.6. Two classifications of subject areas are provided. The first provides a four-fold breakdown of degree subject areas. It can be seen that no specific pattern emerges. Among Welsh graduates, those who remain living in Wales are more likely to have studied a vocationally orientated degree such as medicine, education or law (27 per cent) compared to those who have migrated away from Wales (19 per cent). Conversely, those Welsh graduates who remain living in Wales are less likely to have studied Science, Engineering and Technology (SET) related subjects (a differential of 9 percentage points). Wales has the lowest proportion of non-migrant graduates who have studied a SET related subject.

Both the English and Welsh Higher Education Funding Councils have placed considerable emphasis on the importance of STEM subjects (Science, Technology, Engineering and Mathematics). These subject areas have been regarded as strategically important and vulnerable. Within England, the National HE STEM Programme² aims to contribute to ‘the

² <http://www.hestem.ac.uk/>

development of a national higher education (HE) STEM sector, and increase and enhance employees with knowledge and skills in these areas'. Within Wales, the Higher Education Funding Council for Wales (HEFCW) has identified 'Subjects of Broader Importance to Wales'³ which are deemed to need support in order to maintain courses and/or increase the number of students from under-represented groups. STEM subjects have again been identified as a subject area which requires additional investment and HEFCW has implemented projects to address issues of student demand for STEM subjects. Given the importance of STEM subjects, the bottom panel of Table 3.6 shows the proportion of graduates who have undertaken degrees within this broad subject area. Across each of the devolved regions of the UK, migrant graduates are more likely to possess degrees in STEM subject areas. This differential is widest in Wales, where the proportion of graduates with STEM degrees is 7 percentage points higher among migrant graduates.

Table 3.6: Subject Studied of Post-1992 Young Graduates

	Non-Migrant	Migrant	Differential
Wales			
Medical, Education and Vocational	26.5	19.4	-7.1
Science, Engineering and Technology (SET)	26.6	34.8	8.2
Social Sciences	20.8	19.9	-0.9
Arts, Humanities	26.1	25.9	-0.2
Scotland			
Medical, Education and Vocational	24.1	18.8	-5.3
Science, Engineering and Technology (SET)	32.2	36.0	3.8
Social Sciences	26.6	25.3	-1.3
Arts, Humanities	17.2	19.9	2.8
Northern Ireland			
Medical, Education and Vocational	26.8	25.0	-1.7
Science, Engineering and Technology (SET)	30.1	33.1	3.0
Social Sciences	29.7	22.5	-7.3
Arts, Humanities	13.5	19.4	6.0
All			
Medical, Education and Vocational	25.3	20.4	-4.9
Science, Engineering and Technology (SET)	30.3	34.9	4.6
Social Sciences	25.7	22.7	-3.0
Arts, Humanities	18.7	22.0	3.3
STEM Summary			
Wales	35.6	42.2	6.6
Scotland	41.3	43.9	2.6
Northern Ireland	42.8	45.2	2.4
Total	40.2	43.6	3.4

Source: Labour Force Survey 2006-2010

³ http://www.hefcw.ac.uk/policy_areas/strategic_change/subjects_broader_importance_wales.aspx

4. Graduate Migration and Family Formation

Chapter Summary

- In terms of understanding graduate careers and graduate migration, living within the family home for a period of time following graduation is the norm for a majority of graduates. Evidence from the Labour Force Survey (LFS) reveals that approximately two thirds of graduates can be identified as living in the parental home during the year immediately following graduation. By 3 years following graduation, less than a third of graduates remain in the parental home.
- The reduction in the proportion of graduates leaving the family home can largely be accounted for by an increase in the proportion of graduates who leave home but who remain in their county of birth.
- Among Welsh-born graduates, a majority of migratory activity occurs immediately following graduation where approximately 30 per cent are no longer living within Wales. By 15 years following graduation, the proportion of such graduates living outside Wales increases to 41 per cent.
- Within Wales, levels of out migration peak at between 10 to 14 years following graduation, indicating that beyond this period the number of Welsh graduates who return to Wales following an initial period of migration exceeds levels of outward migration at this time. The reduction in the proportion of Welsh migrant graduates can be accounted for by a reduction in the proportion of graduates who are living within the Inner Region Core (IRC).
- The presence of a group of graduates who live in the family home following graduation has important implications for understanding differences in the relative characteristics of migrant and non-migrant graduates. Most significantly, those graduates who are observed to be living in the family home are approximately 5 years younger than those who have left home. Related to this, they are more likely to be single and less likely to have dependent children.
- Abstracting from those graduates who are observed to live in the family home, levels of partnership formation among other non-migrant graduates are higher than those observed among migrant graduates, particularly compared to graduates who migrate to the IRC. This contributes to lower levels of family formation within the IRC, although even those graduates within the IRC who are married or cohabitating are less likely to have dependent children.

4.1 Introduction

The analysis of the previous chapter focussed primarily upon understanding the incidence of graduates who no longer live in the region in which they are born. However, this distinction between migrant and non-migrant graduates is an over simplification of the position of graduates during their time following HE. Upon leaving university, many graduates live within the family home. Some of these graduates may have attended a university within their locality and would never have left home whilst attending Higher Education. For some, the return to the family home may be a short term phenomena whilst they search for their first full-time position following graduation and gain their first job that facilitates independent living. For others, the return to the family home may represent a longer term situation that could reflect a number of factors such as an inability to secure a full-time position, wishing to to pay off graduate debts or simply a preference for living at home.

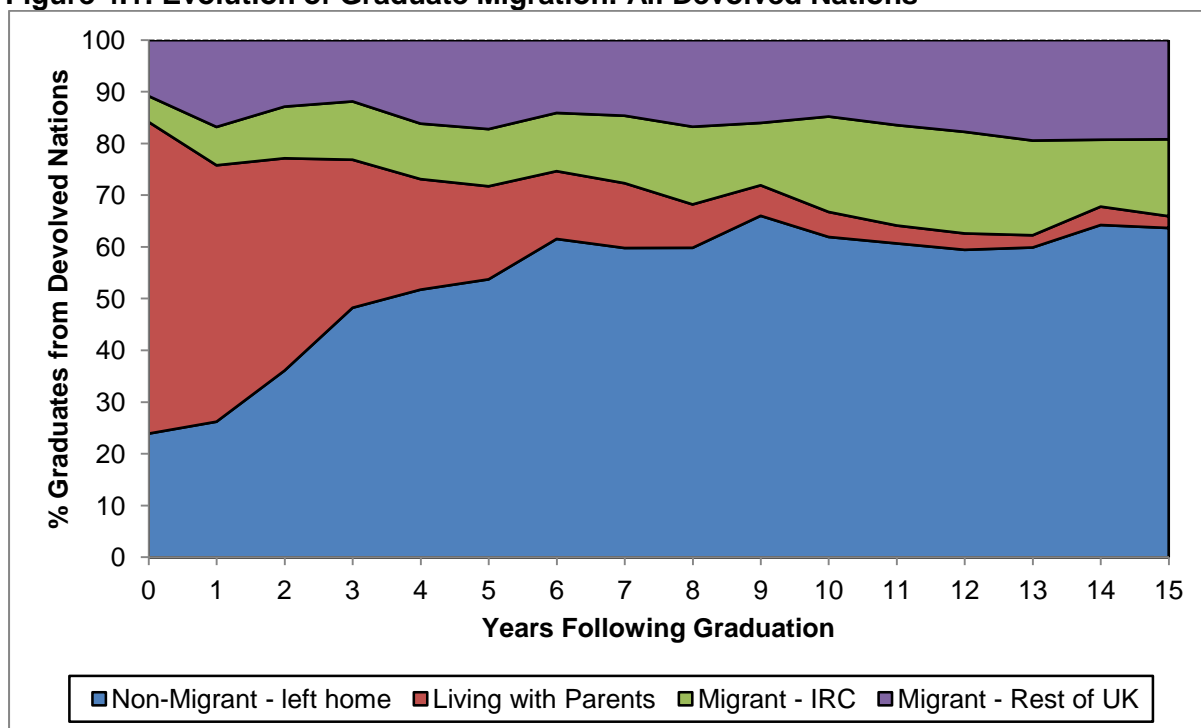
Those who remain living or return to live in their region of birth following graduation will therefore consist of two distinct groups, those who remain living in their parental home and those who have left the parental home. Both the personal and labour market characteristics of these 2 groups may be expected to be quite different. Simple comparisons of the relative characteristics of graduates who remain living in their region of birth compared to graduates who have moved elsewhere may therefore be misleading. This chapter considers how the situation of graduates evolves with respect to migration and living within the family home and how this can be demonstrated to relate to partnership and family formation. The analysis utilises data from the Labour Force Survey and focuses upon the circumstances of post-1992 graduates.

4.2 The Evolution of Graduate Migration

It is possible to use repeated cross sections of the LFS to consider the evolution of the personal circumstances of post-1992 graduates. For the purpose of this analysis, we identify all young graduates (those aged 25 or below at the time of graduation) within the LFS between 2006 and 2010 who had graduated since 1992. The LFS is a cross sectional survey and so these graduates are not the same individuals being followed up over time. It should therefore be noted that these graduates could have left university at any time between 1992 or 2010 if they are a recent graduate who has been included in our last year of data. Within our sample, someone who had graduated more than 15 years ago must have done so in the early to mid-1990s.

The evolution of graduate migration among post-1992 graduates is demonstrated in Figure 4.1. This 'pseudo cohort' analysis assumes that information collected from different cohorts of post-1992 graduates can be combined to provide a longitudinal picture of the circumstances of graduates from devolved nations following graduation. There are limitations to this approach in so far that it does not follow the position of a single cohort of graduates. Different cohorts of graduates could therefore have faced different labour market circumstances following graduation (both in terms of economic conditions and the supply of graduates) than those who have graduated more recently. Nonetheless, the analysis clearly demonstrates that a majority of young graduates (almost 65 per cent) can be identified as living in the parental home during the year immediately following graduation. By 3 years following graduation, less than a third of graduates remain in the parental home. By 10 years following graduation, only approximately 5 per cent of graduates remain living in the family home.

Figure 4.1: Evolution of Graduate Migration: All Devolved Nations



Source: Labour Force Survey 2006-2010

The decline in the proportion of graduates living within the parental home is largely accounted for by an increase in the proportion of graduates who leave their parental home but who remain in their region of birth. The proportion of graduates who are in such a position increases from 24 per cent during the year following graduation to 64 per cent among those whose careers can be observed over a period of 15 years. The proportion of graduates within devolved nations who migrate away from their region of birth increases from 16 per cent in the year following graduation to 34 per cent among those observed some 15 years following graduation. Overall, half of net migratory activity during the first fifteen years following graduation occurs during the first 12 months following graduation. This 18 percentage point increase in net migration is split relatively evenly between those who migrate from the devolved nations to the IRC and those who migrate to the rest of the UK.

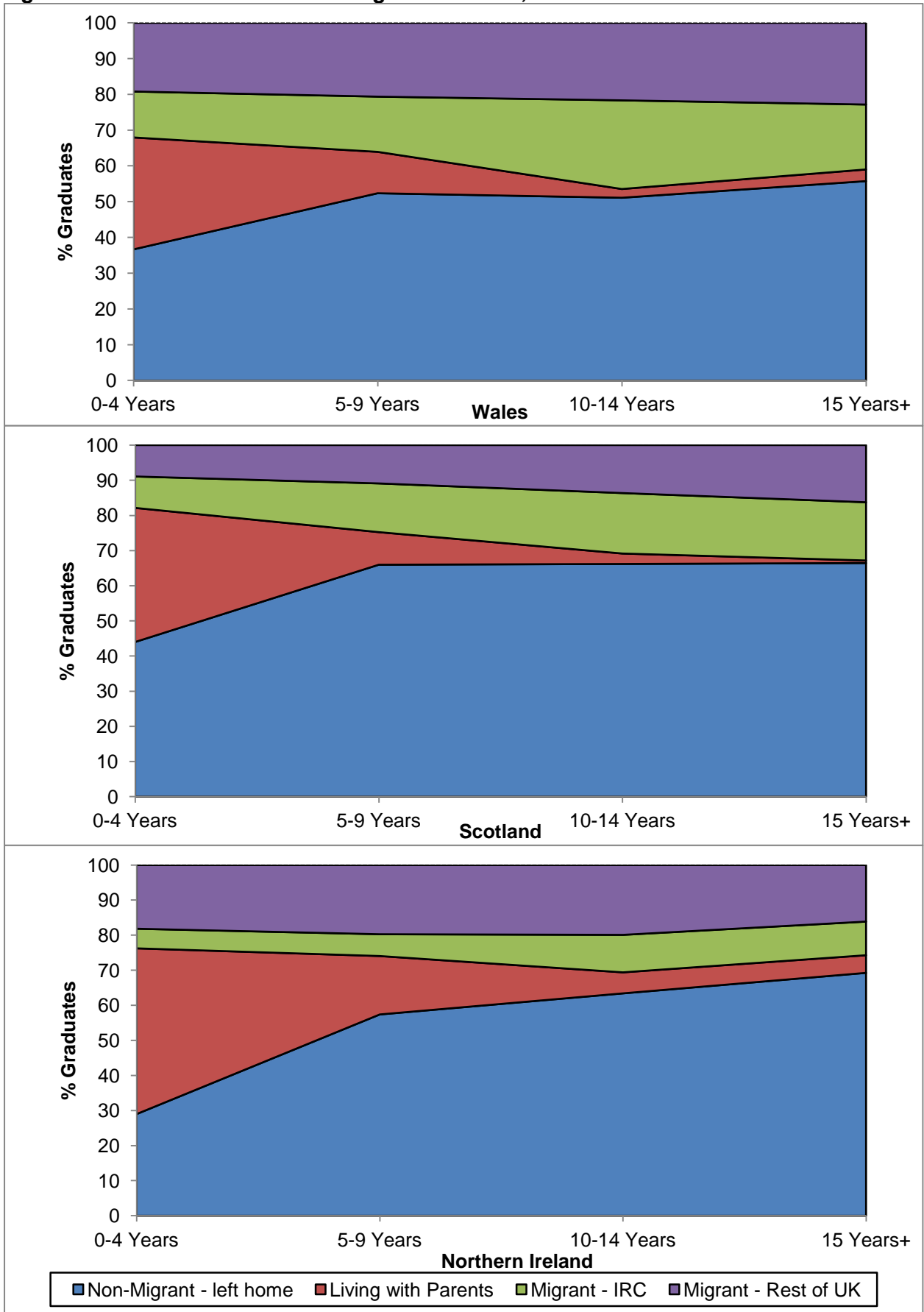
Figure 4.2 considers national variations in the evolution of migratory activity among the post-1992 young graduates. Due to the smaller sample sizes, information on the number of years following graduation has been aggregated into five-year bandwidths. Regional variations in the proportions of graduates who are observed as living at home reflect the migration patterns described in Figure 4.2. It can be seen that expressed as a proportion of all graduates, the proportion of graduates who live in the parental home is highest in Northern Ireland and lowest in Wales, reflecting the low and high levels of outward migration from these devolved nations. Beyond 5 years following graduation, it can be seen that proportion of graduates who live with their parents is relatively similar within Wales and Scotland. However, the proportion of non-migrant graduates who live within the parental home is significantly higher within Northern Ireland than other areas of the UK even after taking into account the lower levels of outward migration. A range of economic factors, such as fewer opportunities within the local labour market, and social factors, such as higher levels of religious belief and an associated expectation that people live in the parental home for longer, could each contribute to this difference.

Across all devolved nations, the decline in the proportion of graduates living within the family home is largely accounted for by an increase in the proportion who no longer live at home

but who remain in their region of birth. However, variations in the evolution of migratory behaviour are shown to exist. Welsh-born graduates exhibit the highest incidence of migration. However, a majority of this migratory activity occurs during the first four years following graduation, during which approximately a third of Welsh-born graduates are observed to be living elsewhere in the UK. Beyond 15 years following graduation, the proportion of Welsh-born graduates who have migrated increases to 41 per cent, an increase of 9 percentage points. Among Scottish-born graduates, whilst levels of graduate migration are considerably lower during the first 4 years following graduation (18 per cent), levels of net outward migration increase at a higher rate over the remainder of the follow-up period. Beyond 15 years following graduation, the proportion of Scottish-born graduates who no longer live in their country of birth increases to a third. The picture of migration among graduates from Northern Ireland is relatively flat. During the first 4 years following graduation, approximately 1 in 4 Northern Ireland graduates live elsewhere in the UK, a level of migration that is also observed beyond 15 years following graduation.

Within both Northern Ireland and Wales, it can be seen that levels of migration peak at between 10 to 14 years following graduation. Reflecting the different migratory patterns of the 2 groups, the reduction in levels of net outward migration among Welsh graduates that occurs beyond this point is accounted for by a reduction in the proportion of Welsh-born graduates living in the IRC (a decline of 7 percentage points). Among Northern Ireland graduates, the subsequent reduction in levels of net outward migration are accounted for by a lower proportion of such graduates living within the Rest of the UK. It must be noted that this 'pseudo cohort' analysis of the LFS does not follow up the same group of graduates over a period over time and therefore these patterns could be the result of changes in migratory behaviour between different cohorts of graduates. However, given that the analysis is based upon pooled data from the LFS that covers a period of 5 years (2006 to 2010) and that we are classifying graduates in terms of the time elapsed since graduation using 5 year bandwidths, the potential period during which graduates within each of the 5 groupings left university could be up to a decade and there will also be overlap in the years of data from which graduates in the different groupings are drawn. The analysis therefore points to the presence of groups of graduates who return to their country of birth following an initial period of migration. Whilst both outward and return migration will exist among all cohorts of graduates, it appears that the net effect of this migratory activity beyond 15 years following graduation is to increase the proportion of Welsh and Northern Irish graduates who live in their country of birth. Among these cohorts, the proportion of graduates who return to their countries of birth exceeds the proportion that leave.

Figure 4.2: Evolution of Graduate Migration: Wales, Scotland and Northern Ireland



Source: Labour Force Survey 2006-2010

There are therefore important distinctions that need to be made among both migrant and non-migrant graduates in order to understand the relative personal and labour market outcomes of these groups. Much of the analysis in the remainder of this chapter and in the analysis of labour market outcomes of post-1992 graduates in the following chapter utilises a four-fold classification of graduates:

- Non-Migrant Graduates
 - Living at the parental home
 - Not living at the parental home
- Migrant Graduates
 - Living in the Inner Region Core (IRC)
 - Living elsewhere ('Rest of UK')

The importance of utilising this fourfold classification of graduates is underlined in Table 4.1 which compares the gender and age composition of graduates according to their migratory behaviour. In terms of the relative characteristics of post-1992 young graduates, migrants from the devolved nations are more likely to be male (a differential of 7 percentage points in Wales). However, among non-migrants it can be seen that males are also more likely to live in the parental home following graduation. Migrants are also slightly older (on average, by 1 year) than graduates who remain in their region of birth. However, across all regions, the youngest group of graduates are those who are still living within the parental home reflecting those reasons outlined above. This group are approximately 5 years younger than non-migrant graduates who have left the parental home. Finally, in Table 4.1 it can be seen that moving away from the region of birth is associated with a reduced likelihood of an individual retaining the national identity of the birth region. Only 58 per cent of Welsh-born post-1992 young graduates living outside Wales consider themselves as Welsh, compared to 84 per cent of such graduates who live in Wales. A similar picture is revealed in Scotland.

