

Educational attainment and inequality in Scotland: How does Scotland compare with the rest of the UK?

Date & time: 13:30-16:30, Wednesday 28th August 2013

Venue: [Seminar Rooms 1 & 2, The Chrystal MacMillan Building, University of Edinburgh](#)

Floor plan & parking: [A Guide to Access & Facilities](#) (PDF, see pp.4 & 10)

Pre-event Briefing

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Overview

When deciding whether or not to seek independence from the UK, the Scottish electorate will need to consider how Scotland has fared in its governance of areas that are already devolved. Education is one such high-profile area of policy. It is highly devolved in the UK, and the fact that all four constituent countries have pursued very different policies in the recent past provides a good testing ground to undertake a comparative review of the merits or otherwise of the education reforms that have taken place.

This briefing presents findings from an LSE research project funded by the ESRC. The project examined the performance of children educated in the devolved Scottish system in comparison to those educated in England, Wales and Northern Ireland, at all ages and key stages. Thus, the project offers a unique and valuable insight into the impact of Scottish devolution in a high profile area of public policy.

In this pre-event briefing, we provide background information relating to the following questions:

- What do home international comparisons tell us about the relative performance of pupils and students in Scotland?
- Does Scotland's system of one year Highers (for some pupils) discourage staying on?
- What are the implications of educational inequalities for higher education?

Education in a Devolved Scotland – overview of the LSE research

The project used national statistics and international survey data to assess and compare education in the four constituent countries of the UK, focusing on overall academic attainment and on inequality in attainment, focusing on the performance of Scotland relative to the rest of the UK. Education is an area of policy that is already highly devolved in the UK, with the constituent countries, including Scotland, pursuing quite different education policies. Thus, a comparative analysis allows us to consider possible effects of policy differences between the UK countries and should also generate new and interesting insights into the impact of Scottish devolution in a specific, high profile area of public policy.

The research involved detailed analysis of educational attainment data spanning several age ranges between the early stage of primary school and the end of secondary school. The researchers also examined staying-on rates and university participation across the four countries.

Key findings include the following:

- Scotland's devolved education system performs well in comparison to the rest of the UK
- Scotland's young people also perform very well relative to those in other OECD countries
- There are more similarities than differences in terms of the performance of young people educated in the four UK countries

However the research also raised a number of concerns and questions and concerns including the following:

- A-level and GCSE attainment in England has increased rapidly over the last few years, while pupil attainment in Scotland has apparently remained relatively stable. Is this a cause for concern or does England's improved performance merely reflect grade inflation and game playing in the English system?
- There are still large numbers of Scottish children leaving school without sufficient qualifications for entry into degree-level higher education. Is this a result of the more modular system of Highers which allows young people to leave school relatively early? Or do the advantages of Scotland's more flexible system outweigh these apparent disadvantages? Of course, it may not be desirable or necessary to continually expand the proportion going to HE – perhaps a more serious problem is the relatively large number of pupils leaving with few or no qualifications.
- Scotland, like the rest of the UK, performs well in comparison to other OECD countries on measures of inequality in education. Whilst this is good news for Scotland, there still remain significant inequalities in all levels of the Scottish education system. Could more be done to tackle these inequalities with further devolution or independence?

Education in a Devolved Scotland – Detailed summary and research methods (see Appendix for further details)

The research tracked educational achievement at several key stages of compulsory and non-compulsory education in Scotland, England, Wales and Northern Ireland over the past 20 years. Differences in early cognitive skills of children at age 7 were explored using the Millennium Cohort Study (a sample of children born in 2000), administered when children are aged 7. The scores across all four countries are very similar (especially with regard to maths), and only a little lower for reading in Wales and Northern Ireland (a score of about 47, compared to about 50 in England and Scotland). This seems to imply that pupils in each country start their school careers with similar levels of cognitive skills. However, it may be the case that there are different levels of poverty and inequality across the UK. As it is widely known that high poverty levels are associated with lower performance in early tests of cognitive ability (e.g. Feinstein, 2003) we additionally examined these findings adjusted for differences in demographics, parental education and poverty, as measured by free school meals eligibility. The results of this analysis indicate that the difference between reading scores for Scottish and English children, while significant, is very small

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compared to Wales and Northern Ireland. In terms of maths capability at age 7, there are no significant differences between England, Wales and Northern Ireland, though Scottish children perform slightly worse. This analysis suggests that there are small differences in cognitive maths and reading skills at age 7, though these are by no means stark.

