

# Inequalities in school leavers' labour market outcomes: do school subject choices matter?

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## Abstract

Despite a large international literature on the effect of vocational and general education on school-to-work transition, relatively little is known about the role of having studied specific subjects in explaining inequalities in young people's labour market outcomes. This paper aims to fill this gap by examining differences in employment chances of young people who left education early, either at the end of compulsory schooling or at the end of secondary school. Using data from the Scottish Longitudinal Study, a large-scale linkage study created using data from administrative and statistical sources, we found little gender differences but strong parental background differences in school leavers' employment status and type of occupation entered. Overall 'curriculum' appeared to be more important in predicting labour market outcomes among upper-secondary leavers while grades were more important in predicting the same outcomes among lower-secondary leavers. Only a few subjects were associated with a reduction in the chances of being unemployed/inactive. Social inequalities in labour market outcomes were only partly explained by curriculum choices.

## Non-technical summary

This study examines gender and social inequalities in school leavers' labour market outcomes and whether the curriculum studied at school explains these inequalities in Scotland. Previous research has shown that people from more advantaged social backgrounds tend to study a larger number of academic subjects than people from less advantaged social backgrounds and this gives them an advantage when applying to enter higher education. However, there is limited evidence on whether curriculum choices may lead to differentiated labour market outcomes among young people from different social origins who do not continue to higher education. This research aims to provide this evidence.

The data used for the study comes from the Scottish Longitudinal Study, a large-scale linkage study created using data from administrative and statistical sources. Our extract contains information about individuals' characteristics and those of their parents from 2001 Census data, their activity status from 2011 Census data, and their educational attainment (with detailed information about subjects studied and grades achieved). The analyses were carried out separately for lower-secondary school leavers and upper-secondary leavers and focused on two main outcomes: activity status (employment vs. inactive/unemployed) and occupational status.

The results show few gender differences, but strong parental background differences, in young people's labour market outcomes. School leavers with jobless parents or parents with low education or living in social housing were found to be significantly more likely to be unemployed or inactive and occupying lower status occupations than school leavers from more advantaged families. Differences in labour market outcomes were only partly explained by variation in curriculum choices among pupils from different social origins. Moreover, after taking into account individual characteristics and grades, only a few subjects provided a significant advantage in school leavers' early labour market integration: 'History' and 'Business' for lower secondary leavers and 'Maths' for upper-secondary leavers were found to reduce the chances of being unemployed or inactive.

Our findings suggest that subjects studied at school matter relatively little for young people's employment chances and for explaining social inequalities in these chances. We argue that the general nature of school curricula and the lack of standardisation of certifications in Scotland may be unable to provide clear signals about school leavers' knowledge and skills to future employers and hence curriculum plays a modest role in explaining the existing inequalities in the early labour market outcomes of secondary school leavers.

## Introduction

Flexibility in curriculum choices is often seen as a positive feature of education systems because it allows pupils to take ownership over their learning and reduces the probability of disengaging them by imposing the same curriculum to all (see for example Noddings, 2011). In line with this perspective, the curriculum reform recently introduced in Scotland (the *Curriculum for Excellence*) stresses the importance of individualised educational programmes which build on pupils' interests and prior learning (Education Scotland, 2012). However, this individualisation of learning and the flexibility of curriculum which is used to achieve this purpose is not unproblematic because it overlooks the fact that pupils' learning experiences and their educational choices are never free from the influence of the family, school and the wider context which surrounds them and tends to reinforce existing societal inequalities or gender stereotypes. Thus, pupils may make curricular choices with different degrees of knowledge and understanding of the consequences that those choices may lead to. Indeed, previous research has shown that school subject choices are important for young people's opportunities to enter higher education and for promoting social mobility (Iannelli, Smyth and Klein, 2016; Iannelli, 2013).