Table 4.1: Comparing Personal Characteristics of Post-1992 Young Graduates

	Non-Migrants			Migrants			Migrant/Non-Migrant Differential
	Living Elsewhere	Living with Parents	All	IRC	Rest of UK	All	
Gender (% Male)							
Wales	42.0	50.8	44.1	54.7	47.6	50.9	6.8
Scotland	42.8	53.0	45.0	55.8	52.6	54.3	9.3
Northern Ireland	37.9	46.7	40.6	50.7	47.0	48.1	7.5
Total	41.5	50.5	43.7	54.7	49.2	51.7	8.0
Age (Years)							
Wales	30.4	25.2	29.1	31.0	30.1	30.5	1.4
Scotland	30.4	25.0	29.2	30.9	31.2	31.0	1.8
Northern Ireland	31.3	25.9	29.7	31.3	30.3	30.5	0.9
Total	30.6	25.3	29.3	31.0	30.5	30.7	1.4
Nationality of Birth Country (%)							
Wales	83.1	85.0	83.5	54.0	61.7	58.1	-25.4
Scotland	83.1	90.6	84.7	56.2	59.1	57.5	-27.2
Total	83.1	88.7	84.3	55.3	60.4	57.8	-26.5

Source: Labour Force Survey 2006-2010

4.3 Partnership and Family Formation

During the years immediately following graduation, a majority of graduates live in the parental home. Whilst for many this is a short term step taken whilst they assimilate in to their careers, nonetheless it has implications for understanding differences in the characteristics of migrant and non-migrant graduates. Those graduates who are observed to be living in their region of birth are, on average, several years younger than graduates who have migrated to other parts of the UK. Such differences in the age structure imply that whether a graduate is a migrant or non-migrant may be expected to have possibly counterintuitive implications for the partnership and family formation status of these two groups. For example, does the younger age profile of non-migrant graduates result in lower levels of partnership and family formation among this group? Or are the effects of the younger age profile of non-migrant graduates offset by a higher propensity among this group to engage in partnership and family formation? This section therefore considers overall levels of partnership and family formation among the post-1992 cohorts of young graduates. Previous research has demonstrated the importance of such activities to our understanding of labour market outcomes particularly among women (see Davies and Pierre, 2005), and so such factors may be important in terms of understanding the subsequent careers of migrant and non-migrant graduates.

In Table 4.2 we consider how graduate migration relates to partnership status and family formation. Before considering these results in detail, it is important to consider how information about household structure and family structure recorded in the LFS are used in the context of the analysis of graduates. Within the LFS, graduates are identified as living in the parental home if they are identified as being the child (including the step-child or foster child) of the household reference person. The household reference person is the individual who owns the accommodation or is legally responsible for the rent. If there are joint householders, the one with the highest income is the household reference person. A single graduate living at home with their parents will be part of the same family unit as their parents. However, graduates who live with their parents and are married or have children of their own living with them are treated (with their spouse/children) as being a separate family unit from their parents. This is an important distinction as it allows dependent children in the household to be differentiated in terms of whether they are the children of the graduate or whether they are the children of the household head (and therefore the siblings of the graduate).

Table 4.2 reveals that approximately 1 in 4 young graduates who are living in their region of birth are living in the parental home, with this proportion approaching 1 in 3 among those graduates who were born in Northern Ireland. A limitation of the LFS data for studying graduate migration is that a small minority of graduates will be identified as graduate migrants on the basis of the migration patterns of their families subsequent to their birth. Such measurement problems also exist among non-migrants. Graduates who were born in one region but who were then brought up in another will be classified as non-migrants if they return to live in the region in which they were born. Due to the relatively small sizes of these groups (particularly among graduates born within the devolved regions of the UK), we do not distinguish them in the remainder of the analysis. Those graduates identified as living in a different region from where they were born but who are still observed as living with their parents are excluded from the analysis.

Table 4.2: Comparing the Partnership and Family Status of Post-1992 Young Graduates

	Non-Migrants			Migrants			Migrant/Non-Migrant Differential
	Living Elsewhere	Living with Parents	All	IRC	Rest of UK	All	
Living at Parental Home (%)							
Wales			24.1				
Scotland			21.6				
Northern Ireland			30.8				
Total			21.4				
Partnership Status (% Single)							
Wales	22.5	96.0	40.2	28.4	27.4	27.9	-18.3
Scotland	29.5	97.6	44.2	34.4	25.9	30.5	-20.7
Northern Ireland	24.5	99.2	47.5	29.4	34.3	32.9	-20.3
Total	26.7	97.7	44.0	31.4	28.8	30.0	-18.9
Family Status (% Dependent Children)							
Wales	40.0	6.4	31.9	30.6	34.7	32.8	0.9
Scotland	33.6	7.5	28.0	29.0	36.6	32.6	4.6
Northern Ireland	44.0	13.8	34.7	32.2	33.4	33.1	-1.6
Total	37.5	9.1	30.6	30.0	35.9	34.2	5.5
Family Status (% Married/Co-habiting with Dependent Children)							
Wales	49.5	-	48.7	35.7	41.1	38.5	-10.2
Scotland	45.6	-	45.4	38.2	45.5	41.8	-3.6
Northern Ireland	54.9	-	54.8	40.7	43.8	42.9	-12.0
Total	48.7	19.2	48.4	37.5	43.4	40.8	-7.7

Source: Labour Force Survey 2006-2010

The presence of a group of non-migrant graduates who live in their parental home influences levels of partnership and family formation within the devolved regions. It can be seen in the second panel of Table 4.2 that in terms of family status, those graduates living within the country where they were born are significantly more likely to be single (a differential of 18 per cent points in Wales). However, a large majority of non-migrant graduates who live in the family home (over 95 per cent) record their marital status as being single. Within the devolved nations, non-migrants who have left the family home exhibit patterns of partnership formation that are broadly comparable to those exhibited by graduate migrants who were born in these countries. Non-migrant graduates from Wales who are no longer living in the family home are 5 percentage points less likely to be single than Welsh migrant graduates. A similar situation emerges in Northern Ireland, where the differential between these 2 groups is estimated to be 8 percentage points. Lower levels of partnership formation among graduates within devolved nations can therefore generally be attributed to the presence of a group of, on average, younger graduates who are still living in the family home. Among those who have left the family home, the incidence of partnership formation appears to be higher.

The third panel of Table 4.2 considers the incidence of family formation among graduates. Across the devolved nations of the UK, it appears that levels of family formation exhibited among migrant graduates are similar to those exhibited among non-migrant graduates, with

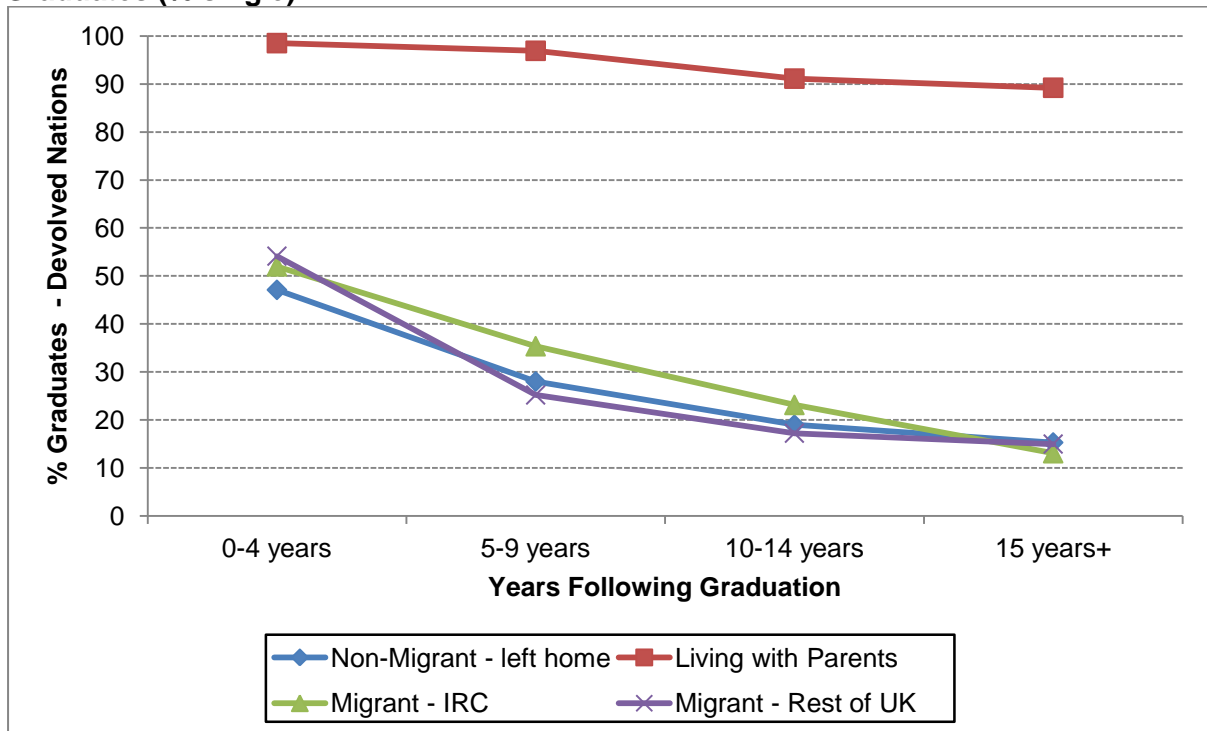
approximately a third of graduates reporting that they have a dependent child. However, this overall picture disguises the different family formation patterns that exist between different groups of graduates. The most obvious difference that emerges is among non-migrant graduates where the incidence of family formation among those graduates living within the parental home is estimated to be just 9 per cent. Interestingly, this figure is much higher in Northern Ireland (14 per cent). Abstracting from the particular circumstances facing this youngest group of graduates, rates of family formation are next lowest among those graduates who have migrated to the IRC. Within Wales and Northern Ireland, rates of family formation among non-migrant graduates who have left the family home are higher than migrant graduates from these countries (7 percentage point differential in Wales, 11 percentage point differential in Northern Ireland). Within Scotland, non-migrant graduates exhibit levels of family formation that are comparable to Scottish-born migrant graduates.

The final panel of Table 4.2 considers the incidence of family formation among graduates who are either married or cohabitating. This allows us to consider differences in family formation behaviour after having taken into account differences in partnership status. The analysis reveals that even after taking partnership status into account by only focusing upon those graduates who are married or co-habiting, those graduates who are living in devolved regions and who are not living in the family home are more likely to have dependent children than those who have migrated away from their region of birth. This differential is particularly evident in Wales (11 percentage points) and Northern Ireland (12 percentage points). The lowest levels of family formation among married or cohabitating graduates are observed among migrant graduates who are living in the IRC. Among Welsh graduates, only 36 per cent of such graduates have had a child (or children), considerably less than the 50 per cent of non-migrant Welsh graduates who are not living in the parental home.

4.4 The Evolution of Partnership and Family Formation Status

Finally, this section examines the evolving patterns of partnership and family formation over time following graduation. By taking into account the time elapsed following graduation, this analysis enables us to consider whether migrant and non-migrant graduates who are at a comparable stage of their life-cycle exhibit different propensities to engage in partnership and family formation. Once again, we use repeated cross sections of the LFS to consider the evolution of the personal circumstances of post-1992 graduates. Due to the small sample sizes associated with this analysis, we combine data together on graduates who were born in Wales, Scotland and Northern Ireland. Nonetheless, the analysis in Figure 4.3 clearly demonstrates how the partnership status of graduates evolves over a fifteen year period following graduation. Among the post-1992 cohorts of young graduates, non-migrants are more likely to be single during the first decade following graduation, beyond 10 years patterns of partnership formation are similar among non-migrants and migrants. However, if we abstract from non-migrant graduates living within the parental home, patterns of partnership formation among migrants and non-migrants are similar. Among those graduates who have migrated to the IRC, delays in partnership formation are apparent. However, beyond 15 years following graduation, graduates from devolved nations living within the IRC are as likely to be married or cohabitating as those who remain in their country of birth.

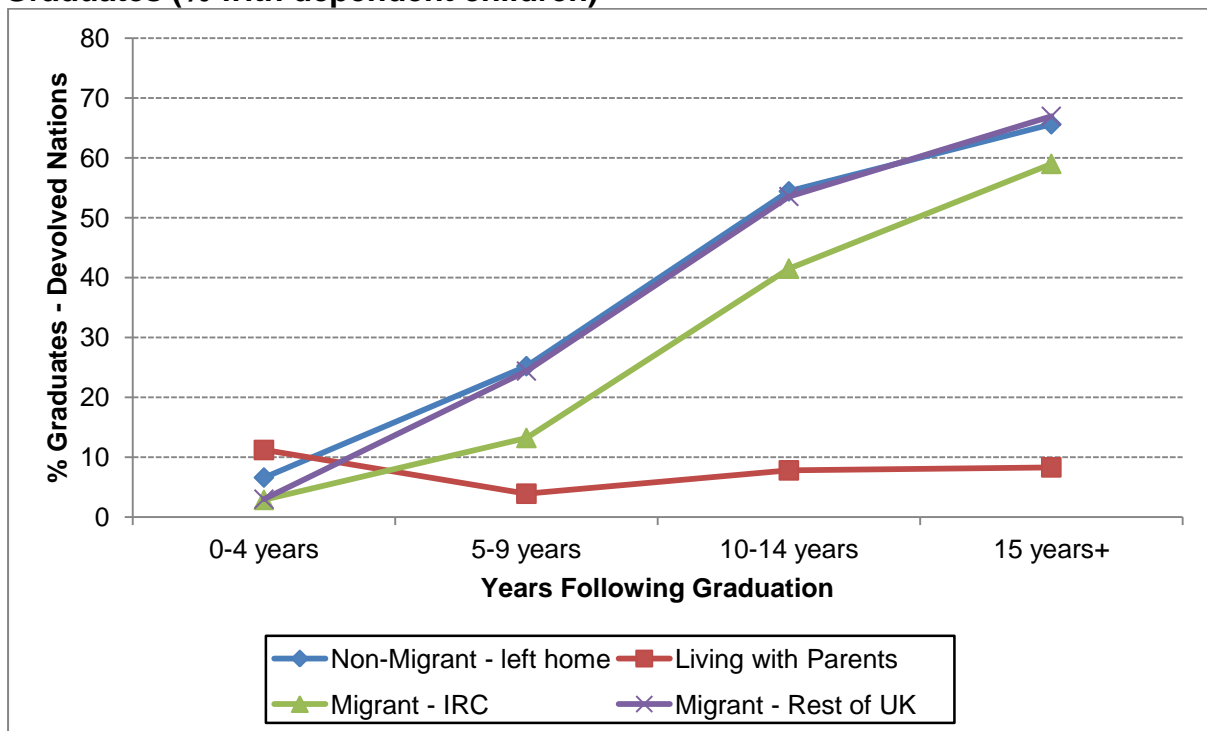
Figure 4.3: The Evolution of Partnership Formation among Post-1992 Young Graduates (% single)



Source: Labour Force Survey 2006-2010

Figure 4.4 demonstrates the evolution of family formation among graduates from devolved nations. Patterns of family formation are relatively similar when comparing non-migrant graduates who have left the parental home with graduates who have migrated to regions elsewhere in the UK. However, delays in partnership formation appear to impact significantly on the family formation patterns of graduate migrants living within the IRC. During the first 15 years following graduation, differences between IRC migrants and non-migrants who have left the family home are in the order of 12-13 percentage points. Interestingly, this differential narrows to approximately 7 percentage points beyond 15 years following graduation, indicating that migrant graduates moving to the IRC enter into family formation later than other groups of graduates. Nonetheless, the convergence observed in terms of partnership formation is not observed in the case of family formation.

Figure 4.4: The Evolution of Family Formation among Post-1992 Young Graduates (% with dependent children)



Source: Labour Force Survey 2006-2010

5. Graduate Migration and Labour Market Outcomes

Chapter Summary

- Graduates who move away from devolved regions are less likely to be employed in a non-graduate jobs (14 per cent) than those who remain (25 per cent) in that region. Among the devolved nations of the UK, non-migrant graduates from Wales are most likely to be employed within non-graduate jobs (27 per cent), reflecting the relative lack of opportunities for graduates within Wales.
- The public sector provides a source of relatively well-paid employment among graduates living within Wales. Approximately half of post-1992 young graduates who were born in Wales and live in Wales are employed in the public sector. Although graduate earnings are generally lower in the public sector, Wales stands out as exhibiting higher earnings for graduates in the public sector compared to the private sector.
- The gross weekly earnings of graduates who migrate from Wales and Scotland are approximately 30 per cent higher than those graduates who remain in these countries. The premium associated with migration to the Inner Region Core (IRC) is in excess of 40 per cent among graduates from Wales and Scotland.
- The years following graduation represent a period of assimilation into employment. A majority of graduates in devolved regions initially find employment in non-graduate occupations (60 per cent). The proportion of graduates employed in such occupations gradually declines as they find employment in jobs that are more suited to their skills. The rate of assimilation is however slower among young graduates who are based in their region of birth and live in the parental home.
- Overall, 7 per cent of young graduates from devolved nations are self-employed following graduation. The incidence of self-employment is highest among those graduates who migrate from their regions of birth (10 per cent) and lowest among those living at the parental home (4 per cent). However, it takes time for graduates to establish themselves as self-employed, with rates of self-employment remaining relatively low during the first decade after graduation.
- Graduates from STEM subject areas generally exhibit better labour market outcomes and these outcomes are further improved among those who migrate. However, the opportunities for these graduates are not necessarily located within the IRC and employment within the public sector is of relative importance to this group.
- After taking into account differences in the personal characteristics of graduates using multivariate analysis, the migration of graduates from each of the devolved nations to the IRC is estimated to be associated with a statistically significant increase in earnings of between 12 and 19 per cent relative to those graduates who remain living in their region of birth but who have left the parental home.

5.1 Introduction

Previous chapters have demonstrated how the characteristics of graduates vary according to their migration behaviour following graduation. In terms of their personal characteristics, non-migrant graduates who are observed to be living in the parental home at the time of the LFS interview are younger, are more likely to be single and less likely to have dependent children. Rates of partnership and family formation are lowest among those graduates from devolved nations who migrate to the IRC and are highest among non-migrant graduates who have left the family home, with these differentials being particularly apparent between 5 and 15 years following graduation. Migrant graduates from devolved nations exhibit marginally higher pre-entry qualifications and are more likely to have obtained a postgraduate qualification.

Such differences between migrant and non-migrant graduates are likely to have implications in terms of their respective employment outcomes subsequent to migration. We might expect migrant graduates to have better labour market outcomes due to the higher levels of educational attainment among these graduates. Higher levels of family formation among non-migrant graduates may have a relative negative impact upon career outcomes, particularly among female graduates who are more likely to experience interruptions in their careers during periods of family formation. Aside from such 'observable' differences between migrant and non-migrant graduates, these two groups may also differ in terms of their career mindedness, with migrant graduates showing a greater willingness to move elsewhere in the UK in order to gain employment that is commensurate with their skills. To consider these issues, our attention in this chapter turns to the relative employment outcomes of graduates according to their migration behaviour following graduation.

5.2 Labour Market Outcomes of Post-1992 Young Graduates

Table 5.1 considers different dimensions of the employment outcomes of graduates. Employment outcomes are firstly considered in terms of participation in employment, the share of employment within non-graduate occupations, earnings and employment in the public sector. These measures are generally self-explanatory. Employment within non-graduate jobs is part of the classification of graduate occupations developed by Elias and Purcell (2005) and is defined as a job where the skills, knowledge and experience associated with the competent performance of work tasks is less than that which would be expected to held by a person who had successfully completed a degree.

In terms of participation in employment, the first panel of Table 5.1 demonstrates that there appears to be relatively little difference in the overall employment outcomes of graduates when comparing those who remain in the region where they were born with those who moved away. Within each of the devolved nations, participation in employment is approximately 2 to 3 percentage points higher among those graduates who are no longer living in their region of birth compared to those who remain. However, those living within the parental home exhibit levels of employment that are approximately 10 percentage points lower than those observed among other non-migrant graduates. Non-migrants who are no longer living with their parents exhibit comparable levels of participation in employment to migrants from these regions.