National datasets were used to explore differences in attainment of pupils in official school tests. The earliest official data we have for pupils in Scotland is from Scottish Standard Grade tests which take place when pupils are aged 15 and 16 (official data from England and Wales in the form of Key Stage 2 tests, is available at age 11, but since we have no comparable data for Scotland we excluded these results). We compared the Scottish Standard Grade test results of pupils in Scotland with the GCSE examination scores of pupils in England, Wales and Northern Ireland taken when pupils are aged 16.

Making comparisons is difficult because of the different systems of exams and qualifications in Scotland compared with the rest of the UK – and this exercise will become more difficult as the systems of the UK continue to diverge with the implementation of Curriculum for Excellence in Scotland and the Gove reforms in England.

Analysis shows that Scotland's performance has been very stable over time while performance in the rest of the UK has been improving, and English students have now 'caught up' – though this may be more as a result of well documented grade inflation and game-playing in England (Wolf, 2011). Nevertheless, Scotland performs well relative to the rest of the UK at age 16 (see Table 1 and Figure 1). While this suggests that Scottish children are reaching school leaving age with a good grounding in English and maths, it is important to know what happens next.

We therefore examined staying on rates of Scottish children as well as attainment in post-compulsory schooling and higher education. While national statistics show that staying on rates for the second year of post-compulsory school in Scotland are lower than in the rest of the UK, these may not portray an accurate picture of participation due to inherent differences in the systems (in particular that Scottish young people can go to university at age 17). We therefore boost this analysis using the Labour Force Survey. Analysis for 2011 indicates that education participation of any kind (all qualification types and institution types) is lower in Scotland for those aged 17 (67% in Scotland vs 81% in England) and at age 18 (53% in Scotland vs. 62% in England).

This may be a result of the more modular system of Scottish Highers, which can be completed in one year, in contrast with A-levels, which must be studied over two years, essentially requiring pupils to stay in school for another year. This could be evidence that the system of one-year Highers is a disincentive to stay on for another year. We also found that the proportion of pupils gaining 3 or more Highers by S6 is just 36.8% in 2011, compared with 52% of 18 year olds in England achieving this level (defined as the percentage of 18 year olds gaining 2 or more A-levels).

Looking at higher education participation, however, a slightly different picture emerges. Higher education participation – measured as the proportion undertaking a degree, HNC/HND or other form of HE - has been consistently higher in Scotland than in England. For 2010/11, the Higher Education Initial Participation Rate

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(which measures the proportion of 16-30 year olds in higher education) shows a participation rate of 56% in Scotland versus 47% in England (Scottish Funding Council, 2013, Table 1; DfE, 2013, Table 1).

But overall figures mask some interesting trends. Firstly, Scotland has a greater proportion of mature students than England. Comparing participation of those aged 17-19, for example, shows that participation in England and Scotland is very similar at 36.8% in Scotland compared with 34.6% in England (Scottish Funding Council, 2013, Table 2; DfE, 2013, Table 2). Furthermore, 50% of Scottish HE students are studying for something other than a degree – i.e. an HND, HNC or other form of HE¹. This could explain why, whilst S6 attainment appears low in Scotland, HE participation is still relatively high.

While figures showing the breakdown of qualification types are not available for England from the same source, we can again turn to the Labour Force Survey to look at the proportion of students in HE studying for a degree in each country. Figures for 2011 show that for those aged 21 or under, Scotland's degree participation rate is 24%, compared with 25% in England (a figure which includes Foundation degrees). However, an additional 7% of students in Scotland are studying for an HNC/HND or other type of HE, compared with only 1% in England.

Evidence from international survey data

Because of the problems associated with comparing educational attainment across countries with different systems, we also look at three international surveys in which all the UK nations participate: the Programme for International Student Assessment (PISA), a study of the reading, science and maths abilities of 15 year olds; the Progress in International Reading Literacy Study (PIRLS), which assesses reading comprehension at age 10; and the Trends in International Mathematics and Science Study (TIMSS), which surveys achievement at ages 10 and 14.