A large international literature has analysed gender and social inequalities in education systems with more or less pronounced differentiation of vocational and general curricula and the influence of these inequalities on school-to-work transition (see for example Shavit and Müller, 1998; Müller and Gangl, 2003). However, relatively little is known about the role of having studied specific subjects within general education systems in young people's labour market outcomes and, in particular, in explaining inequalities in these outcomes. This paper aims to fill this gap by examining the extent to which subject choices mediate social background and gender differences in early labour market integration of young people in Scotland.

By focusing on Scotland, we are able to assess whether school subject choices matter for youth labour market outcomes in an education system characterised by low stratification (i.e. no school tracks), low standardisation of certifications and weak links between education and the labour market (Allmendinger, 1989). Pupils in Scotland are taught in comprehensive schools until the end of compulsory education and, for the majority of pupils who continue in education, until the end of secondary school. There is not a national curriculum but the Scottish Government provides a national framework for learning and teaching together with a set of guidelines for teachers. Due to the lack of a standardised curriculum, there is a lot of variation in the proportions of people studying different subjects for their exams at secondary school (with the exception of English and Maths which are compulsory until the end of lower-secondary education). Research has found that young people from more advantaged social backgrounds are more likely to take academic subjects such as English, Maths, Sciences and Languages than young people from less advantaged social backgrounds and this puts them in an advantaged position when applying for entry into higher education (Iannelli, Smyth and Klein, 2016). However, it is still unclear whether these curriculum differences also have consequences for the labour market outcomes of those young people who do not aspire or are unable (for academic or personal reasons) to go to higher education.

These young people are the focus of our paper. We analyse the labour market outcomes of two groups of school leavers in Scotland: those who left school at the earliest possible time (i.e. at the end of compulsory education) and those who left at the end of secondary school. By focusing on inequalities in labour market outcomes of these two groups and the role that curriculum choices may have in reproducing these inequalities we intend to provide important new evidence to address pressing policy concerns on improving youth employment, eradicating poverty and reducing inequalities (Scottish Government, 2014).

Our study addresses the following research questions:

- What is the relationship between gender, social background characteristics and young people's labour market outcomes?
- How do curriculum choices (and attainment) in secondary education shape young people's access to employment and better jobs?
- What is the role of subject choice and exam grades in explaining gender and social class differences in young people's labour market outcomes?

## Literature review

The relationship between low level of educational attainment and the risk of unemployment, low –paid jobs and labour market marginalisation is well known (Hannan *et al.*, 1995; Shavit and Muller, 1998; Solga, 2008), and its causes have been found to be context specific (Gesthuizen *et al.*, 2011). Young people who leave education with few or no qualifications struggle to achieve a positive post-school destination (whether further education, employment or training). Moreover, low attainment is often associated with social class, gender and ethnicity (Furlong & Cartmel, 2007; Hills *et al.*, 2010). The development of vocational education and training, even in countries traditionally providing mainly general education, has often been seen as a response to this issue.

Research on school-to-work transition has shown that, in countries with a strong vocational training component (such as Germany and the Netherlands), vocational education has been found to provide a 'safety net' for young people against unemployment or unskilled manual jobs (Shavit and Müller, 2000). However, it also diverts them from higher education and better occupational destinations. Due to the strong linkages between education and the labour market, these systems allow a smooth and quick integration into the labour market but, at the same time, constrain young people's chances of continuing education at the highest educational levels and gaining access to more prestigious and economically rewarding occupations. In addition, in these education systems, a strong social pattern of participation in vocational education is evident: more socially disadvantaged students are

overrepresented in vocational education and this ends up reinforcing inequalities present in society. A number of studies have also considered the impact of gendered choices at school on post-school outcomes. Such research has found that systems characterised by early curriculum choices and higher levels of educational segregation by gender are more likely to result in gendered pathways and in higher levels of occupational segregation in the labour market (Buchmann and Charles, 1995; Smyth, 2005).