The remaining panels of Table 5.1 compare different measures of the nature of employment held. Similar patterns emerge. When non-migrants appear to exhibit poorer labour market outcomes compared to migrants, this can generally be attributed to the particular career circumstances of those who remain living in the family home.

Graduates who move away from devolved regions are less likely to be employed in a non-graduate job (14 per cent) than those who remain (25 per cent) in that region. Non-migrant

graduates from Wales are most likely to be employed within a non-graduate job (27 per cent). However, it can be seen that these overall differentials are partly explained by the high rates of employment in non-graduate occupations among those who live in the parental home (46 per cent overall). Within Wales over half of in-work graduates (51 per cent) who live with their parents hold a non-graduate position. This may be expected given that assimilation into a graduate level position does not occur immediately following graduation and that the younger graduates living at home would be expected to be more likely to hold a non-graduate position. Nonetheless, even among non-migrant graduates within devolved regions who have left the family home, employment within non-graduate occupations is approximately 6 percentage points higher than that observed among migrant graduates. Among migrant graduates, working within the IRC is associated with lower levels of employment within non-graduate occupations among graduates from Scotland and Northern Ireland. However, among Welsh migrant graduates, the incidence of employment within non-graduate occupations is relatively high at 16 per cent. This may suggest that the relative proximity of the IRC to Wales means that Welsh graduates are willing to undertake poorer quality jobs compared to graduates from Scotland and Northern Ireland who move to the IRC.

Among those graduates born within the devolved nations, those who remain living in their region of birth are more likely to be employed within the public sector. This is particularly evident within Wales, where the share of graduate employment within the public sector is 16 percentage points lower among migrants compared to those who remain living in Wales. Approximately half of post-1992 young graduates who were born in Wales and live in Wales are employed in the public sector. However, graduates who live in the parental home are less likely to work within the public sector than other non-migrant graduates. The public sector provides a source of relatively well-paid employment among graduates living within the devolved regions of the UK.

Having considered the nature of employment held by post-1992 graduates, Table 5.1 considers the relative earnings of different groups of graduates. An analysis of the relative earnings of migrant and non-migrant graduates is problematic due to differences in the cost of living. For example, the relatively higher proportion of Scottish and Welsh graduates who migrate to the IRC will mean that the earnings differentials of migrants from these devolved nations will encompass a cost of living adjustment (sometimes referred to as 'London Weighting') which employers have to pay in order to attract workers in the face of additional costs associated with working within that region. We would therefore expect graduates who have moved away from both Wales and Scotland to earn considerably more than graduates who remained in their region of birth.

To account for this, regional price differentials produced by the Office for National Statistics in 2004 (see Wingfield, Fenwick and Smith, 2005) are applied to the earnings data collected from the LFS. These price differentials estimate the cost of a fixed basket of goods and services between different regions of the UK and can therefore take into account the relatively high prices that exist within London (estimated at 9.7 per cent above the UK average) and the South East (5.3 per cent above the UK average). At the outset it should be noted that such indices can only take into account differences in the cost of living between different parts of the UK. Regional wage relativities will reflect a variety of both monetary and non-monetary costs and benefits associated with living in different parts of the UK. The application of regional cost of living indices to the earnings data has the effect of reducing the real value of earnings within the IRC and increasing the real value of earnings within the devolved nations of the UK. When expressing these differentials as a percentage of the gross weekly earnings of non-migrant graduates, graduates who migrate from Scotland and Wales each exhibit a premium in real earnings of approximately 30 per cent. The premium associated with migrating to the IRC is estimated to be 44 per cent among Welsh graduates and 42 per cent among Scottish graduates. This is in contrast to Northern Ireland, where the

premium associated with migration is estimated to be 18 per cent, irrespective of the region to which these graduates move to. It must be noted that the sample of Northern Ireland graduates observed moving to the IRC is relatively small at 59 observations. The statistical significance of these differences will be considered within a multivariate framework later in this chapter.

Table 5.1: Employment Outcomes of Post-1992 Young Graduates

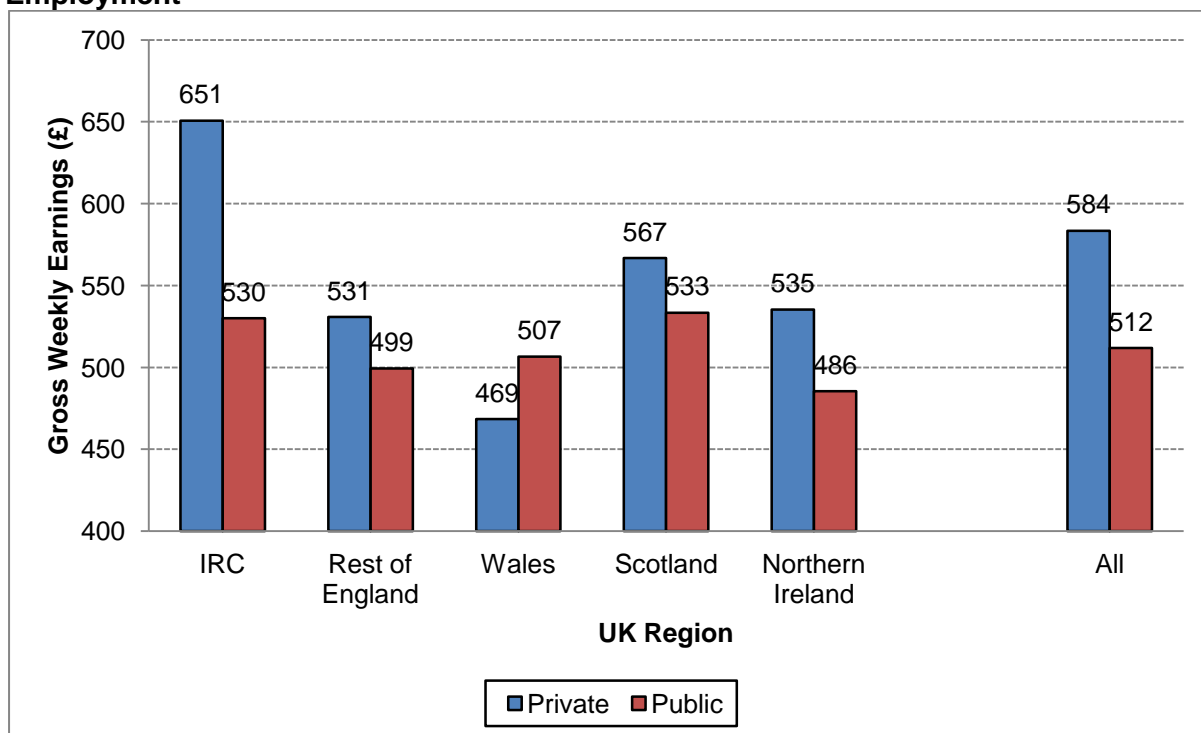
	Non-Migrants			Migrants			Migrant/ Non- Migrant Differential
	Living Elsewhere	Living with Parents	All	IRC	Rest of UK	All	
In Work (%)							
Wales	93.5	82.9	90.9	93.6	93.4	93.5	2.6
Scotland	93.9	82.2	91.4	92.0	94.6	93.2	1.8
Northern Ireland	95.4	82.7	91.5	93.4	93.1	93.2	1.7
Total	94.1	82.6	91.3	92.8	93.8	93.3	2.0
Employed in a Non Graduate Job (%)							
Wales	20.5	50.7	27.2	15.6	13.9	14.7	-12.5
Scotland	18.0	45.6	23.3	10.8	14.7	12.6	-10.7
Northern Ireland	19.7	41.1	25.6	11.7	13.9	13.2	-12.4
Total	19.0	45.5	24.8	12.7	14.2	13.5	-11.3
Employed in the Public Sector (%)							
Wales	50.0	45.0	48.9	24.4	41.0	33.3	-15.6
Scotland	39.9	28.9	37.8	17.5	35.1	25.7	-12.1
Northern Ireland	45.1	39.2	43.5	28.1	36.2	33.9	-9.6
Total	43.6	36.0	41.9	21.6	37.6	30.3	-11.6
Real Gross Weekly Earnings							
Wales	515	325	480	691	566	621	29.5%
Scotland	579	343	539	766	647	708	31.4%
Northern Ireland	546	363	510	603	607	605	18.7%
Total	556	343	517	715	607	655	26.6%

Source: Labour Force Survey 2006-2010

Given the importance of public sector employment to Welsh graduates, Figures 5.1 and 5.2 provide information on earnings and the incidence of non-graduate employment according to whether or not a post-1992 young graduate works in the private or public sector. It is observed that earnings are generally lower in the public sector, although Wales stands out as exhibiting higher relative earnings in the public sector among post-1992 graduates compared to the private sector (a differential of approximately £40 per week). This finding emphasises the importance of the public sector in Wales in providing a source of relatively well-paid work for graduates. Despite its lower earnings, the incidence of non-graduate employment is generally lower in the public sector than it is in the private sector reflecting the availability of a range of roles that are more likely to utilise the skills accumulated by graduates. Only within the IRC does the private sector appear to provide roles that are of comparable suitability to graduates as those provided by the public sector. Almost a third of private sector jobs held by post-1992 graduates in Wales and Northern Ireland are not

regarded as being commensurate with the skills of individuals who possess a degree or higher degree.

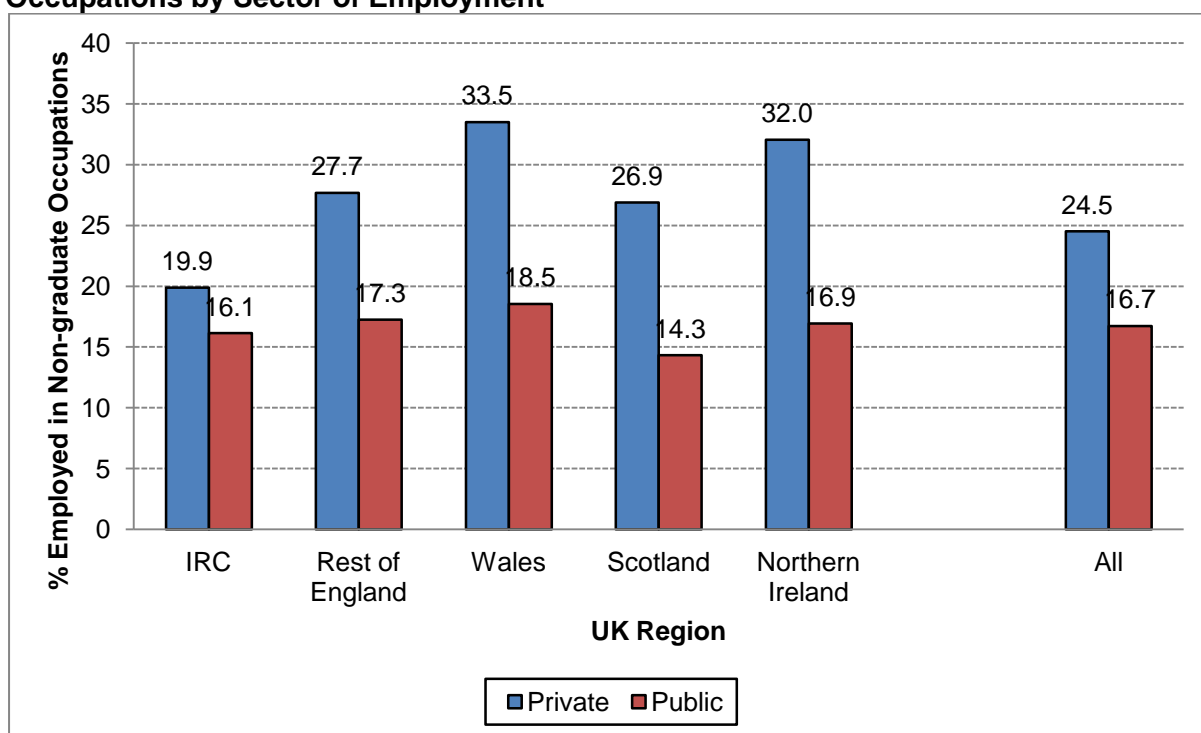
Figure 5.1: Gross Weekly Earnings of Post-1992 Young Graduates by Sector of Employment



Source: Labour Force Survey 2006-2010

Finally in this section, Table 5.2 provides a more detailed overview of graduate employment outcomes in Wales, contrasting those who are born in Wales with those who were born elsewhere and have moved in to Wales. It can be seen that graduates born outside Wales who migrate to Wales are 3 percentage points more likely to be employed in a non-graduate job than those who remain outside Wales. Such graduates have a similar likelihood of being in a non-graduate job as those Welsh graduates who remain in Wales (35 per cent). Graduates both in Wales and who remain in Wales are 10 percentage points more likely to be employed in a non-graduate job than those who leave the country. In terms of earnings, those born outside Wales and who come to live in Wales earn approximately £60 less per week than those who were born outside Wales and who remain outside. Young post-1992 graduates who were born outside Wales but who live in Wales earn approximately £110 less per week (£503 per week) than Welsh-born graduates who live elsewhere (£613 per week).

Figure 5.2: Percentage of Post-1992 Young Graduates Employed in Non-Graduate Occupations by Sector of Employment



Source: Labour Force Survey 2006-2010

Table 5.2: Comparing Employment Outcomes of Post-1992 Young Welsh Graduates and Graduates in Wales

	Lives outside Wales	Lives in Wales	Total
In Work (%)			
Born Outside Wales	90.8	89.9	90.8
Born Inside Wales	93.0	90.9	91.7
Total	90.8	90.6	90.8
Non-graduate Job (%)			
Born Outside Wales	21.9	25.9	21.9
Born Inside Wales	16.1	27.2	22.9
Total	21.8	26.8	22.0
Real Gross Weekly Earnings (£)			
Born Outside Wales	560	503	559
Born Inside Wales	613	480	531
Total	561	487	558

Source: Labour Force Survey 2006-2010

5.3 The Evolution of Graduate Careers

As demonstrated in the previous chapter, it is possible to use repeated cross sections of the LFS to create 'pseudo cohorts' of graduates. Information on individuals who graduate a year prior to their LFS interview can be combined with information on individuals who graduated two years prior to LFS interview. Combining additional data from graduates for whom longer periods of time have elapsed since graduation enables us to consider how the careers of graduates evolve over time. Due to the small sample sizes associated with this analysis, we

combine data on graduates who were born in Wales, Scotland and Northern Ireland. It can be seen from Table 5.3 there is a period of assimilation into paid work with the proportion of graduates from devolved regions who are in work increasing during the 5 or so years following graduation. The rate of assimilation into paid work appears to be relatively slow among young graduates who are based in their region of birth and live in the parental home. It must be remembered, however, that this group of graduates becomes smaller over time as many graduates only return to the parental home following graduation for a relatively short period of time.

Table 5.3: The Short Term Evolution of Graduate Careers among Recent Graduates

Years following graduation	Non-Migrants			Migrants			Migrant/ Non-Migrant Differential
	Living Elsewhere	Living with Parents	All	IRC	Rest of UK	All	
% in Employment							
0	71.7	63.9	66.2	62.1	75.0	70.9	4.8
1	82.4	71.0	74.9	84.8	86.9	86.2	11.3
2	93.3	81.1	86.8	90.4	89.9	90.0	3.3
3	92.7	84.1	89.5	86.1	89.6	87.8	-1.7
4	91.9	87.5	90.6	86.4	89.3	88.1	-2.4
5	95.1	90.7	94.0	91.0	95.0	93.3	-0.5
% in Non-graduate Employment							
0	54.6	62.9	60.3	27.1	50.1	43.7	-16.6
1	38.6	53.6	48.0	29.8	29.4	29.5	-18.5
2	27.3	47.0	37.1	26.5	20.0	23.1	-14.0
3	27.1	45.8	33.7	16.1	17.6	16.8	-16.9
4	21.3	39.1	26.5	11.1	12.8	12.1	-14.4
5	23.5	42.1	28.0	15.0	12.4	13.4	-14.6
Real Gross Weekly Earnings (£)							
0	294	228	246	*	*	396	61.0%
1	347	300	321	396	382	387	20.6%
2	410	308	368	413	428	421	14.4%
3	448	347	419	572	430	507	21.0%
4	463	417	453	520	532	527	16.3%
5	503	401	484	706	578	629	30.0%

*Sample sizes less than 10 observations

Source: Labour Force Survey 2006-2010

The proportion of young graduates employed in non-graduate occupations also declines with time. A majority of graduates in devolved regions initially find employment in non-graduate occupations (60 per cent). The proportion of graduates employed in such occupations gradually declines as they find employment in jobs that are more suited to their skills. Five years after graduation, 28 per cent of employed non-migrant graduates remain in non-graduate jobs. Throughout this five year period, the share of employment in non-graduate occupations among employed graduates is consistently higher among those who live in their region of birth and is highest among those who live in the parental home. The rate of decline in the share of employment within non-graduate occupations is also relatively slow among this group of non-migrant graduates. However, again it must be noted that this group becomes smaller over time. Migrants appear to exhibit lower levels of employment in non-

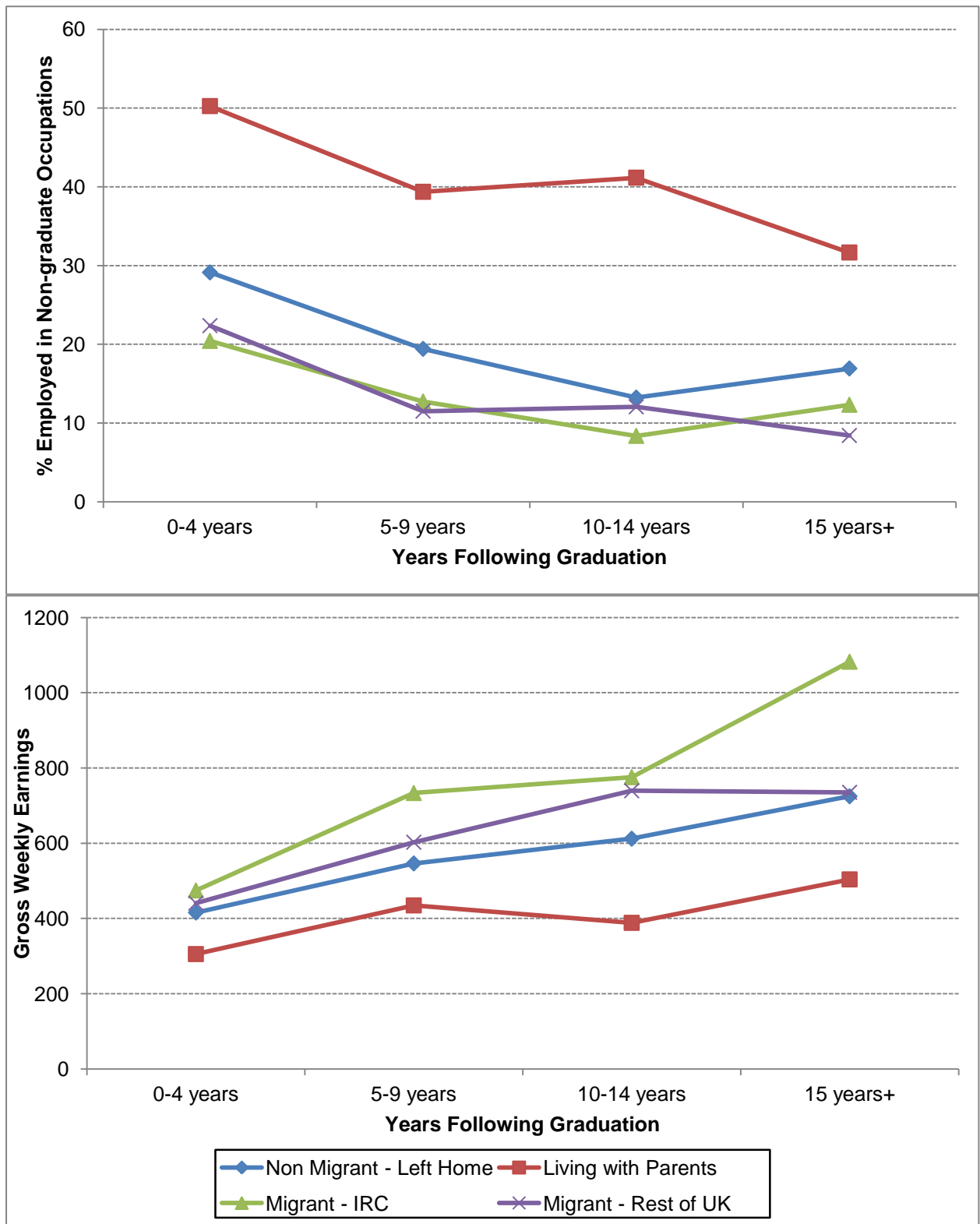
graduate occupations during the first year following graduation. This may reflect geographical mobility being associated with gaining a graduate job following university.