The advantage of these surveys is that pupils are tested in the same way at the same age. Our analysis of international test scores shows Scotland in a favourable light internationally. While there are some inconsistencies in findings depending on the survey, the results tend to show Scottish pupils performing as well if not slightly better than pupils in the rest of the UK (see Table 2).

Indeed, we find more similarities than differences across the UK, with all four nations attaining similar positions relative to the international community. This is perhaps unsurprising, given the history of education in the UK, as well as the cultural similarities and shared labour markets. It suggests that these factors may be more important for educational outcomes than the types of institutional arrangements that countries adopt or their policies on school autonomy, centralisation and pupil testing.

Devolution to date has not resulted in a relative deterioration of Scottish educational performance. At the same time, there is little evidence of improvement in Scotland's educational performance in national

¹ Figures are based on authors own calculations from Scottish Funding Council, 2013, Table3; in 2011/12 there were 37155 entrants, and a 56.1% HEIPR. Thus, the eligible population is $66229 (37155 \times 100 / 56.1 = 66229)$. 27.8% of the population are doing a degree = $18,411$ degree participants ($66229.9 / 100 \times 27.8$). This is 50% of entrants ($18,411 / 37,155$). Thus, the remaining 50% are studying for something other than a degree.

assessments or in international comparisons of educational performance over the time periods studied (1995-2007 in the TIMSS study, 2000-09 in the PISA study and since 2004 in national statistics).

Significant differences also emerge in the educational outcomes of pupils from different socio-economic groups. For example, the PISA data for maths in Scotland in 2009 show that the difference between the most advantaged quarter of young people and the least advantaged quarter is 93 points. The top quarter achieved 549 points, which is on a par with the average score in Hong Kong (which was placed third in the OECD for maths that year), while the bottom quarter achieved only 456 points, on a par with Turkey (which was placed 44th).

As previously discussed, Scotland and the UK perform relatively well on measures of inequality relative to other OECD countries and inequality in educational outcomes is a problem that is shared by all four nations of the UK, with Scotland faring no worse in these terms than England. Furthermore, while Scotland is in charge of its education system, it does not have full fiscal autonomy which somewhat limits the level and distribution of spending on education. If Scotland wishes to move upwards in the OECD table of high achieving/high equity nations, led by Finland and Canada, greater investment in education would be necessary, alongside a determination to tackle social inequality in school composition which contributes to inequalities in outcome.

Table 1: Education performance across the UK nations: national data sets

Measure	Source	England	Wales	Scotland	Northern Ireland
Five or more GCSEs A*-C or equivalent	GCSE exams or equivalent 2010/11	80.5	67.3	78.8	75.3
A*-C GCSE in maths	GCSE exams or equivalent, 2006/07	54.6	50.0	48.3	54.7
A*-C GCSE in English	GCSE exams or equivalent, 2006/07	60.2	58.9	69.8	62.9
Percentage of 17-18 year olds at school or in further and higher education	Labour Force Survey	72		60	
Percentage of 17-24 year olds with no qualifications	Labour Force Survey, 2009	7.0	7.8	7.4	12.7
Percentage of 18 years olds with two or more A-levels	A-level results, 2011/12; Higher results 2011/12	51.8	27.1	36.8	50.2

Notes: Exact definitions differ between countries in the indicators from administrative sources.