Countries with more general education systems (such as Scotland and the UK more generally), on the other hand, usually have weaker connections between education and labour market outcomes and young people's transitions tend to be more turbulent, characterised by unemployment spells, early job mismatches and lower immediate occupational returns (Müller and Gangl, 2003). In these systems variation in young people's labour market outcomes is strongly associated with the level of education completed or their academic performance (Howieson and Iannelli, 2008; Crawford *et al.*, 2011). Vocational education is usually a less valued credential in the labour market, often signalling low academic ability and more disadvantaged social circumstances.

Recent research has shown that, despite the absence of formal tracks, the take up of academic and vocational subjects at school in Britain vary by gender and social class of origin (Van de Werfhorst *et al.*, 2003; Iannelli, Smyth and Klein, 2016; McMullin and Kulic, 2016). This has profound consequences for widening access to higher education and for social mobility. In her study on the role of school curricula in social mobility, Iannelli (2013) found that, of people included in the National Child Development Study (NCDS) born in Britain in 1958, those who studied subjects such as English, Maths, Languages and Science in secondary school had higher chances of entering top-level occupations (such as professional and managerial jobs) and avoiding unskilled jobs. The positive effect of studying these subjects persisted beyond the early transition years (when analysing individual occupational destinations at age 33 and 42) and explained between a quarter and a third of the occupational advantage associated with growing up in more advantaged families.

While most sociological research has focused on the labour market returns to vocational and academic curricula, economic research has tried to estimate the economic returns to having studied specific subjects at school. Using data from the National Child Development Study for England, Dolton and Vignoles (2002) estimated that, after controlling for family background measures and personal attributes including prior ability measures, people who had studied A-level mathematics benefited from an earnings premium between 7% and 10% at age 33. Interestingly the take-up of other A-level subjects did not result in any significant advantage or disadvantage on earnings. Adkins and Noyes (2016) replicated their study using more recent data from the 1970 British Cohort Study and also found a wage premium for A-level Mathematics. The authors, however, caution that the extent of this premium may vary considerably, being dependent on the combination of the other predictors. Johnes' (2005) study highlighted that school curriculum plays an important role in determining earnings outcomes and that the combination of

subjects taken at A-level is more important than the individual subjects in determining later earnings. Positive economic returns to having studied advanced Maths were also found in other countries such as the U.S. (Rose and Betts, 2004) and Israel (Kimhi and Horovitz, 2015).

With the exception of the study by Rose and Betts (2004) which found that Maths curriculum explained about 27% of the earnings gap between students from lowest-income families and those from middle-income families, none of the other studies has investigated whether subjects studied at school may explain inequalities in school leavers' labour market outcomes. Moreover, the studies reported above focus on the importance of studying different subjects at upper-secondary level. This paper improves upon the previous research by examining differences in employment opportunities of both lower-secondary and upper-secondary leavers from different social origins and the role of school curricula in explaining these differences.

## Scottish Secondary Education

Scottish secondary education lasts 6 years (from S1 to S6), with compulsory education up to the age of 16 (S4). No formal examination takes place until S4. Until recently, 'Standard Grades' were the final examinations after compulsory schooling. They could be taken at different levels: Foundation, General and Credit (with this latter level being the most demanding). In general, pupils took about 8 subjects out of which English and Maths were (and still are) compulsory. The sample we have analysed in this paper sat their exams under this qualification system. The new Curriculum for Excellence (CfE)<sup>1</sup> was introduced in 2010 and involved the development of a new qualification framework which included National 1 to 5 and new Highers and revised Advanced Highers. Standard Grades were replaced by National 5 qualifications from the school year 2013-14 (SPICe, 2013).