Finally, in terms of the evolution of weekly earnings, earnings differentials between migrant and non-migrants graduates from devolved regions are particularly high during the first 12 months following graduation. This could simply be the result of small sample sizes or possibly the relatively poor quality jobs held by graduates who remain in their region of birth immediately following graduation. As noted above, geographical mobility during the year following migration could be associated with a graduate gaining a graduate entry position which is associated with relatively high earnings immediately following university. Abstracting from their first year in the labour market, the earnings differential between migrating and non-migrating graduates from devolved regions appears to remain relatively stable over time during the first five years following graduation. Once again, earnings are lowest among those living in the parental home.

We next consider the evolution of the careers of young graduates over a longer time period. Here the sample is expanded to consider the circumstances of all post-1992 young graduates. We again focus on graduates who were born in one of the devolved nations of the UK. Combining data for several years increases the available sample sizes, improving the robustness of the results. Considering data over this longer period, most people gain employment irrespective of their migratory status. We therefore instead focus upon the incidence of employment in non-graduate occupations and trajectories of gross weekly earnings.

In the top panel of Figure 5.3, it can be seen that differences in the proportion of migrating and non-migrating graduates employed in non-graduate occupations appear to narrow over time, from 18 percentage points during the first 4 years following graduation to 7 percentage points beyond 15 years following graduation. Whilst employment in non-graduate occupations remains high among those graduates who live with their parents, it must be noted that the number of graduates who live with their parents some ten years after graduation is relatively small. Earnings differentials remain relatively stable over time, with migrant graduates consistently earning approximately 22-25 per cent more than non-migrant graduates. These figures provide a more accurate account of the higher relative earnings of migrant graduates as they control for the time elapsed following graduation which is of particular relevance in terms of making like for like comparisons.

Figure 5.3: The Longer Term Evolution of Graduate Careers: Non Graduate Jobs and Gross Weekly Earnings

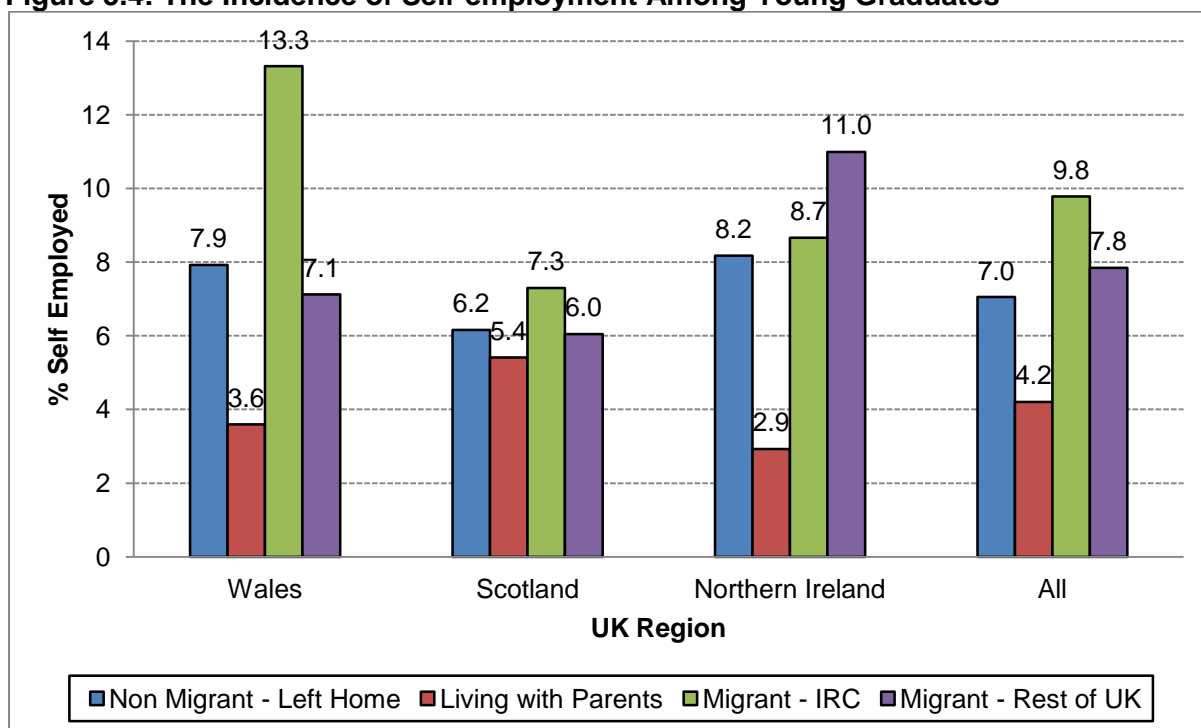


Source: Labour Force Survey 2006-2010

5.4 Graduates and Self-employment

Given the importance attached to self-employment as a source of wealth and job creation, this section considers the incidence and evolution of self-employment among young graduates. Overall, 7 per cent of young graduates from devolved nations are self-employed following graduation. In Figure 5.4 it can be seen that the incidence of self-employment is highest among those graduates who migrate from their regions of birth (10 per cent) and lowest among those living at the parental home (4 per cent). Less than 2 per cent of in-work graduates are self-employed with employees. The incidence of self-employment is estimated to be 3 percentage points higher among migrant graduates from Wales and Northern Ireland than it is amongst graduates who remain living in these countries. With a rate of self-employment estimated to be 13 per cent, Welsh graduates living in London are estimated to be the group who are most likely to be self-employed. This is in contrast to Scottish graduates where the incidence of self-employment among non-migrant graduates is broadly comparable to that exhibited among migrant graduates.

Figure 5.4: The Incidence of Self-employment Among Young Graduates

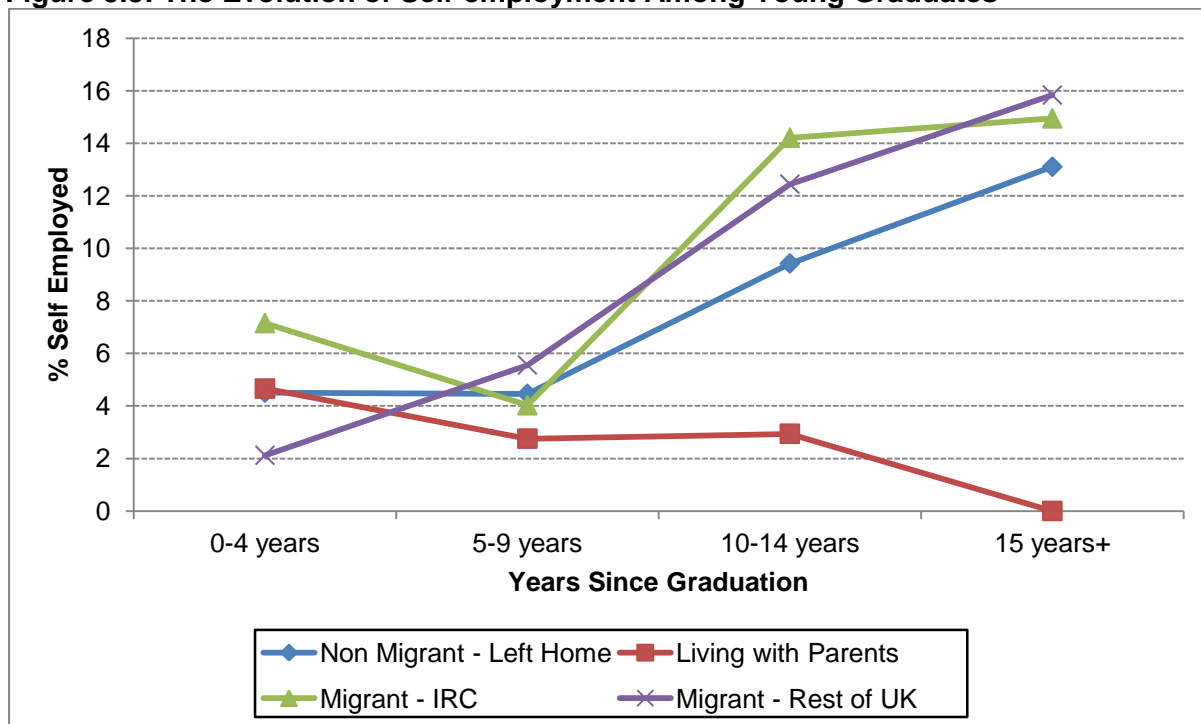


Source: Labour Force Survey 2006-2010

We next consider the evolution of self-employment among graduates. Once again, we utilise data from different groups of graduates from devolved nations to present a longitudinal picture of the incidence of self-employment by way of a 'pseudo cohort' analysis. The incidence of self-employment is relatively low during the first five years following graduation and so we therefore consider the evolution of self-employment over the full period during which post-1992 graduates from the LFS can be observed. It can be seen in Figure 5.5 that the incidence of self-employment increases with time elapsed since graduation. However, it is only after ten years following graduation that the incidence of self-employment exceeds 10 per cent, with this incidence being higher among migrant graduates (12-14 per cent). The findings indicate that it takes time for graduates to establish themselves as self-employed, possibly reflecting the acquisition of financial and human capital necessary to establish themselves as self-employed. Self-employment is low among graduates living in the parental home and declines over time as this group gets smaller and increasingly un-representative of the wider graduate population. Among non-migrant

graduates who have left the parental home, beyond 15 years after graduation the rate of self-employment among this group is only 2 to 3 percentage points lower than that observed among migrant graduates. The relatively wide gap that emerges in the incidence of self-employment between migrant and non-migrant graduates some 10 to 14 years following graduation, particularly in relation to migrant graduates living within the IRC, appears to narrow. It is possible that the return migration of graduates from devolved nations to the region of their birth could be contributing to such a pattern.

Figure 5.5: The Evolution of Self-employment Among Young Graduates



Source: Labour Force Survey 2006-2010

5.5 STEM and Employment Outcomes

As previously outlined in Chapter 3, considerable emphasis has been placed by funding councils on the importance of graduates attaining degrees within STEM subjects (Science, Technology, Engineering and Mathematics), with additional support being provided in these areas to maintain courses or to increase the number of students from under-represented groups taking these subjects. As outlined in Chapter 3, across each of the devolved region of the UK, migrant graduates are more likely to possess degrees in STEM subject areas. This differential is widest within Wales, where the proportion of graduates with STEM degrees is 6 percentage points higher among migrant graduates. This may indicate that there is a relative lack of opportunity for graduates in STEM subject areas across the devolved nations of the UK. It is therefore informative to consider how the labour market outcomes of graduates undertaking such degrees compare with the outcomes of graduates who undertook their studies in other subject areas, and how this differs between migrant and non-migrant graduates.

From Table 5.4 it can be seen that rates of employment are slightly higher among graduates from devolved nations who have degrees in STEM subject areas. However, more significant differences emerge when we consider the relative characteristics of employment between STEM and non-STEM graduates. With the exception of those graduates living in the IRC, rates of employment in non-graduate occupations are generally 5-7 percentage points higher among non-STEM graduates. Whilst migration is still associated with a reduced likelihood of

being employed within a non-graduate job among STEM graduates, it is interesting to note that migration to the IRC does not confer an additional advantage to this group in respect of employment within non-graduate jobs. Graduate migrants with degrees in STEM subjects are also more likely to work in the public sector. This is observed among those who migrate to the IRC and those who migrate elsewhere in the UK.

Table 5.4: Employment Outcomes of Post-1992 Young Graduates: By Subject Studied

	Non-Migrants			Migrants			Non-Migrant Differential
	Living Elsewhere	Living with Parents	All	IRC	Rest of UK	All	
In Work (%)							
Non-STEM	93.4	81.7	90.4	90.4	93.9	92.2	1.8
STEM	94.9	82.5	92.1	95.5	94.1	94.6	2.5
Total	94.0	82.0	91.1	92.4	94.0	93.3	2.2
Employed in a Non-graduate Job (%)							
Non-STEM	20.7	45.6	26.4	11.4	17.4	14.5	-11.9
STEM	15.0	40.7	20.2	10.5	9.5	9.9	-10.3
Total	18.4	43.8	23.9	11.1	13.6	12.5	-11.4
Employed in the Public Sector (%)							
Non-STEM	43.4	33.0	41.0	18.4	35.3	27.3	-13.8
STEM	43.0	39.2	42.2	24.3	40.5	34.1	-8.1
Total	43.2	35.3	41.5	20.7	37.8	30.3	-11.2
Real Gross Weekly Earnings (£)							
Non-STEM	537	326	496	704	558	627	26.4%
STEM	592	392	560	721	676	693	23.8%
Total	559	349	521	710	614	656	25.8%
Self Employed (%)							
Non-STEM	7.7	5.4	7.2	10.2	10.7	10.5	3.3
STEM	6.8	3.0	6.0	9.0	6.1	7.2	1.2
Total	7.3	4.5	6.7	9.8	8.5	9.1	2.3

Graduates in STEM subjects are shown to earn more than non-STEM graduates. This differential however is not observed among graduates from devolved nations who migrate to the IRC. This is consistent with the findings related to non-graduate jobs and indicates that STEM graduates do not have a relative advantage in terms of accessing good quality employment within the IRC. Finally, STEM graduates appear less likely to become self-employed. Again, this is consistent with the finding that STEM graduates exhibit higher rates of employment within the public sector. These findings indicate that migration is associated with improved labour market outcomes for STEM graduates, although the opportunities for these graduates are not necessarily located within the IRC, and employment within the public sector is of increased importance to this group.

5.6 Estimating the Effect of Migration on Career Outcomes

The previous analyses have demonstrated that young graduates from devolved nations within the UK who no longer live in their country of birth differ compared to those who remain (or have returned) to these countries. In general, we have observed that graduates who

have moved away from their country of birth are more likely to be male. They are on average older. Abstracting from those non-migrants living within the parental home, they exhibit similar levels of partnership formation but lower levels of family formation. In terms of the qualifications prior to undertaking their degree, they are demonstrated to have attained a higher number of GCSE passes or equivalent, although no significant difference in performance at degree level is observed. They are also more likely to have undertaken a postgraduate qualification subsequent to their degree. In terms of their career outcomes, graduates who no longer live in their region of birth are less likely to be employed in a non-graduate occupation, are more likely to be employed within the private sector, have higher gross weekly earnings and are more likely to be self-employed.

Differences in personal characteristics (such as family status and educational attainment) will be important factors in determining subsequent labour market outcomes. Some of the characteristics of migrating graduates may be expected to contribute to improved labour market outcomes, such as their higher levels of educational attainment. Some of the characteristics of graduates who remain in their country of birth would be expected to contribute to poorer labour market outcomes, such as higher levels of family formation that may particularly affect the careers of women. It is therefore of interest to consider what is the separate and additional effect of migration upon the subsequent careers of graduates. To consider this issue, we utilise multivariate statistical techniques to estimate, after controlling for other personal characteristics, the effect of migration on two labour market outcomes: 1) the likelihood of being employed in a non-graduate occupation and 2) relative gross weekly earnings. For each devolved nation, the analysis was restricted to post-1992 graduates who had graduated by the age of 25.

The analysis was conducted in two stages separately for each of the devolved countries of the UK. During the first stage, the effect of being a migrant graduate relative to being a non-migrant graduate upon both of the labour market outcomes is estimated. As a dichotomous dependent variable (i.e. 0/1), the probability of being in a non-graduate job is estimated using logistic regression. The analysis of relative gross weekly earnings is estimated using standard OLS techniques. During this stage, separate models were estimated for males and females. The second stage of the analysis refines the distinction made between migrant and non-migrant graduates by utilising the fourfold classification which distinguishes between non-migrants in terms of whether or not they live in the parental home, and between migrants in terms of whether they have migrated to the IRC or elsewhere in the UK. In each stage of the analysis, statistical models contained control variables for age, ethnicity, degree class, educational attainment at GCSE level (or equivalent), parental status, family status and subject studied.

Selected results from the statistical analysis are presented in Table 5.5. Statistically significant results at the 5 per cent significance levels are highlighted in bold. Results from the analysis are relatively uniform across countries. The first stage of the analysis reveals that those who migrate from their country of birth are about 50 per cent less likely to be employed in a non-graduate job at the time of the LFS interview compared to those graduates who remain in their country of birth. Within Wales and Northern Ireland, the effect is larger for women than men, although additional tests reveal that these differentials are not statistically different from each other. In terms of gross weekly earnings (earnings have been adjusted for regional differences in the cost of living), graduate who migrate earn between 10 and 20 per cent more than those who remain in their country of birth. However, the results are only estimated to be statistically significant for Welsh males and for females from Northern Ireland.

Table 5.5: Estimated association between graduate migration and labour market outcomes

	Probability of Being in a non-graduate job (% differential)	Relative Gross Weekly Earnings (% differential)
Wales		
Overall Differential		
Male Migrants	49.5	19.5
Female Migrants	51.0	11.1
Distinguishing Parental Home		
Living in parental home	306.1	-22.4
Non-migrant (reference)		
Migrant - IRC	-32.5	18.8
Migrant - Rest of UK	-36.8	8.0
Scotland		
Overall Differential		
Male Migrants	-48.6	9.6
Female Migrants	-44.3	8.2
Distinguishing Parental Home		
Living in parental home	193.1	-20.5
Non-migrant (reference)		
Migrant - IRC	-34.3	12.2
Migrant - Rest of UK	-37.0	3.3
Northern Ireland		
Overall Differential		
Male Migrants	-34.3	10.8
Female Migrants	-66.5	19.8
Distinguishing Parental Home		
Living in parental home	52.8	-21.8
Non-migrant (reference)		
Migrant - IRC	-12.3	17.4
Migrant - Rest of UK	-63.3	9.2
All Devolved Nations		
Distinguishing STEM Graduates		
Non Migrant - Non STEM		
Non Migrant - STEM	-28.4	9.8
Migrant - Non STEM	-43.3	8.5
Migrant - STEM	-63.1	23.0

Source: Labour Force Survey 2006-2010

Results from the second stage of the analysis confirm that graduates living within the parental home are most likely to be employed in non-graduate jobs. This is particularly evident in Wales, where those living in the parental home are almost 300 per cent more likely (or almost 4 times as likely) to be employed in a non-graduate job compared to non-migrants who have moved out of parental home. A large differential also exists within

Scotland (190 per cent more likely). Interestingly, the effect of living in the parental home upon the probability of being employed in a non-graduate job is lowest in Northern Ireland – where no statistically significant effect is estimated. This may reflect the higher propensity of graduates within Northern Ireland to live for longer within the parental home. Separately accounting for those who live in the parental home means that the differential that is estimated to exist between non-migrants who have left the parental home and migrants, is smaller than the differentials that are estimated between migrants and non-migrants as a whole. In terms of employment within non-graduate occupations, with the exception of migration from Northern Ireland to other parts of the UK, migration is not estimated to be associated with a reduced likelihood of being employed within a non-graduate occupation. This is the case when the destination of migrants between those moving to the IRC and the Rest of the UK are separately distinguished (although combining these 2 migration categories together does yield statistically significant results for Scotland). In terms of the analysis of earnings, the migration of graduates from each of the devolved nations to the IRC is estimated to be associated with a statistically significant increase in earnings, ranging from 19 per cent among Welsh graduates to 12 per cent among Scottish graduates. This effect is estimated after having taken into account regional differences in the cost of living.