Figure 1: Education performance across the UK nations: compulsory age exams

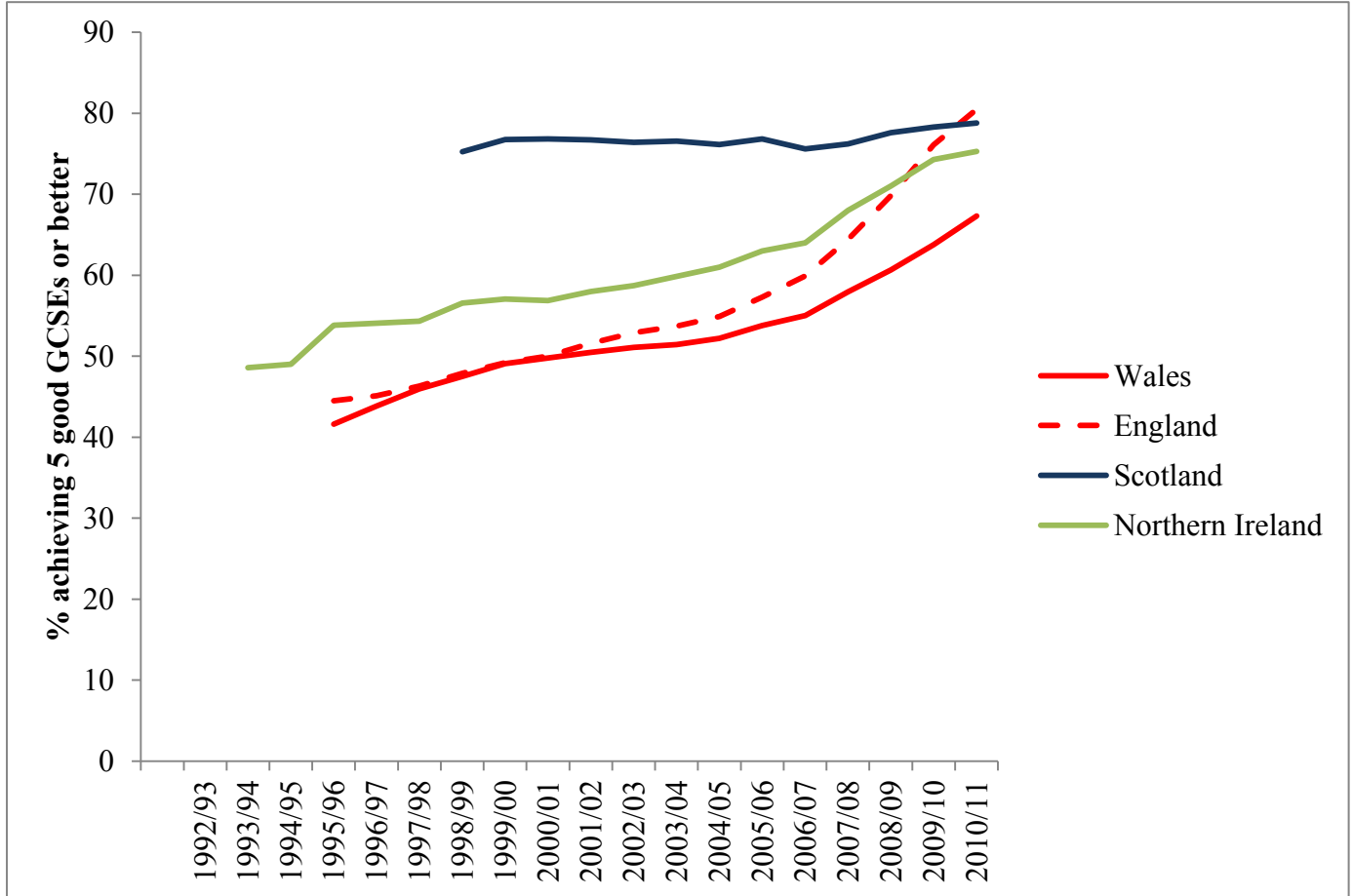


Table 2: Education performance across the UK nations: international data sets

Measure	Source	England	Wales	Scotland	Northern Ireland
Reading score of 10 year olds (average over sample of 35 countries = 500. Sd=100)	PIRLS, 2001	551	n/a	530	n/a
40 countries	PIRLS, 2006	536	n/a	530	n/a
Maths score of 10 year olds (average over sample of 49 countries = 500. Sd=100)	TIMSS, 2003	531		490	
59 countries	TIMSS, 2007	541	n/a	494	n/a
Maths score of 14 year olds (average over sample of 49 countries = 500. Sd=100)	TIMSS, 2003	498	n/a	498	n/a
59 countries	TIMSS, 2007	513	n/a	487	n/a
Maths score of 15 year olds (average over sample of 47 OECD countries=500. Sd=100)	PISA, 2006	495	483	506	494
32 OECD countries	PISA, 2009	493	471	499	493
Reading score of 15 year olds (average over sample of 47 OECD countries=500. Sd=100)	PISA, 2006	496	480	499	489
32 OECD countries	PISA, 2009	495	475	500	500

Notes: Figures are standardised so that the mean for all participating countries is 500.