In the final two years of secondary school (in S5/S6) students take subject-specific exams called Highers and Advanced Highers (these latter mainly in S6). Advanced Highers provide pupils with the chance of studying subjects in more depth, hence at a higher level of difficulty. Higher and Advanced Higher courses were introduced in 1999 through the Higher Still reforms and replaced the Higher Grade and Certificate of Sixth Year Studies (CSYS). This reform also introduced Intermediate 1 and 2 qualifications, equivalent to Credit Standard grades and General Standard Grades respectively, which are considered as, their name suggests, an intermediate step towards Highers.

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<sup>1</sup> The new curriculum aims at providing a holistic framework through an integrated 3-18 curriculum comprising of 'a suitable blend of what has traditionally been seen as academic and vocational' (Scottish Executive, 2004, p. 10). CfE stresses inter-disciplinary learning, skills development and encouraging personal achievement. It offers even greater flexibility to schools and teachers to design their curriculum.

A key feature of the Scottish system is the absence of compulsory subjects in S5 and S6 and the lack of restriction in terms of number and types of subjects to take for the final S5-S6 examinations. Provision of subjects as well as student guidance may vary from school to school. Generally, students who enrol in higher education take an average of five Highers.

An alternative set of qualifications which pupils could achieve after compulsory education are provided by the Further Education (FE) colleges. Such qualifications include Scottish Vocational Qualifications (SVQ), Higher National Certificates (HNC), and Higher National Diploma (HND). They offer a vocational, work-based curriculum which may lead to enrolment into higher education through articulation agreements between FE colleges and universities. In 2009/2010 about 27% of school leavers were enrolled in further education (The Scottish Government, 2010). Unfortunately, we are unable to analyse FE qualifications acquired after leaving school since this information is not available in our data.

Compared to the English system, the Scottish education system has a less differentiated secondary sector with the main divide being between comprehensive state schools and independent schools (less than 6% of students attend these latter schools). In addition, there are also some denominational (Catholic) state-funded schools which do not differ in their curriculum or governance from state schools apart from a stronger focus on religious education. Moreover, as highlighted above, the Scottish system provides a broader (less specialised) and less prescriptive secondary school curricula.

Like the other UK countries, Scotland has also experienced a massive education expansion. Participation in higher education in Scotland has been historically higher than in England due to the greater provision of sub-degree level programmes in FE colleges. However, although levels of social inequalities reduced in compulsory education, they remained high at upper- and post-secondary levels (Machin *et al.*, 2013).

## Data and methods

### Data and sample

Our research uses data from the Scottish Longitudinal Study (SLS), a large-scale anonymised linkage study using data from the current Scottish administrative and statistical sources (Census data 2001, 2011 and school education data 2007-2010). The SLS was designed to capture 5.5% of the Scottish population, including census data from 1991 onwards; vital events data (births, deaths, marriages); NHS Central Register data (gives information on migration into or out of Scotland); and education

data (including Schools Census and SQA data). The data analysis was carried out in a safe setting at the National Records of Scotland in Edinburgh.

Our SLS sub-sample consists of respondents who passed through the school stages S3-S6 or S4-S6 (two pupil cohorts) in 2007-2010 who were present during the 2001 Census and for whom their father and/or mother could be identified. Information about attainment, subject choices, levels and performance was provided by linked data from the Scottish Qualifications Authority (SQA). Unfortunately, information about the school attainment of pupils from independent schools was not available in the data. As such, only data for pupils who attended state schools are included in the study. Data on pupils' family characteristics comes from the 2001 Census when respondents were aged 9 or 10. Finally, information about post-school destinations was linked from the 2011 Census when respondents were 19 or 20 years old.