A third stage of analysis was conducted on a merged sample of graduates from Wales, Scotland and Northern Ireland. This final stage of the analysis explored the returns to holding a degree in a STEM subject area, and examined specifically how the returns from holding such a degree were related to whether or not a graduate had migrated from their place of birth. The results of this analysis are shown at the base of Table 5.5. It can be seen that among both non-migrants and migrants, possessing a degree in a STEM subject is associated with a reduced likelihood of being in a non-graduate job, but that the size of this differential does not vary between migrants and non-migrants. However, in the case of earnings, it can be seen that the differential that exists among non-migrants between those with and without a STEM degree (8 per cent) is narrower than the differential that exists between these groups among migrant graduates (15 per cent). The effect of migration upon earnings is therefore greater among STEM graduates.

6. Welsh-born Graduates

Chapter Summary

- There are some gender differences amongst Welsh-born graduates of working age according to the country in which they obtained their degrees. Welsh-born males are more likely to have obtained their highest degree outside Wales (predominantly in England). In particular, the percentage of male graduates with a highest degree from a non-Welsh HEI is around 8 points higher than it is for female graduates. However, a relatively high proportion of men return to Wales after graduating since over a quarter of male Welsh-born graduates live in Wales but obtained their highest degree from a non-Welsh HEI. The equivalent for females is just over a fifth.
- The differences by age reflect the analysis that was undertaken for different cohorts of graduates in Chapter 3. The most notable finding is that a high percentage (around 65 per cent) of graduates aged under 30 gained their highest degree from a Welsh HEI. This compares to just over 50 per cent of Welsh-born graduates aged between 35 and 44.
- There are some variations in type and subject of degree according to the country where the degree was obtained. Graduates receiving their highest degrees from a Welsh HEI are less likely to be postgraduates. There appears to be a concentration of Welsh-born graduates with higher degrees living in the IRC as well as in some other parts of the UK, especially amongst those who graduated from a non-Welsh HEI. Welsh-born graduates resident in Wales with a highest degree from a Welsh HEI are more likely to have studied a non-STEM subject.
- All categories of Welsh-born graduates have high employment rates, regardless of where they studied or where they currently reside. However, there are some notable differences in the types of jobs that each group tends to hold. The incidence of non-graduate jobs is higher for Welsh residents and a high percentage also work in the public sector, which is particularly noticeable amongst those with a highest degree from a Welsh HEI. Self-employment rates amongst Welsh-born graduates are highest for those living in the IRC and lowest for those with a highest degree from a Welsh HEI living in Wales.
- Earnings vary widely for Welsh-born graduates both in relation to which part of the UK they live but also according to where they studied. Average earnings are lowest amongst graduates from Welsh HEIs who live in Wales. This is likely to reflect the high concentration of public sector employment and also the relatively low levels of very well-paid workers. In contrast, Welsh-born graduates living in the IRC have both high average earnings and a much higher proportion of very high earners. Interestingly, average earnings are higher in the public sector than in the private sector for Welsh-born graduates with highest degrees from both inside and outside Wales.

6.1 Introduction

As explained previously, the Annual Population Survey (APS) contains a question on which country the respondent obtained their highest degree. This provides some additional information in comparison to the LFS since it enables us to identify whether or not Welsh-born non-migrants had studied outside Wales and if Welsh-born migrants had studied in Wales, England or some other part of the UK. Although this provides a potentially useful dimension to the analysis, it still has some limitations. As with the LFS data, we are unable to establish exactly when the migrant moved from Wales, although if they studied outside Wales there is a high likelihood that they initially moved away to study, given the relatively small movements of Welsh-born children to other parts of the UK. The question on country of degree solely relates to the respondent's highest degree, so they could have received a lower level degree from another country but this information is not provided in the APS. However, the analysis undertaken in Chapter 3 indicates that this is unlikely to make that much of a difference, especially amongst more recent cohorts of graduates. Finally, despite a Welsh boost being available in the APS, the sample size for some of the categories being analysed is quite small, which restricts the type of analysis that is possible.

In contrast to Chapter 3, where comparisons were made relative to other parts of the UK, this chapter just focuses on the Welsh-born. The categories that have been constructed to examine the characteristics and outcomes of Welsh-born graduates take into account the fact that the graduate labour market is different in the inner region core (IRC) and other parts of the UK by separately identifying the IRC and the Rest of UK. Therefore, the majority of this chapter makes use of a six-category breakdown of Welsh-born graduates of working age, as shown in Table 6.1. The middle column of the table reports the number of observations in each category and the final column shows the distribution of Welsh-born graduates according to where they obtained their highest degree and where they currently live. The table reveals that over 50 per cent of working age Welsh-born graduates studied and live in Wales and a further 23 per cent live in Wales but obtained their highest degree from outside Wales. Around 10 per cent of Welsh-born graduates live in the IRC, but only around a fifth of these people obtained their highest degree from Welsh HEIs. The percentage of Welsh-born graduates living in the Rest of UK obtaining their highest degree from outside Wales is slightly higher than is seen in the IRC and again is around four times greater than the percentage living in this area whose highest degree is from a Welsh HEI.

Table 6.1: Type of Degree (%) by Country of Degree and Residence for Welsh-born Working Age Graduates

	Number of Observations	% of Total
Welsh Degree, Lives in Wales	2505	53.5
Welsh Degree, Lives in IRC	81	1.7
Welsh Degree, Lives in Rest of UK	129	2.7
Non-Welsh Degree, Lives in Wales	1077	22.9
Non-Welsh Degree, Lives in IRC	368	7.8
Non-Welsh Degree, Lives in Rest of UK	544	11.6

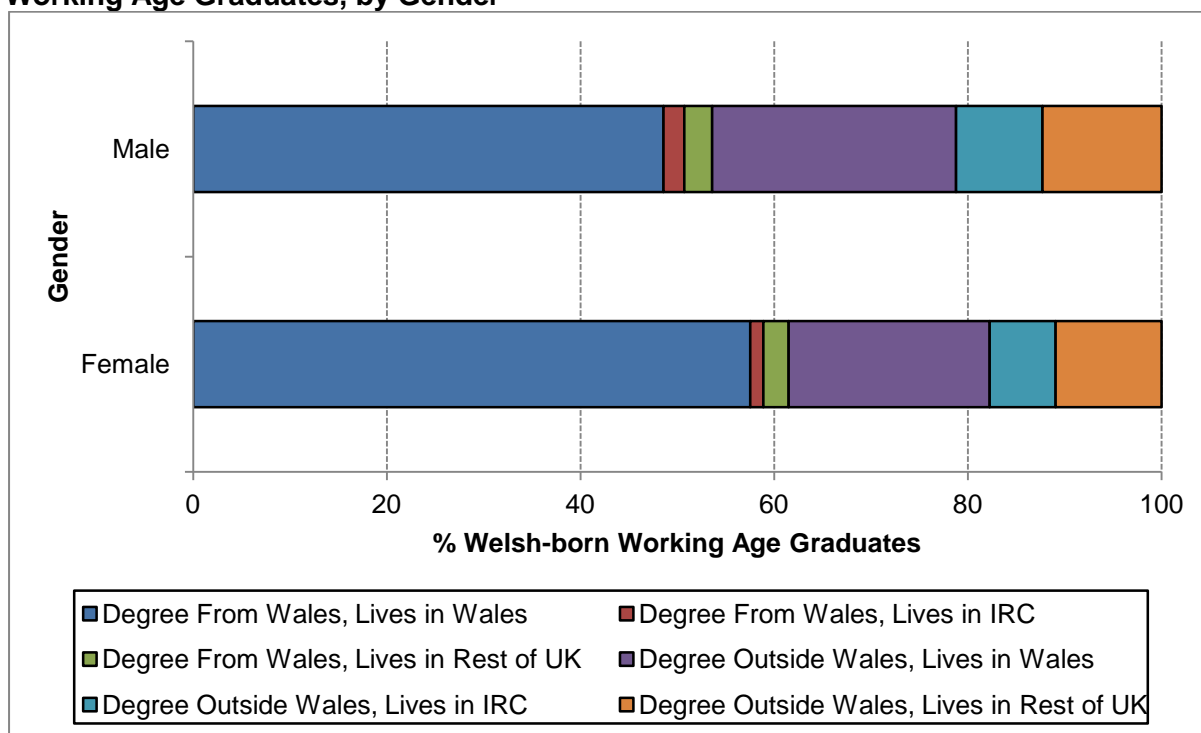
Source: Annual Population Survey 2008-2010

In the remainder of this chapter, the characteristics of Welsh-born graduates in these six categories are examined, firstly with respect to differences in gender and age, and then according to type of degree and subject. This is followed by an analysis of how labour market outcomes vary across these categories. It has already been noted above that the sample sizes for some of the categories are fairly small. This has the effect of limiting the amount of detail which can be provided on some aspects since some of the cells have to be combined to achieve reasonable numbers.

6.2 Gender and Age

This section examines whether the personal characteristics of Welsh-born graduates differ according to where they live and where they studied. Figure 6.1 reports the country of highest degree and area of residence for Welsh-born graduates of working age, split by gender. Just over half (53.6 per cent) of Welsh-born male graduates obtained their highest degrees from a Welsh HEI, whereas the equivalent percentage for Welsh-born female graduates is around 8 points higher. The vast majority of males and females who obtained their highest degree from non-Welsh HEIs obtained these in England, with large proportions also settling there, especially in the IRC. This is particularly noticeable for males, with around 11 per cent of Welsh-born male graduates residing in the IRC, compared with around 8 per cent of females. For both males and females, over 80 per cent of Welsh-born graduates living in the IRC and other parts of the UK obtained their highest degree from a non-Welsh HEI. A higher percentage of males also return to Wales after completing their studies, with over a third (34.2 per cent) of Welsh-born male graduates of working age residing in Wales having obtained their highest degree outside Wales. In contrast, the equivalent percentage for Welsh-born female graduates living in Wales was only 26.5 per cent.

Figure 6.1: Country of Highest Degree and Area of Residence (%) for Welsh-born Working Age Graduates, by Gender



Source: Annual Population Survey 2008-2010

As discussed in Chapter 3, although the percentage of Welsh-born graduates receiving degrees from English HEIs has declined since the mid-1990s, it is still substantial. Unsurprisingly, the variations by age closely mirror the figures reported for the different cohorts of graduates. Table 6.2 reveals variations in the country where a graduate obtained their highest degree by age group for Welsh-born graduates of working age. The percentage of Welsh-born graduates who obtained their highest degrees from a Welsh HEI is highest amongst the younger age categories and lowest in the mid-age categories. In particular, 65 per cent of Welsh-born graduates aged under 30 obtained their higher degree from a Welsh HEI compared to 53 per cent in the 35-44 age group. However, the percentage of Welsh-born graduates who obtained their highest degrees outside Wales is highest for those

(males) aged between 60 and 64, of whom only 50 per cent obtained their highest degree from a Welsh HEI.

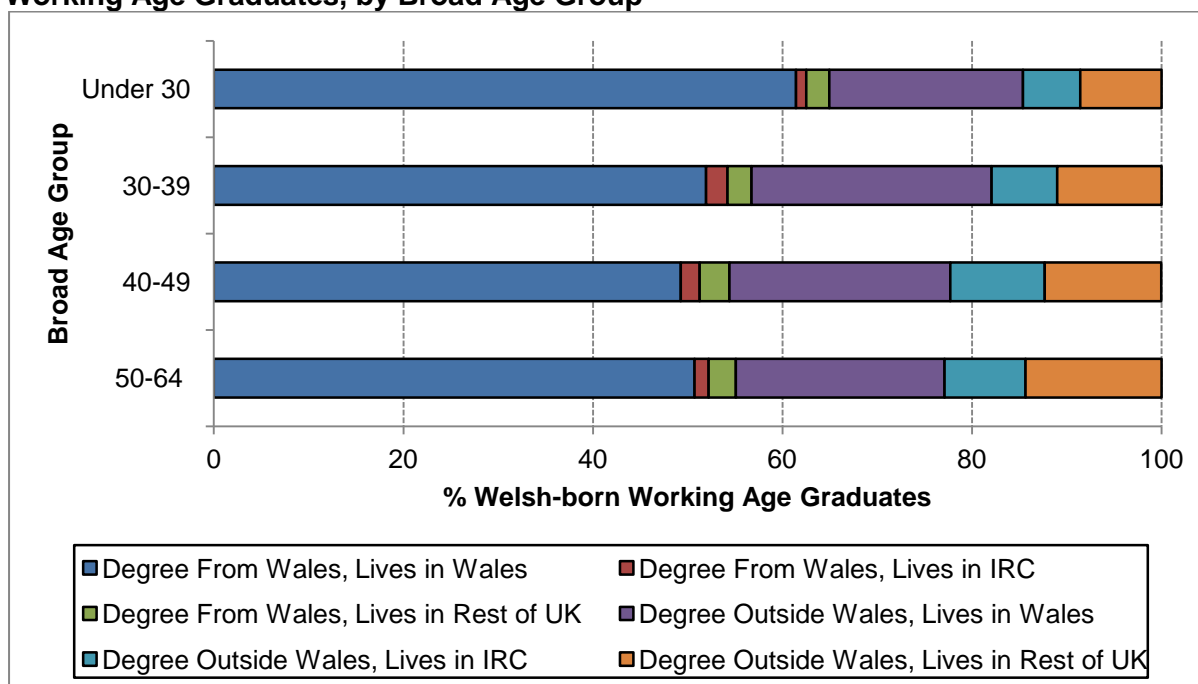
Table 6.2: Country Obtained Highest Degree (%) for Welsh-born Working Age Graduates, by Age Group

	Wales	Outside Wales
Under 25	64.8	35.2
25-29	65.1	34.9
30-34	61.0	39.0
35-39	52.6	47.4
40-44	52.9	47.1
45-49	55.9	44.1
50-54	58.4	41.6
55-59	54.6	45.4
60-64	50.0	50.0
Total	57.7	42.3

Source: Annual Population Survey 2008-2010

Figure 6.2 provides a split between Welsh-born graduates living in Wales and those living in other areas of the UK (though given sample sizes age groups have had to be combined). The most noticeable variation by age can be seen for Welsh-born graduates living in Wales. Less than a quarter aged under 30 within this group obtained their highest degree from a Welsh HEI, compared to almost a third in the 30-39 age category. The age differences for Welsh-born graduates living outside Wales are smaller, with around 80 per cent of each group having obtained their highest degree from a non-Welsh HEI. This suggests that although return migration amongst Welsh-born graduates who have studied in England occurs to a certain extent, this does not appear to increase noticeably with age. In fact, the percentage of Welsh-born graduates living outside Wales with degrees from England is highest in the 50-64 age group, with 85 per cent of Welsh-born graduates living in the IRC having obtained their highest degree outside Wales.

Figure 6.2: Country of Highest Degree and Area of Residence (%) for Welsh-born Working Age Graduates, by Broad Age Group



Source: Annual Population Survey 2008-2010

6.3 Degree Type and Broad Subject

Whereas the previous section focused on the personal characteristics of different categories of Welsh-born graduates, we now turn our attention to examining how degree characteristics vary across these categories. Table 6.3 reveals some variation in the type of degree held by the country where the degree was obtained. First degrees are the most common degree type held by just over two thirds of Welsh graduates. Amongst this group, around 42 per cent obtained their degrees outside Wales. Nearly all the remaining Welsh-born graduates hold higher degrees (30 per cent in total). The percentage receiving higher degrees from a Welsh HEI was slightly lower than for 'other' (non-degree) holders, suggesting that Welsh-born postgraduate students are relatively more likely than their undergraduate counterparts to study outside Wales. Less than 3 per cent of Welsh-born graduates hold other types of degree, although this has increased in recent years since this group consists of those who have been awarded Foundation degrees. More than three-fifths of graduates with other degrees obtained their degrees from a Welsh HEI, the highest of the three groups.

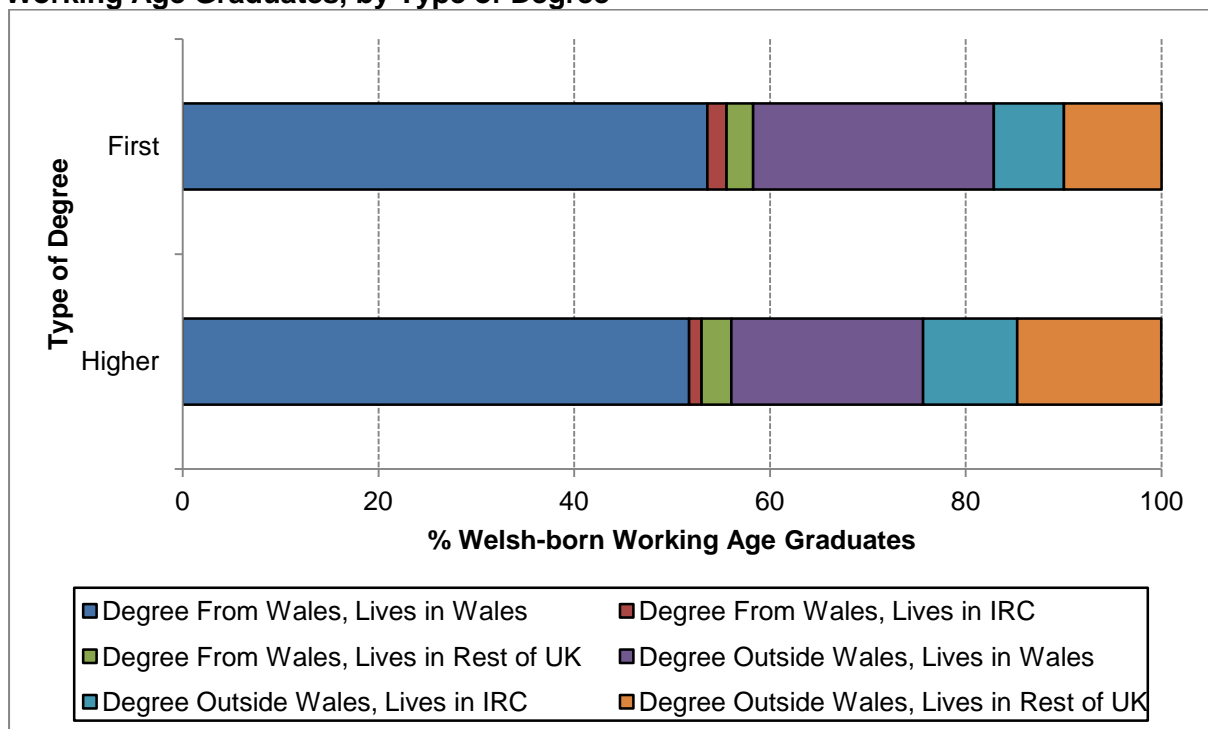
Table 6.3: Country Obtained Highest Degree (%) for Welsh-born Working Age Graduates, by Type of Degree

	Higher	First	Other
Wales	56.1	58.3	62.3
Outside Wales	44.0	41.7	37.7
% of Total degrees	30.0	67.0	2.9

Source: Annual Population Survey 2008-2010

Figure 6.3 displays information on Welsh-born graduates according to where they obtained their highest degree and where they live, for first and higher degree holders. A slightly higher percentage of Welsh-born graduates living in Wales who obtained their highest degree in Wales have a first degree in comparison to higher degree holders. Conversely, amongst Welsh-born graduates living in the IRC, the percentage with higher degrees is much higher for those who obtained their highest degree outside Wales, although the figures for those with Welsh degrees are based on a fairly small sample. The same pattern also prevails for Welsh-born graduates in the Rest of UK, with the high percentage with higher degrees (38 per cent) combining with a relatively high percentage reporting other types of degrees (4 per cent) to produce a relatively small proportion of this group with first degrees as their highest degree.