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Data Appendix

1. Data Sources

The data that appear in this research were collected by the authors from a number of sources:

Official Government Sources

- Department for Education
- Scottish Government
- The Welsh Government
- Department of Education, Northern Ireland

National Data Sets

- **The Millennium Cohort Study (MCS)** follows the lives of a sample of nearly 19,000 babies born between 1 September 2000 and 31 August 2001 in England and Wales, and between 22 November 2000 and 11 January 2002 in Scotland and Northern Ireland.

International Data Sets

- **Trends in International Mathematics and Science Study (TIMSS)** is used to measure over time the mathematics and science knowledge and skills of fourth- and eighth-graders. TIMSS is designed to align broadly with mathematics and science curricula in the participating countries. The data in this paper come from TIMSS studies in 2003 (49 participating countries) and 2007 (59 participating countries). See <http://timssandpirls.bc.edu/> for more details.
- **Progress in International Reading Literacy Survey (PIRLS)** provides internationally comparative data about students' reading achievement in primary school (the fourth grade in most participating countries). The data in this paper come from PIRLS studies in 2001 (35 participating countries) and 2006 (40 participating countries). See <http://timssandpirls.bc.edu/> for more details.
- **The OECD Programme for International Student Assessment (PISA)** surveys 15-year-olds in the principal industrialised countries. Every three years, it assesses students' skills and knowledge as they approach the end of compulsory education. See <http://pisa2009.acer.edu.au/> for more details.

2. Definitions

Age 7

Data for all countries are taken from the MCS. The data come from the most recent wave of the study (wave 4) conducted over the period January – December 2008 when the study participants were aged 7. Scores are standardised to have mean 50 and standard deviation 10.

Age 11-16

Data are taken from official government sources but are only available for England and Wales (definitions of Key Stage 2 are different in Northern Ireland and Scotland). Pupils are tested at aged 11 - in Year 6. Data for Key Stage 2 are expressed as the proportion of candidates in all schools achieving level 4 or above in all schools.

GCSE or equivalent

Data are taken from official government sources. Definitions vary by country as follows:

- England (DfE): pre-2004/05 data are expressed as % of 15 year olds achieving 5 GCSEs or equivalent at A*-C; 2004/05 onwards – data are expressed as the % of pupils at the end of KS4 achieving 5+ GCSEs/equivalent at A*-C. Data are from maintained schools only
- Wales (Welsh Statistics Office): data are expressed as the % of pupils aged 15 who achieved the Level 2 threshold. Figures include attainment at independent schools.
- Scotland (Scottish Government): data are expressed as % of S4 roll achieving 5+ Awards at Scottish Qualifications framework (SCQF) level 4 or better. Pupils are aged 15-16 at time of exam. Data are from publicly funded secondary schools.
- Northern Ireland (DENI): pre-2004/05, data are expressed as the % of school-leavers achieving 5 GCSEs/equivalent at A*-C; 2004/05 onwards, data are expressed as the % of year 12s (pupils aged 15-16) achieving 5+ GCSEs/equivalent at A*-C. Data are from all grant aided post primary schools in Northern Ireland.

Staying on rates:

Data are taken from official government sources as above. All data are expressed as % 16 year olds still in full or part-time education (all school types, 6th form colleges, FE and HE).

Post compulsory qualifications (A-levels/Highers):

Data are taken from official government sources as above. Definitions vary by country as follows:

- England: pre 2005, data are expressed as % 18 year olds with 2 or more GCE/VCE A level or equivalent; 2005/06 onwards data are expressed as % 18 year olds achieving 2 or more passes of A Level equivalent size (all schools and FE colleges)
- Scotland: data are expressed as % of the S4 year group from the previous 2 years achieving 3+ Awards (Higher or better) at SCQF level 6 (publicly funded secondary schools)
- Wales: data are expressed as % of 18 year olds achieving Level 3 or more (equivalent to 2 or more A-levels) (maintained secondary schools, special schools and Pupil Referral Units)
- Northern Ireland: data are expressed as % of 18 year olds achieving 2 or more A-levels (including equivalents)

Reading and maths scores of 10 and 15 year olds:

Data are taken from PISA, PIRLS and TIMSS. Participating countries vary by year and by study. Scores are standardised so that the mean across all participating countries within each dataset is 500, and the standard deviation is 100.