Our analysis distinguishes between two core groups: (1) S4 leavers (GR1) who left school straight after compulsory schooling representing about 18% of our sample and (2) S5-S6 leavers (GR2) who left school at the end of upper-secondary education either one or two years after compulsory education ended (the remaining 82%). We started from a sample of 4496 cases<sup>2</sup> ( $N_{GR1}=840$  &  $N_{GR2}=3656$ ) but for our analysis we selected only those respondents who were not in full-time education in 2011 (i.e. 625 cases among S4 leavers and 1067 cases among S5/S6 leavers). After removing some cases with missing data on our variables (6.5% of our sub-sample), our final sample was 574 (GR1) and 1008 (GR2). The sample of employed young people used in the analysis of the occupational status was 428 for GR1 and 821 for GR2.<sup>3</sup>

An important aspect which needs to be taken into account when interpreting the results is that the two groups spent a different length of time in the labour market. This is because the information about the labour market outcomes of both groups was collected during the 2011 Census but the two groups left school at different time points (S4 leavers either in 2007 or 2008 and S5/S6 leavers any year between 2008-2010). Thus, the school leavers in the first group potentially spent more time in the labour market (about 3-4 years in total) than the leavers in the second group (between 1 and 3 years in total). Table 1 below illustrates the timeline of the two cohorts between leaving school and the 2011 Census.

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<sup>2</sup> The initial sample used to link information from the 2011 Census consisted of 4944 respondents out of which 448 respondents were not matched to the 2011 Census.

<sup>3</sup> This sample excludes those young people who combined education and employment.

Table 1: Timeline showing the years when respondents left school for the two cohorts of pupils included in the study

Cohort	2007	2008	2009	2010	2011 (March)
S3-S6		S4	S5	S6	Activity status/occupation at the time of the Census
S4-S6	S4	S5	S6		

## Variables

### Dependent variables

Our study focuses on the post-school destinations of young people who were *not* in full-time education at the time of the 2011 Census. For this sub-sample, we examine two outcomes: employment status and occupational status.

**Employment status** is measured as a binary variable taking the value of 0 for 'employment' and 1 for 'not in employment'. The latter category includes unemployed and inactive respondents while the former includes both part-time and full-time employed respondents. At first, we carried out analyses which distinguished between unemployed and inactive young people. The general patterns of inequalities were similar and, for this reason, we decided to collapse inactive/unemployed people together. Where differences were found (e.g. in relation to gender) we discuss them in the text and present the results in the supplementary material.

Our second outcome is **occupational status** and it is measured by the International Socio-Economic Index of Occupational Status (ISEI) (Ganzeboom *et al.*, 1992). ISEI is a continuous measure ranging from 10 to 90 which was derived from the International Standard Classification of Occupations (ISCO) codes. For a detailed explanation of how ISEI can be constructed please see Ganzeboom *et al.* (1992) and Ganzeboom (2010). We converted UK's Standard Occupational Classification (SOC) 2010 into ISCO codes based on which we derived the ISEI08.

### Independent variables

Our first set of key explanatory variables are gender and parental background characteristics.

**Gender** is measured as a binary indicator, coded 0 for 'male' (reference category) and 1 for 'female'. In our sample, there is a higher proportion of men than women leaving school at S4 and S5/S6 (63% and 56% respectively).

We defined parental background characteristics using three indicators: parental social class, parental education and whether parents lived in social housing when respondents were 9 or 10 years old.

**Parental social class** is measured using NS-SEC three class schema (Rose *et al.*, 2005) with the inclusion of a fourth category for parents who were not in employment: 1 'Managerial and professional occupations' (reference category), 2 'Intermediate occupations', 3 'Routine and manual occupations' 4 'Never worked and long-term unemployed'. **Parental education** consists of four categories: 1 'No qualifications', 2 'Standard Grades', 3 'Highers' and 4 'Higher Education Degree' (reference category). **Social renting** is used as a proxy for economic disadvantage (in the absence of information on family income) and was measured as a binary variable indicating whether parents lived in social housing (1) or not (0).

The data show that a large proportion of school leavers from S4 came from disadvantaged backgrounds. 55% had parents with routine and semi-routine occupations or were long-term unemployed, 63% had parents with standard grades or lower and 44% lived in social housing. Although the social composition of S5-S6 leavers is similar, the patterns of disadvantage are less marked.