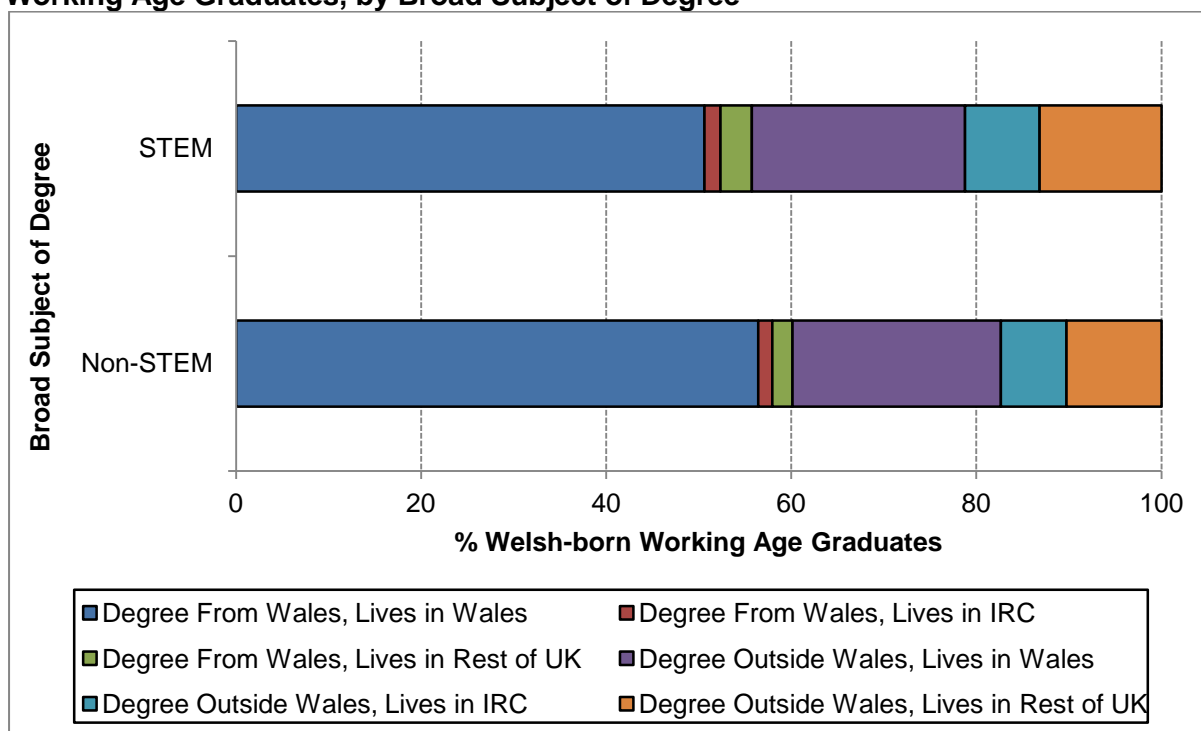
Figure 6.3: Country of Highest Degree and Area of Residence (%) for Welsh-born Working Age Graduates, by Type of Degree



Source: Annual Population Survey 2008-2010

Figure 6.4 reports the broad subject of highest degree for Welsh-born graduates. The figure reveals that a lower percentage of the Welsh-born living in Wales were awarded their highest degrees in a STEM subject. This is particularly the case for those who studied Wales, with only 37 per cent of this group having obtained their highest degree in a STEM subject. The equivalent percentage for those living in the Rest of UK is over 50 per cent and is also higher (43 per cent) in the IRC. Therefore, it appears that Welsh-born graduates who studied in Wales are more likely to stay in Wales if their degree was in a non-STEM subject. Interestingly, the percentage of Welsh-born graduates with degrees in STEM subjects is higher in the Rest of UK than in the IRC, both for those who studied inside and outside Wales.

Figure 6.4: Country of Highest Degree and Area of Residence (%) for Welsh-born Working Age Graduates, by Broad Subject of Degree



Source: Annual Population Survey 2008-2010

6.4 Labour Market Outcomes of Working Age Welsh-born Graduates

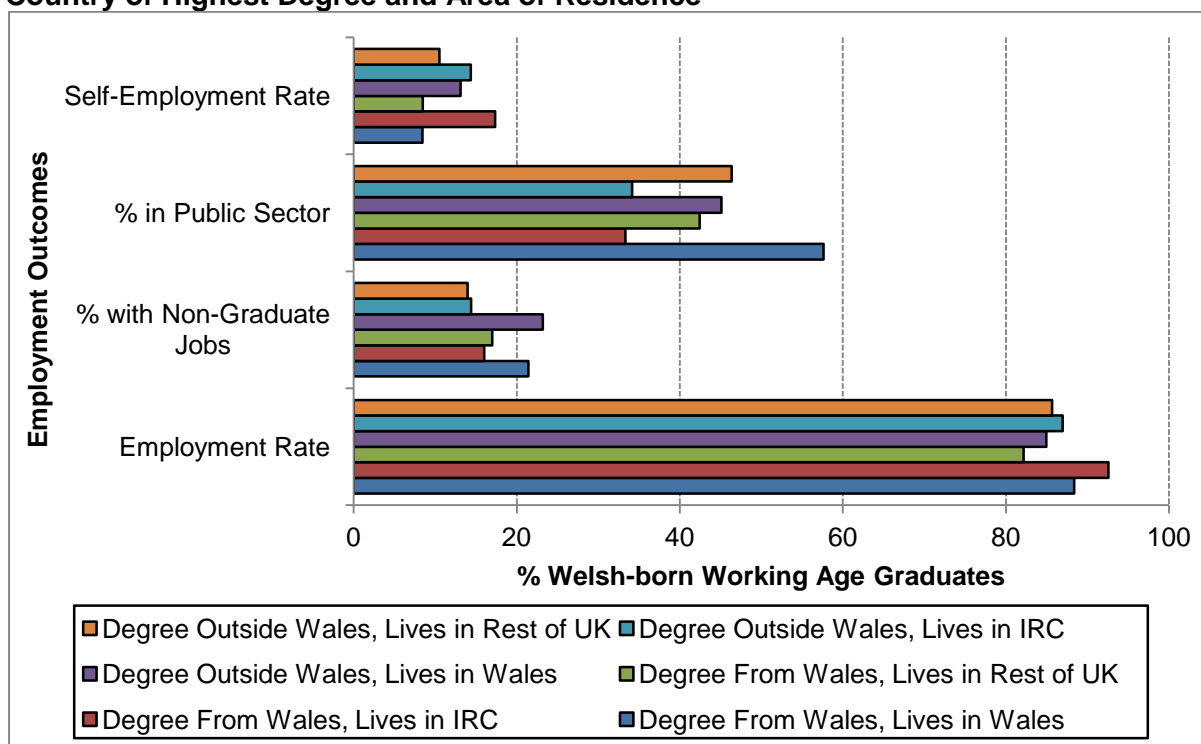
Given the large differences in labour market outcomes revealed in the LFS for graduate migrants across the UK, this section contains a labour market analysis of Welsh-born graduates using the APS, making use of the same six-category breakdown of this group according to their location of residence and highest degree.

Figure 6.5 reports information on employment and self-employment rates and the percentage working in non-graduate jobs and in the public sector. Employment rates for Welsh-born graduates are high in all areas. For Welsh residents, the rate is higher for those who obtained their highest degree from a Welsh HEI, which is also the case for Welsh-born graduates living in the IRC. There is greater variation in terms of types of jobs, with Welsh residents who obtained their highest degree from outside Wales most likely to have a non-graduate job, closely followed by Welsh residents who received their highest degree from a Welsh HEI. The proportion of Welsh-born graduates with non-graduate jobs in the rest of the UK is noticeably lower and similar in the IRC and Rest of UK, and slightly lower for those with their highest degree from a non-Welsh HEI in both areas. As was also shown in the LFS analysis, the percentage working in the public sector is highest in Wales and lowest in the IRC. This figure is particularly high for Welsh-born graduates living in Wales who also studied there, with nearly 60 per cent of this group working for public sector organisations. This compares to around a third of Welsh-born graduates living in the IRC. The percentage of Welsh-born graduates living in the Rest of UK working in the public sector lies in between these two extremes, and is slightly higher for those who obtained their highest degree from a non-Welsh HEI.

Figure 6.5 also reveals some variation in self-employment rates, again consistent with the previous LFS analysis since entrepreneurship is most common amongst Welsh-born graduates in the IRC. Self-employment rates are higher for working age rather than young graduates because entrepreneurs often need time to acquire the necessary financial capital.

Self-employment is lowest amongst Welsh-born graduates who studied and live in Wales and the Rest of UK, with only 8.5 per cent of those in employment working for themselves.

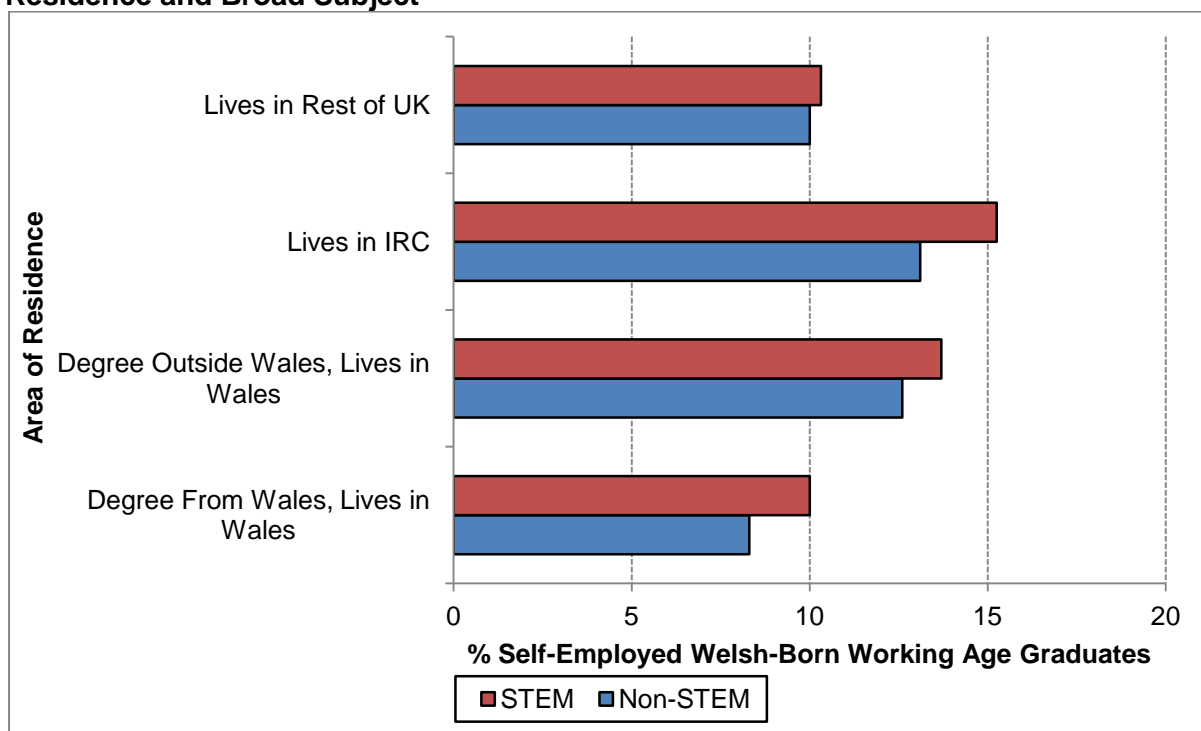
Figure 6.5: Employment Outcomes for Welsh-born Working Age Graduates, by Country of Highest Degree and Area of Residence



Source: Annual Population Survey 2008-2010

Figure 6.6 further examines differences in self-employment rates by including broad subject of study. Due to the relatively small numbers of Welsh-born self-employed in the APS, some categories have been combined. Nevertheless, it can be seen that self-employment rates are highest for Welsh-born graduates living in the IRC, both for graduates with a highest degree in STEM and in non-STEM subjects. STEM graduates are more likely to be self-employed in each of the groups, although the difference is very small for Welsh-born graduates living in the IRC. For Welsh-born graduates resident in Wales, self-employment rates are far higher for both STEM and non-STEM graduates who obtained their highest degree from a non-Welsh HEI. This suggests that this group is far more entrepreneurial than Welsh-born graduates who are likely not to have left Wales. This is consistent with Le's (1999) finding that migrants are generally more likely to be entrepreneurs, possibly because they have a less cautious attitude towards taking risks. Welsh-born graduates who obtained their highest degree in a non-STEM subject from a Welsh HEI have particularly low self-employment rates, with just over 8 per cent of those who are in employment working for themselves.

Figure 6.6: Self-Employment Rate for Welsh-born Working Age Graduates, by Area of Residence and Broad Subject

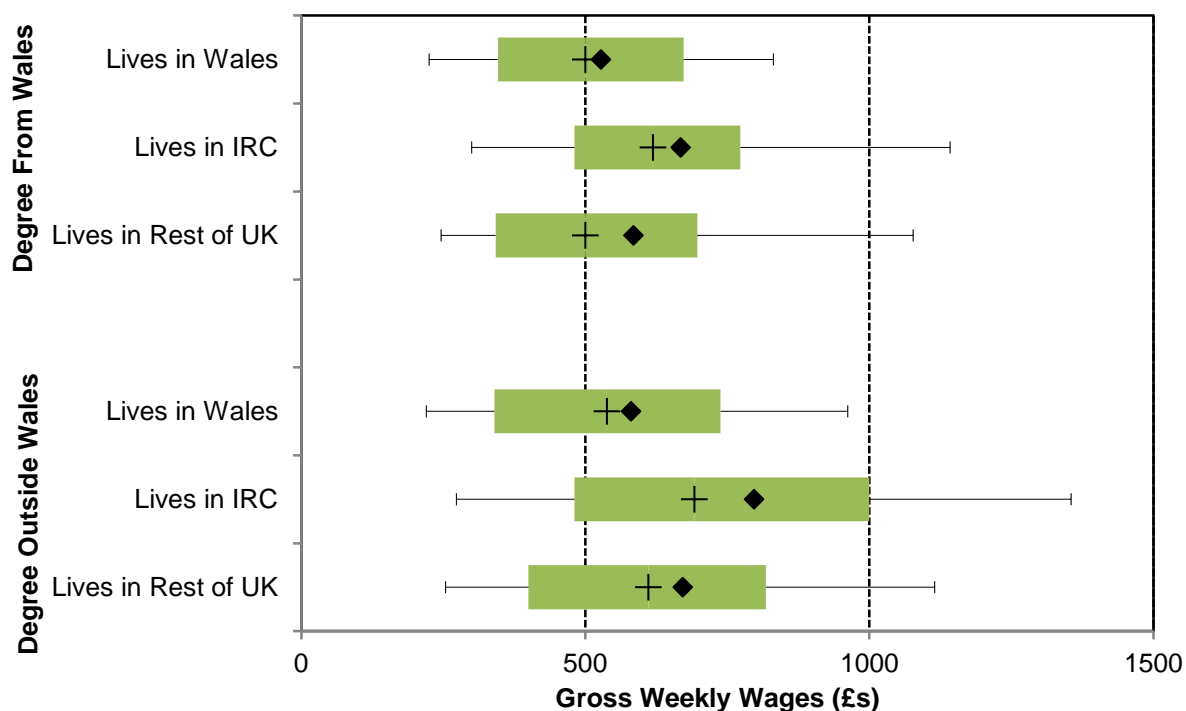


Source: Annual Population Survey 2008-2010

Information on the distribution of the gross weekly earnings of Welsh-born graduates is provided by Figure 6.7 (in the form of a boxplot). This reports measures of central tendency, dispersion and the main percentiles of the distribution. In particular, mean earnings for each group are represented by a diamond and the median by a cross. The degree of variability in the distribution is shown by the end points of the box (the upper and lower quartiles) and the end points of the line (90th and 10th percentiles). Greater detail on the use of this type of diagram to analyse differences in earnings distributions amongst particular demographic groups can be found in Davies et al (2011).

Figure 6.7 confirms the findings from the previous chapter, finding that average earnings are lowest in Wales and highest in the IRC. However, the figure also provides additional information by reporting how dispersed earnings are in different parts of the UK for Welsh-born graduates according to where they obtained their highest degree. Not only are average earnings lowest for Welsh residents who also obtained their highest degree in Wales, but the earnings distribution of this group is more compressed. The bottom end of the earnings distribution (first quartile) is very similar for Welsh residents obtaining their highest degree outside Wales, but earnings at the upper parts of the distribution are noticeably higher. This means that both the mean and median weekly earnings of this group are £40-£50 higher than for those who obtained their highest degree outside Wales, with this difference widening to over £130 at the 90th percentile. Part of the explanation for this is the higher propensity of Welsh-born graduates who live and studied in Wales to work in the public sector. This aspect is further investigated in Figure 6.8.

Figure 6.7: Distribution of Earnings for Welsh-born Working Age Graduates, by Country of Highest Degree and Area of Residence

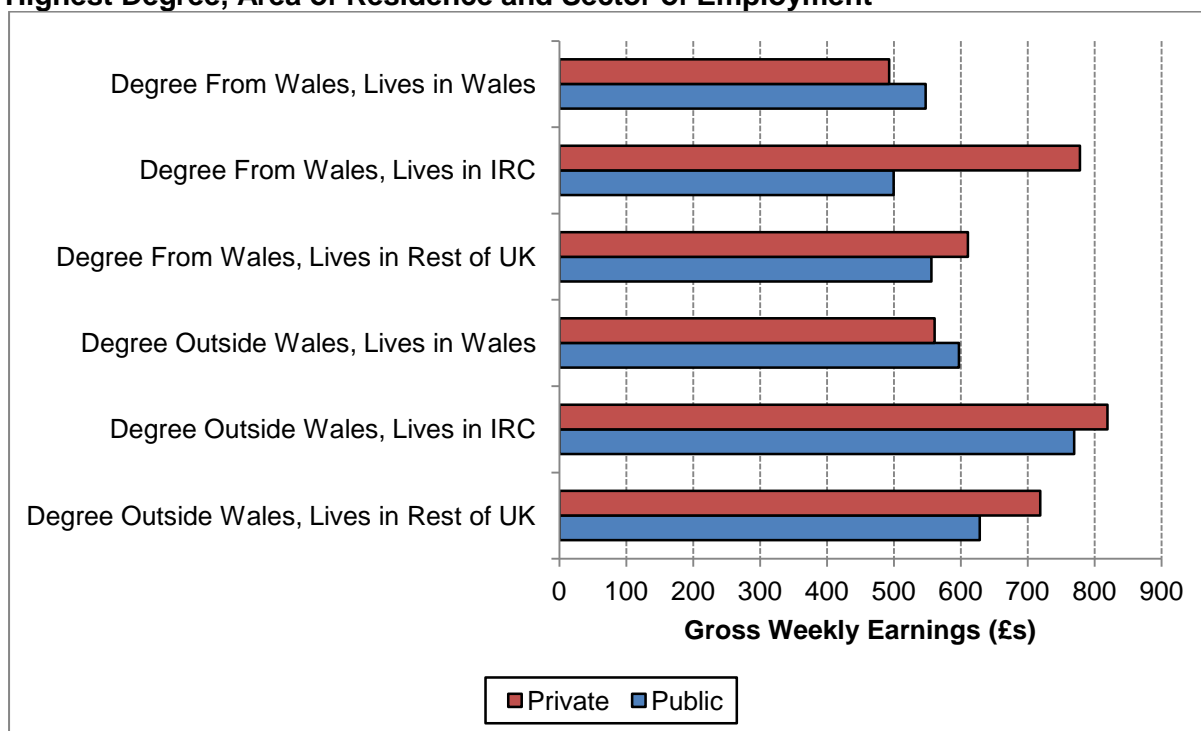


Source: Annual Population Survey 2008-2010

Differences in employment in the public sector are likely to partly account for why earnings are far higher in the IRC, since a much lower percentage of Welsh-born graduates living in this area work for the state. However, the ability of private sector organisations to pay higher wages in this part of the country, partly due to their need to compensate for the higher cost of living, is probably the most important driver. This is not only shown by the high average earnings of Welsh-born graduates in the IRC but also the high variation in their earnings. This is particularly noticeable in the upper part of the earnings distribution for those who obtained their highest degree from a non-Welsh HEI, since 10 per cent of this group earned in excess of £1,350 a week. The earnings of Welsh-born graduates living in the Rest of UK again lie between those of graduates living in Wales and the IRC, with the average earnings of graduates obtaining their degrees from a Welsh HEI being lower.

Finally, differences in the gross weekly earnings of Welsh-born graduates are further analysed, with reference to Figure 6.8. This reports mean gross weekly earnings of graduates working in the public and private sectors. In accordance with the previous LFS analysis for young graduates, Figure 6.8 reveals that the weekly earnings of Welsh-born graduates working in the public sector are noticeably higher than they are for those working in the private sector in Wales. This is the case for both employees who graduated from Welsh and non-Welsh HEIs. However, the mean earnings of graduates with a highest degree from outside Wales are higher in both the public and private sectors. Further inspection of the variation in earnings amongst these two groups also indicates a much higher dispersion of earnings in the public sector for those with a higher degree from a non-Welsh HEI. This suggests that there is a concentration of Welsh-born graduates who studied in Wales who tend to work in lower and middle ranking positions within the public sector. Earnings are higher in the private sector for all of the other groups, especially amongst Welsh-born graduates living in the IRC. It is particularly interesting to note the very high mean earnings of Welsh-born graduates living in the IRC who received their highest degree from a non-Welsh HEI, both in the public and private sectors.

Figure 6.8: Mean Gross Weekly Earnings of Welsh-born Graduates, by Country of Highest Degree, Area of Residence and Sector of Employment



Source: Annual Population Survey 2008-2010

In sum, this chapter has used APS data to complement and extend the analysis undertaken on LFS data. In particular, the APS contains some additional information on graduates living in the UK since a question on the country in which their highest degree was obtained has been asked since 2008. The chapter solely focuses on Welsh-born graduates and some interesting differences are revealed according to whether or not the respondent graduated from a Welsh HEI. These include that females and more recent graduates are more likely to have received their highest degree from a Welsh HEI. Welsh-born graduates receiving their highest degree from a Welsh HEI are less likely to have been awarded a higher degree and to have studied a STEM subject. Labour market outcomes also vary fairly widely, with a high incidence of non-graduate employment amongst Welsh-born graduates residing in Wales, regardless of where they obtained their highest degree. Graduates of Welsh HEIs who studied and live in Wales are the most likely to work in the public sector and least likely to be self-employed. The dominance of public sector jobs amongst this group also translates into relatively low earnings, with average earnings lagging behind those of Welsh-born graduates living in other parts of the UK, especially in the IRC. The differences in earnings are highly influenced by earners the upper end of the distribution, with relatively few very well-paid, Welsh-born and Welsh resident graduates who also obtained their highest degree from a Welsh HEI.

7. Push and Pull Factors Influencing Welsh Graduate Mobility: Illuminating the Findings

7.1 Introduction

Having explored and quantified the movements of Welsh graduates and the labour market and family formation consequences of their migration decisions, this chapter seeks to address the third aim of our study i.e. to consider how graduate mobility over time is influenced by the complex and perhaps competing 'pull' factors of places where graduates grew up or studied, as well as the powerful 'push' of career opportunities.

The quantitative analysis reported in chapters 3 to 6 has demonstrated that, in terms of graduate flows, graduates who migrate from their home nation generally possess higher levels of educational attainment (such as postgraduate qualifications) and (particularly for Wales) degrees in STEM subject areas. In terms of labour market outcomes, the analysis found that migration is associated with better jobs, higher earnings and higher rates of self-employment. Graduates from STEM subject areas generally exhibit better labour market outcomes and these outcomes are further improved among those who migrate. The main source of quality employment for non-migrant graduates in Wales is the public sector. As such, it is clear that there are powerful economic factors shaping graduate migration decisions and, perhaps not surprisingly, given the differences in employment and salary opportunities for graduates between Wales and other parts of the UK (notably the Inner Region Core), there is a powerful 'push' away from home after graduation.

Nevertheless, our analysis also shows that there are powerful forces at work which 'pull' graduates to Wales. First and foremost, the most significant source of graduate labour in Wales is that of 'locals', or Wales-born students who stayed in the region to study and work. Secondly, Wales also exhibits a relatively high proportion of 'returners' or Welsh-born graduates who return to the region to work after studying elsewhere. Indeed, the LFS analysis found that Welsh HEI graduate out-migration from Wales peaks 10 to 14 years following graduation (figure 4.2), which indicates that beyond this period the number of Welsh graduates who return to Wales, following an initial period of migration, exceeds levels of outward migration. The APS analysis in turn also indicates the importance of the 'returners' pathway, for example finding that a relatively high proportion of men return to Wales after graduating from HEIs elsewhere (figure 6.1). However, the quantitative data tells us little about how these competing push and pull factors might operate for different migrants according to their pathways i.e. whether 'locals', 'stayers', 'returners' or 'outsiders', and how these evolve and change over time.

To consider the complex interplay of push and pull factors on graduate mobility in more detail, the quantitative data discussed here has been supplemented with qualitative research based on a small number of illustrative case studies of Welsh knowledge economy businesses which employ graduate 'talent'. This therefore represents a small sub-sample of graduates living and working in Wales who have not only themselves mediated the competing push and pull factors outlined above, but have revealed a preference for establishing and working in key knowledge economy businesses capable of themselves employing graduates. The research methodology and further detail of our findings is included at annex 1. This research approach illuminates (rather than providing generalisable findings regarding) the factors which have influenced the locational decisions of knowledge economy entrepreneurs and their employees. As such, this highlights how different graduates mediate the often competing forces influencing their migration decisions, and highlights key factors enhancing the pull of home. Given its focus on those who are creating private sector graduate jobs in Wales, which is regarded as key to retaining Welsh talent and

boosting the Welsh economy, the qualitative approach also informs consideration of the policy implications of this research, explored in our final chapter.

7.2 Case Study Findings

The four knowledge economy companies who participated were all recently established (between 2002 and 2008) and small (with three to forty employees). Two were technology-related, two were consultancy services. Two were also 'spin outs' of Welsh HEIs. In addition, one multinational corporation (with predominantly non-graduate level jobs) participated to provide insights from a large employer.

Pathways

The experiences of the respondents (who were founder directors or partners of the companies) illustrate the 'pathways' into the Welsh labour market which have been identified in previous studies (as explained in chapter 2). Applying Hoare and Corver's (2010) HULT model (of Home to University to Labour Transitions), to respondents revealed that:

- two were 'locals' (who were Welsh-born and had attended a Welsh HEI)
- two were 'returners' (Welsh-born but had studied and worked in England)
- one was a 'stayer' (non-Welsh born, had attended a Welsh HEI, but who did have a Welsh identification due to family)
- one was an 'outsider' (who had come to Wales due to a 'returner' co-founding partner, met while working in the Inner Region Core).

Though the findings cannot be generalised, it is noteworthy that the 'locals' and 'returners' pathways are the most prevalent in the case studies – illustrating the importance of the pull of home.

Push Factors

The locations of respondents' previous study and work experiences illuminate the interconnectedness of Wales and England in terms of higher education at first and higher degree levels, and for employment. Of the three respondents with higher degrees, two of these were gained in England, following completion of undergraduate degrees in Wales. The respondents in turn illustrate the complexity of graduate flows over time, demonstrating Hoare and Corver's (2010; p.491) observation that 'any assumption that first destinations represent jobs and labour markets for life is clearly never less tenable than now'. Three of the respondents were geographically mobile following entry into the labour market, working in three different locations in England and Wales prior to founding their companies in Wales.

This prior mobility of three of the respondents demonstrates the 'push of career' following graduation and reinforces the finding in the literature that economic factors are critical in influencing graduate migration decisions. The role of the IRC in particular in developing the careers, skills and networks (and thus, it can be argued, entrepreneurial abilities) of these three respondents was evident. Two of these were ultimately 'returners' to Wales, who had built up their skills and knowledge elsewhere, as employees. The push of career, and then the pull of home was evident for the two 'returners' interviewed, illuminating the 'escalator effect' (Fielding, 1992) explained in chapter 2. Furthermore, it can be argued that their desire to return to Wales (the pull factors are explored below) assisted them in becoming entrepreneurs. In other words, they were looking to be able to create opportunities for themselves which would not otherwise be available on their return, and sought self-employment or business creation as a route to achieving this.

Pull Factors

All respondents explained that it did not matter to their clients where they were located. All the companies had clients across England and Wales. For the consultancies, the company location was not of relevance to their associates either, who were located across the UK. Of course, however, their company location did matter to the respondents and the factors influencing their business location decision were elicited in the discussion.

The pull factors for Wales identified by respondents were linked to reaching the family formation lifestage, with returners mentioning the availability of support from their wider families and wanting their children to have a Welsh bilingual education. One 'outsider' respondent also mentioned the disbenefits of the IRC as a place to bring up a family, again reinforcing the notion of the desirability of getting off the IRC 'escalator'.

However, returner entrepreneurs stressed the need for a sound business basis for their company to be located in Wales. For this, they explained the importance of gaining Welsh public sector clients to establish and build their business. The companies have subsequently sought to diversify their client base, with one specifically mentioning increasing IRC-based private sector clients. These respondents also stressed their ability to offer lower costs compared to their more expensive, IRC-based competitors.

The availability of location incentives and business support initiatives was of great importance to the two HEI spin out company entrepreneurs interviewed (one founded by a local, one by a stayer). However, such policy effects were not of relevance to the two returner company founders, one commenting that location incentives were not available in Cardiff, which is where the business had to be located in order that it be accessible to its Welsh and London-based clients.

Recruiting and retaining graduate talent

Respondents also discussed how they went about attracting and retaining graduate 'talent'. The respondents recognised the paucity of quality graduate jobs in Wales. The large employer respondent commented that at more senior levels (in particular recruiting those with MBAs), the company had experienced difficulties in attracting those without prior home or study links to Wales.

The respondents' employees were predominantly Welsh-born, emphasising the importance of the locals and returners pathways. The respondents were aware of the value of the 'locals' pathway and of path dependencies in terms of individuals' propensity to migrate. One explained that they factored this into their recruitment decisions, preferring Welsh employees who were perceived as more likely to remain with the company. As part of this, links with Welsh HEIs for recruitment, such as via work placements, was stressed by four of the respondents (two of whom were from HEI 'spin outs'). One respondent had detailed knowledge of the relevant degree courses offered in Welsh HEIs, and knew which two universities offered the course content that was most appropriate for the skills the company sought.

8. Summary Findings and Policy Implications

8.1 Summary Findings

This report first set out a review of the existing international literature on graduate mobility and migration decisions and patterns (in chapter 2). This highlighted the economic returns to graduate migration and how these are sensitive to the path dependencies and structures of regional economies, as well as to the path dependencies of mobile graduates themselves.

The report then established the extent to which Wales retains its graduate labour in employment, and estimated the labour market and partnership/ family formation outcomes for 'Welsh' graduates (i.e. those born in Wales). The quantitative analysis (reported in chapters 3 to 6) shows that, in terms of graduate flows, Wales exhibits low retention rates compared to other devolved nations in terms of both the proportion of students who remain in Wales to study, and in terms of the proportion of graduates from Welsh HEIs who subsequently gain employment within Wales. Graduates who migrate from their home nation generally possess higher levels of educational attainment (such as postgraduate qualifications) and (particularly for Wales) degrees in STEM subject areas. The analysis thus clearly demonstrates the benefits of migrating for individual graduates. In terms of labour market outcomes, the analysis found that migration is associated with better jobs, higher earnings and higher rates of self-employment. Graduates from STEM subject areas generally exhibit better labour market outcomes and these outcomes are further improved among those who migrate. Within Wales, the main source of quality employment for non-migrant graduates is the public sector, which employs approximately half of post-1992 young graduates who were born and live in Wales.

Finally the report considered how graduate mobility over time is influenced by the complex 'pull' factors of places where graduates grew up or studied, as well as the powerful 'push' of career opportunities. The qualitative analysis (reported in chapter 7) has illuminated the complex interplay of these push and pull factors on graduate mobility, highlighting how different graduates mediate the often competing forces influencing their migration decisions. It pointed to key factors enhancing the pull of home. The insights gained show that the notion of a brain drain is perhaps rather blunt since many Welsh graduates seek to return to Wales at a later stage of their life cycle or career, with some establishing their own businesses as a way of achieving this. As such, 'brain circulation' (Saxenian, 2005) may be a more pertinent concept when considering the flows of graduate labour shaping regional economic development.

8.2 Policy Implications

In improving the evidence base on graduate migration patterns to and from Wales and indeed across the UK, this research has a number of potentially useful implications for policy. In particular, this research usefully highlights the complex forces which drive graduate migration. First and foremost, this research reinforces the importance of the relative economic opportunities available in the region. Graduate migration decisions are strongly influenced by the search for employment and a higher salary, with the Inner Region Core continuing to provide a powerful pull for graduates from all over the UK, and particularly Wales. Whilst the expansion of the public sector in Wales and other regions has dampened this trend to a degree in recent years, the current recession and public expenditure cutbacks threaten to significantly erode these opportunities (Wright, 2011; WAO, 2011), placing much greater onus on the private sector to create graduate employment opportunities, or graduates themselves to set up their own businesses. Furthermore, it seems that particular types of graduates – notably those with a higher degree and in STEM subjects – are most likely to leave Wales.

The qualitative research conducted here has also illustrated the important potential role of returners, who have gained skills elsewhere, in assisting regional economic development through establishing private sector graduate employment opportunities in Wales. A key policy question is thus how to assist the pull of home? Respondents to the qualitative research made a variety of comments regarding what would help their businesses (set out in annex 1). These included Welsh public sector procurement practice and its role as a catalyst for local business; the value of the availability of business advice, particularly from other businesses; the need for the development of clusters and place marketing; and greater links with HEIs, in particular to identify graduate talent. These comments illustrate the range of possible policy responses to a complex and changing set of issues.

It is worth noting that Wales is not alone in facing these issues. Given the links between graduate retention and regional economic performance, a number of UK regions have developed explicit graduate retention interventions which may provide useful insights for policy-makers. These are explained in more detail, alongside consideration of existing or nascent Welsh initiatives, in annex 2. Experience from Scotland is of particular interest given its relative comparability in economic and governance terms to Wales. Findlay et al (2008) found that return migrants from the IRC to Scotland were predominantly young graduates (aged below 45). The research team also carried out an attitudinal survey of Scots in the South East, and found that nearly half declared an intention to return to Scotland at some point. But, similar to the returner entrepreneurs in the qualitative case studies, while lifestyle factors were the main driver behind the desire to return, in most cases job opportunities in Scotland were required before young graduates would make the move. The empirical data shows the draw of Edinburgh for such returners, with its strong financial services sector. Findlay et al conclude that if the Scottish Executive chose to target such young returner graduate talent under its 'Fresh Talent' initiative (which is targeted at 'foreign talent') it would succeed. This begs the questions as to whether such an approach would merit consideration in Wales, where policy has sought to "retain home-grown talent and make Wales appealing to new researchers and wealth creators" (WG, 2010: p31).

However, the path dependent and evolutionary nature of graduate migration also means that these findings have important implications for other areas of policy, notably relating to HE and graduate employability or skills. This research has reinforced the clear link between migration to study and migration of graduates to work. This link seems particularly strong in Wales where, as has been demonstrated, 'locals' represent the most significant source of graduate labour. Thus., encouraging locals to study and stay in Wales is more likely to have an impact on graduate retention rates than seeking to either retain those who come to Wales to study, or to attract those who have no prior Welsh home or study links.

This raises interesting questions around HE tuition fees. Increasingly variable HE fees regimes across different parts of the UK are likely to have potentially very significant effects (as explained in chapter 1). Indeed, previous experience has demonstrated how significant the effects can be of changes in HE fees, with clear fluctuations in the proportions of Welsh-born graduates who received their highest degree from a Welsh HEI resulting from changes in funding arrangements for HE since 1992 (and especially since the introduction of 'top-up' fees in England since 2004). In earlier research, Coombes et al (2003) investigated the impact of student debt on career plans in their survey of graduates of Welsh HEIs. The most prevalent effect of debt was that it increased the importance of wage levels upon job choice (stated by 42% of graduates surveyed with student debt). This is a potential push factor from Wales. However, around 28% of respondents stated that debt had influenced their decisions to live at home to reduce costs, a potent pull factor. As the quantitative findings indicate (chapter 5), increases in the length of time spent living in the parental home after graduation do not bode well for improved employment outcomes.

Current Welsh Government policy on HE fees could be regarded as incentivising Welsh student migration. This highlights interesting tensions between what policy might clearly be desirable as far as individuals are concerned and what might be better for a region in economic terms. Incentivising student migration will encourage greater graduate mobility which we know to be beneficial for individuals, if not for the region. This might imply a policy encouraging greater localisation of higher education admissions would be preferable for the region. However, this also has drawbacks in possibly limited individual returns to education (as shown by Faggian et al, 2007). How current changes will play out merits a concerted ongoing research agenda.

Annex 1: Qualitative Data

Case studies of 'leading light' Welsh knowledge economy businesses which employ graduate 'talent' were conducted to illustrate and illuminate understanding of the push and pull factors which influence location decisions for knowledge economy entrepreneurs and their employees in Wales. The research methods were intended to illuminate rather than provide generalisable findings.

Methodology

Selection

The four knowledge economy companies selected were headquartered in Wales, and judged to be 'leading lights' in terms of their growth rate (via their listing in the Wales Fast Growth 50, 'the annual barometer of entrepreneurial development within Welsh SMEs'⁴) or peer recognition (as recipients of business awards). There was also a purposive selection bias resulting in the selection of two businesses, who in addition to being 'leading lights' as defined above were also 'spin outs' of, and thus had strong links with, two Welsh HEIs. In addition, one multinational corporation (with predominantly non-graduate level jobs) participated to provide insights from a large employer.

Respondents were (with the exception of the MNC, for whom the interviewee was the head of personnel) founding directors or partners of the company, with direct knowledge of the company's locational decisions and the factors which influenced these, and the type of graduate 'talent' required.

Interviews

Topics were explored via a semi-structured interview. An interview topic guide was provided to respondents in advance (it is included at the end of annex 1). Interviews were transcribed and coded using the interview guide as a framework. Topics were:

- Links with Wales and HE eg. have they stayed in Wales throughout their life, have they returned to Wales after studying/ working elsewhere, did they come to Wales to study and stayed?
- Business location decisions: and the push and pull factors which informed these
- Graduate demand: the importance to their business of attracting and retaining graduate 'talent' and the issues they face in so doing.

The interviews were conducted between March and May 2011.

⁴ <http://fg50.community.sequence.co.uk/>

Findings with Illustrative Respondent Quotes

Push Factors

The locations of respondents' previous study and work experiences illuminate the inter-connectedness of Wales and England in terms of higher education at first and higher degree levels, and for employment. Of the three respondents with higher degrees, two of these were gained in England, following completion of undergraduate degrees in Wales. Three of the respondents were geographically mobile following entry into the labour market, working in three different locations in England and Wales prior to founding their companies in Wales.

This prior mobility of three of the respondents demonstrates the 'push of career' following graduation and reinforces the finding in the literature that economic factors are critical in influencing graduate migration decisions. The role of the IRC in particular in developing the careers, skills and networks (and thus, it can be argued, entrepreneurial abilities) of these three respondents was evident. Two of these were ultimately 'returners' to Wales, who had built up their skills and knowledge elsewhere, as employees. The push of career, and then the pull of home was evident for the two 'returners' interviewed, illuminating the 'escalator effect' (Fielding, 1992). The personnel director of the large employer also commented:

"We do have people who have had to move out of Wales to progress their career and are now looking to move back. So they spend five, six years out, they are now working in Bristol or London or Birmingham, whatever and they are now looking to return home"

Furthermore, it can be argued that the returners' desire to come back to Wales assisted them in becoming entrepreneurs. In other words, they were looking to be able to create opportunities for themselves which would not otherwise be available on their return and sought self-employment or business creation as a route to achieving this. One 'returner' respondent commented:

"How can I get experience of a blue chip company, how can I get experience of working in a North American environment without going there, how do I get experience in all the things that I've done by being in Wales? So yes, go and get all those experiences and take advantage of them when you come back".

Pull Factors

All respondents explained that it did not matter to their clients where they were located. All the companies had clients across England and Wales. For the consultancies, the company location was not of relevance to their associates either, who were located across the UK. Of course, however, their company location did matter to the respondents and the factors influencing their business location decision were elicited in the discussion.

The pull factors for Wales identified by respondents were linked to reaching the family formation lifestage, with returners mentioning the availability of support from their wider families and wanting their children to have a Welsh bilingual education:

"It was a very, very conscious decision for me to come back... I wanted to have children... that's another strong driver, which is coming back to Wales, that you've got a wider family to support... I've got three daughters and they all go to Welsh medium school. It was a dominant thing for me."

"I've got two children... we were quite keen on the Welsh education, I feel that a bilingual education offers advantages... So that was certainly something I wanted to come back to, the environment here and what we have here in access to Cardiff is superb, so yes there's lots of reasons."

One 'outsider' respondent also mentioned the disbenefits of the IRC as a place to bring up a family, again reinforcing the notion of the desirability of getting off the IRC 'escalator':

"When you're young it's fine, London and there's a buzz to it and everything, and then after a while you realise it's a bit of a rat race I suppose... We'd had enough of the South East, and I think our lifestyle decision at the time of starting a family was to get out."

However, returner entrepreneurs stressed the need for a sound business basis for their company to be located in Wales. For this, they explained the importance of gaining Welsh public sector clients to establish and build their business. The companies have subsequently sought to diversify their client base, with one specifically mentioning increasing IRC-based private sector clients:

"I'd probably be quite mercenary in terms of setting up where it's appropriate. Our biggest client that we needed to attract and win was the Welsh Assembly Government... So we felt being close to them would not be anything other than sensible... we were looking to position in Cardiff... [now] we've actively spread our risk in terms of clients... there are more and more private sector clients. Our biggest private sector clients are based in London..."

"I was determined to start winning some work in Wales, because I wanted to come back. So I put in all of what it took to try and bid for some of these pieces and we got lucky and we got some work with what was then the Welsh Office."

These respondents also stressed their ability to offer lower costs compared to their more expensive, IRC-based competitors:

"There's also potentially a cost effective upside to it, because we have locally based people ... The expenses element of a consultancy assignment can be quite significant. And most consultancies will wrap that up into their fee. So the being in Wales works at its very best when you've got people who want to live in Wales, work in Wales, and customers who want to buy those people who are in Wales."

"We do bring our clients down from London, it's interesting they don't realise how close Cardiff is... and sometimes they don't realise what's available here, they don't necessarily realise the near-shoring thing is a reality, that our costs are nowhere near London costs and our rates are nowhere near London rates"

The availability of location incentives and business support initiatives was of great importance to the two HEI spin out company entrepreneurs interviewed (one founded by a local, one by a stayer):

"Moving to Cardiff we wouldn't have had any Objective One which was what was about then..."

"It was just a really frightening time but KEF⁵ and spin out gave me so much training. Venture Wales I would go to Port Talbot, I think probably every month there was one going on... everything that I needed to know to be a business person... Everything has been free through the Welsh Assembly... I definitely wouldn't be in this position had I not had all of these little stepping-stones."

⁵ Knowledge Exploitation Fund (KEF) Entrepreneurship Scholarship Programme – this is explained in annex 2.

But such policy effects were not of relevance to the two returner company founders, one commenting that location incentives were not available in Cardiff, which is where the business had to be located in order that it be accessible to its Welsh and London-based clients:

“In terms of funding there’s been a few things that we haven’t been able to perhaps attract by being based here [in Cardiff]. If we’d been sat out in the middle of nowhere in a completely stupid location there would have been money thrown at us but that’s just not how a business that’s a real business should ever look to operate.”

Recruiting and retaining graduate talent

Respondents also discussed how they went about attracting and retaining graduate ‘talent’. The respondents recognised the paucity of quality graduate jobs in Wales:

“If you’re looking at people who are at the peak of their consulting career, they will be earning eighty thousand plus. How many jobs in Wales are there? Very, very few. But we can create those jobs... For those people who’ve gone to England and for whom their career and their earning potential is their number one, they will only be drawn back to Wales if the money is there.”

The large employer respondent commented that at more senior levels (in particular recruiting those with MBAs), the company had experienced difficulties in attracting those without prior home or study links to Wales:

“We’ve had difficulty attracting talent to Cardiff at the higher level... We have difficulty attracting people to Wales if they’ve been to a university not in Wales or if they have no connection with Wales.... We don’t have much difficulty attracting people from Welsh universities or if they’ve already got family connections with Wales. But it’s a big hurdle for us attracting people from business schools if they have no connection with Cardiff or Swansea.”

The respondents’ employees were predominantly Welsh-born, emphasising the importance of the locals and returners pathways. The respondents were aware of the value of the ‘locals’ pathway and of path dependencies in terms of individuals’ propensity to migrate. One explained that they factored this into their recruitment decisions, preferring Welsh employees who were perceived as more likely to remain with the company:

“There were a lot of Eastern Europeans we interviewed who were very good... but we felt we’ve got two Welsh candidates... they can potentially live from home early years and sort themselves out financially so they’re going to be attracted to this and positive about it, whereas potentially East Europeans they’ve already migrated and done their degree in Wales, where are they going to go next, London, North America perhaps. Do we need to invest as a small business in that? Probably not.”

“It feels like Welsh people tend to stay in Wales and that is actually quite an asset for us, because we can build up.... our churn rate is zero currently.”

As part of this, links with Welsh HEIs for recruitment, such as via work placements, was stressed by four of the respondents (two of whom were from HEI ‘spin outs’):

“I want people to be able to get that experience because it is a catch twenty two situation. They come out of uni they are trying to get a job but they are expected to have experience, which they don’t have yet.”

One respondent had detailed knowledge of the relevant degree courses offered in Welsh HEIs, and knew which two universities offered the course content that was most appropriate for the skills the company sought:

“The nature of our work, it is highly technical, we do require skilled individuals, all of our graduates so far are either first or two ones in computer science, they’ve all come from Cardiff University or Aberystwyth.”

Policy Relevant Requests

Finally, the respondents made a variety of comments regarding what would help their businesses. These included Welsh public sector procurement practice and its role as a catalyst for local business; the value of the availability of business advice, particularly from other businesses; the need for the development of clusters and place marketing; and greater links with HEIs, in particular to identify graduate talent:

“You’ve got high quality jobs being undertaken by big corporates in Wales who are working for the Welsh Assembly, they’ve got high quality jobs, and they’re the people who are bringing in people from London”

“The public sector is such a large element in Wales then it can be a catalyst as well”

“Public sector talking in relation to business is not quite the right conversation, but if it’s business to business then there’s more of a chance.”

“Without the business here people will go over the bridge... we need to attract areas of expertise to Wales so that people want to come and study in Wales and stay in Wales after because there’s great career opportunities in certain fields.”

“We haven’t made the most of linking up with HEIs. We can also meet potential new recruits.”

ESRC SKOPE Project on Welsh Graduate Migration: Interview Topic Guide

Main question: the factors that influence the locational decisions of knowledge economy entrepreneurs in Wales.

Preamble

Check about the interview being recorded.

This research is being undertaken as part of a study into graduate migration flows, funded by the ESRC under the SKOPE Centre (the Centre for Skills, Knowledge and Organisational Performance) in Oxford and Cardiff Universities. The project is intended to assist in gaining better understanding of the spatial dimension of the generation and retention of skills and knowledge.

This element of the research is to conduct case studies of 'leading light' Welsh knowledge economy businesses which employ graduate 'talent'. The purpose of these is to illustrate and augment understanding of the push and pull factors that influence the locational decisions for knowledge economy entrepreneurs and their employees in Wales.

About You

- What are your links with Wales and higher education? For example, have you:
 - stayed in Wales throughout your life?
 - have you returned to Wales after studying/ working elsewhere?
 - did you come to Wales to study and stayed?
 - did you not have any previous links with Wales?
- If you had previous links with Wales, would you say these influenced your founding of a company in Wales? If so, how?
- If you did not have previous links with Wales, what were your perceptions of Wales as a place to live and as a place to found a business?

About Your Company

- As a founding director/ partner of the company, can you explain to me how it was decided that the company be located here?
- What would you say were the factors behind this decision?
- How relevant were your previous links, if any, with Wales?

About Your Employees

- How important would you say it was to your business to attract graduate 'talent'?
- In turn, how important is it to your business to be able to retain graduate 'talent'?
- Would you say that your business location helps or hinders you in this regard?
- Thinking generally about the graduates you employ, can you comment on their previous links with Wales and higher education?

Finally

- Is there anything else you would like to add?
- Do you have any questions about the research or how the material will be used?

Thank you

Annex 2: Graduate Retention Policy Initiatives

This annex provides a brief overview of graduate retention policy interventions and approaches. There are initiatives at national scale which aim to assist graduates into employment (for example, STEP, a network of agencies promoting and delivering work experience placements for students and graduates). There are also initiatives which seek to improve productivity by linking HEIs and businesses (for example, Knowledge Transfer Partnerships). However, explicit graduate retention interventions in the UK are focused at the regional scale (explored below) given the links between graduate retention and regional economic performance.

In Wales, as elsewhere, greater HEI engagement has been emphasised to support future economic success through stronger relationships with business and more commercialisation of knowledge (WG, 2009). This has included 'regionalisation', to more coherently plan and organise HE provision in each region of Wales, for the benefit of local learners and employers (WG, 2009; p. 12). Such efforts relate to the need to improve understanding of local employer demand, in terms of what employers want from graduates, and what would make them employ more, particularly from HEIs in the region (Perryman et al, 2003).

A review of the literature shows that there have been a range of attempts by HEIs across the UK to address the employability of their graduates (Lowden et al, 2011) but the extent to which such developments take place and are embedded practice is variable. Lowden et al's (2011) recommendations echo the approaches undertaken at regional level (explored below) by emphasising that HEIs and government explore how careers services can be enhanced. In Wales, the HE Careers Advisory Services (HECAS), in providing separate careers services to university students, are regarded as a disjuncture from the all-age and all-abilities careers services provided by Careers Wales (WG, 2010a). HECAS perceives graduates 'to be on a separate track into employment and the professions which is by no means geographically restricted to Wales' (WG, 2010a; p. 51). Such fragmentation was not felt to be appropriate for the 'locals' and potential 'stayers' (ie. Wales-domiciled students attending Welsh HEIs or others who, following graduation, are aiming to live and work here). This has led to the recommendation that that HECAS, Careers Wales and Jobcentre Plus work more closely in partnership to deliver more integrated support to those students entering and leaving higher education who experience difficulty in determining their career paths or in subsequently securing appropriate employment in Wales (WG, 2010a; p. 52).

Lowden et al (2011) recommend that HEIs and employers should continue to promote and expand opportunities for students to access work-based learning by including appropriate integrated placements into their courses. Students' employment needs, including the generic skills and abilities needed in the workplace, should be reflected in the curriculum and course design. Such approaches require effective, sustained and equitable partnerships between HEIs and employers.

Regional Initiatives

In the UK, the locus for graduate retention initiatives has been at the regional scale, reflected in England in regional development strategies and implemented in part with the involvement of regional development agencies (RDAs). Graduate retention has been a subject of particular emphasis for the Yorkshire and the Humber and West Midlands regions, with explicit mention in their respective regional economic strategies of the need for its promotion given its importance to the productivity of the regional economy. In these regions bespoke bodies have been created (Graduates Yorkshire and Graduate Advantage West Midlands) by regional groupings of HEIs. It is unclear as yet to what extent these initiatives will be affected by the English coalition government's dismantling of regional governance, given

RDA involvement in and support of their efforts. However, there is recent evidence of the emergence of some city-regional (for example in Liverpool and Manchester) and further HEI-led regional arrangements (for example in the North West).

Welsh approaches have much in common with their English regional counterparts. The key scheme is Graduate Opportunities Wales (GO Wales), managed by HEFCW, delivered by university careers services (HECAS), and funded by Welsh Government and the European Union Social Fund (ESF). GO Wales offers a range of graduate retention related services such as recruitment services, work experience and training opportunities.

All the initiatives have three broad target groups: students, graduates and employers. There is a particular focus on Small and Medium-Sized Enterprises, SMEs, given the structuring of regional economies, the need to raise the profile of the local employment opportunities which SMEs can offer, and the benefits of encouraging SMEs to employ graduates given the higher-levels skills they can bring to a business (WG, 2008).

Overall there is an emphasis on providing a package of approaches, comprising recruitment, placement and training opportunities, often via online databases. The emphasis is predominantly upon recruitment rather than the retention of graduates once they have taken up jobs in the region. In Wales there have also been initiatives offering support for graduate business start ups. The 'typical' package of initiatives comprises:

Graduate recruitment services into local employment

Seeking to increase the rate of regional graduate retention by linking graduates to regional employment opportunities. A core component of regional initiatives are the online 'jobsites', such as those offered by GO Wales and Graduates Yorkshire. Opportunities included on Yorkshire's 'Graduate Link' website are screened to ensure that the posts advertised are graduate-level jobs.

Student and graduate work placements (and work tasters) and training

Experience of appropriate work (whether through work experience, work placements or sandwich courses) is felt to help students with their career choices; increase their understanding of the workplace and readiness for work; and improve their connections and networks with recruiters, thus enhancing their employability. The more that local employers and HEIs offer work experience opportunities, the greater the employment prospects of prospective graduates, particularly within the region (Perryman et al, 2003), though systematic evaluation of the longer-term impact of such employability programmes is lacking (Lowden et al, 2011). UKCES (2009) state that such opportunities can also promote productive collaboration and partnerships between HEIs and employers.

Examples of regional initiatives include:

- GO Wales: ten week, paid project-based work placements for students and graduates; and work tasters, which are one day to 2 week periods of unpaid work experience. Also the Graduate Academy, a six week training programme to provide recent graduates with the skills and support to gain graduate employment, resulting in a qualification. A part-time programme is offered for the underemployed.
- Graduate Advantage West Midlands: graduate and student placements and training opportunities via its website.
- Knowledge Innovation Technology Transfer Scheme (KITTS): the scheme, operated via a website, aims to match the skills of qualified graduates with the specific needs of West Midlands SMEs, with graduates undertaking a 10-week work-based project in industry.
- Yorkshire Employment and Training Information and the virtual career coach (on-line training exercises) provided by Graduates Yorkshire.

Support for student business start ups

- SPEED: programme to enable students at three West Midlands universities to start their own business alongside their studies with access to mentors, training and networking opportunities.

Support for graduate business start ups

- The Knowledge Exploitation Fund Entrepreneurship Scholarship Programme ran from 2000 until 2006 and was funded by Welsh Government. It provided financial assistance for knowledge-based business start-up ideas from recent graduates of both further and higher education institutions who wanted to establish a business in Wales.
- The Entrepreneurship@Alacrity Programme (yet to commence). This five-year initiative, to be managed by the Alacrity Foundation with Welsh Government funding support, comprises a 9-12 month training 'bootcamp' where 10 engineering and business graduates per year will work on a technology commercialisation project with mentors and industry partners to prepare them for entrepreneurship in the technology sector. HEI partners (three in Wales, two in England) will provide an aligned Masters degree in 'Entrepreneurial Capital Development'. After training, the graduates will be supported to establish new technology companies headquartered in Wales and identify opportunities to develop new products. The private and public sectors will be given opportunity to invest in the new companies through a managed fund, in return for an equity stake.

Approaches which target particular groups of students/ graduates

Subject-specific placements:

- The Regeneration Placement Service in the West Midlands (RegenWM) brokers placements for students and graduates in regeneration-related organisations and advertises opportunities. The approach has since been transferred to Wales by the Centre for Regeneration Excellence (CREW).
- The Manchester Masters initiative offers 10 graduates from Manchester city-region universities a year's paid work placements in marketing roles and the opportunity to gain a Masters in Professional Practice. The salary costs for local participating businesses are subsidised.

A focus on unemployed/ economically inactive graduates:

- an ESF-funded pilot Graduate Employability Support Programme run by eight universities in the North West. It comprises a range of activities (such as enhanced advice, vocational and soft workplace skills training, and placements) for graduates who require support including up-skilling or re-skilling to access or retain employment.
- Liverpool's Graduate Retention Programme (part ESF-funded, and led by Liverpool Chamber Training and a consortium of local universities), which provides Merseyside-based unemployed graduates and senior executives with employability training and 13 or 26 week work placements.
- A focus on freelancers: the GO Wales Freelancer Academy, a six day training programme (funded by Welsh Government and the ESF) to help potential graduate freelancers develop skills, knowledge and confidence to progress their business ideas.
- A focus on graduates not linked to the region: for example, Graduates Yorkshire runs the Mad2Move service, which provides information about the region.

Financial Incentives

Looking internationally, Canada provides some interesting examples of regional graduate retention initiatives. These differ from the typical UK regional careers service-focused approach given the provision of financial incentives. Such methods may become of greater

relevance to the UK given changes in student funding arrangements leading to increased tuition fees and levels of student debt.

Both of the initiatives below (described by Di Matteo, 2010) seek to retain recent graduates who are resident in the region, irrespective of the location of their HEI:

- Graduate Retention Program in Saskatchewan: provides a rebate of up to \$20,000 for tuition fees paid by graduates who live in and file their income tax return in the province. To be eligible, graduates must have graduated from an approved course after 2005.
- Graduate Retention Rebate Program in Nova Scotia: those who have graduated from university since 2009 can reduce their Nova Scotia income taxes by a maximum of \$2,500 a year for up to five years, to a maximum of \$15,000. To be eligible, graduates must be resident in and filing a tax return in Nova Scotia, and must be graduates from designated educational institutions under the Canada Student Loans Program.

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