Our second set of key explanatory variables are 'subjects studied' and 'attainment' at the end of S4 (GR1) or S5/S6 (GR2).

For **subjects studied** for the final exams (Standard Grades for S4 leavers and Highers/Advanced Highers for S5/S6 leavers) we distinguish between 12 subjects: English, Maths, Languages, Biology, Chemistry, Physics, Geography, History, Cultural studies, Business, Technology, Others (e.g. Home Economics, Physical Education). They were included as dummy variables (i.e. whether young people studied these subjects or not) in the modelling. The most common subjects studied by S4 and S5/S6 leavers were English, Maths, Cultural studies, Technology and Other subjects (Table A1 in appendix). However, the percentage of those taking English and Maths in the second group was reduced by about half compared to the first group for whom these subjects were compulsory.

**School attainment** is measured by a continuous measure based on an extended version of the Universities and Colleges Admissions Service (UCAS) Tariff points system which takes into account the number of subjects taken and the level and

performance in each subject.<sup>4</sup> The mean attainment score among S4 leavers was 107 (SD=60) while the mean attainment score in the S5/S6 leavers was 100 (SD=114). The difference in the two scores is explained by the larger numbers of subjects that Scottish students take at the end of compulsory schooling compared to the number of subjects taken at Highers. In our sample, the average number of subjects was 6.3 (SD=2.3) for S4 leavers and 2.8 (SD=2.4) for S5/S6 leavers. Given that our sample consisted of respondents who left education early and were not enrolled in full time education in 2011, the average number of subjects taken in each group was lower than in the general population of school leavers.<sup>5</sup>

Our analyses controlled for other two independent variables, that is whether respondents experienced **long-term illness** (5-6% of GR1 and GR2) and their **highest educational level** attained at 2011 Census (the distribution of these variables are presented in table A1 in appendix). We examined whether the effect of 'school subjects' and 'school attainment' remained after controlling for other qualifications achieved after leaving school.

## Analytic strategy

Binary logistic regressions were used to analyse the employment status of young people after leaving school. We estimated the probability of an individual being unemployed or inactive compared to being employed. To solve the issue of the lack of comparability of logit coefficients across statistical models (Allison, 1999; Breen et al., 2013) we present average marginal effects (AMEs) derived from the logistic coefficients (Mood, 2010). Analyses on the second labour market outcome, the occupational status measured by the ISEI classification, were carried out using Ordinary Least Squares (OLS) regression.

We ran several models to answer our research questions.

First, to analyse the extent to which gender and social background factors are associated with activity status and occupational status, we examined the gross effects of our key variables (i.e. simple bivariate analysis with no other variables included).

Second, we assessed the relative importance of subject choice and grades in explaining our outcomes of interest. We did so by comparing the improvement in the fit of the models through the use of likelihood ratio tests between several nested

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<sup>4</sup> A more detailed description of these point scores can be found here: <http://www.scotland.gov.uk/Publications/2010/03/22111037/4>

<sup>5</sup> When considering all pupils in the corresponding levels, the average number of subjects is 7.5 (SD=1.5) for S4 leavers and 4.3 (SD=1.9) for S5/S6 leavers. However, those who were enrolled in full-time education in 2011 took 5 subjects on average in S5/S6 (SD=1.9).

models with and without subjects or grades. This was followed by an analysis of the role of having studied specific subjects on labour market destinations, net of the effect of gender, long-term illness, family background factors and attainment.

Third, we tested the role of subjects and grades in explaining the parental background differences in young people's labour market outcomes by analysing the change in the parental background differences when subjects and grades were included first separately and then combined in the regression models.

In the multiple regression analysis, separate analyses for each of the parental background variables were carried out, given that 'parental class', 'parental education' and 'whether parents lived in social housing' are correlated (although not strongly; VIF=1.24) and most of the associations between these background factors and our outcome variables could not be detected when including the three factors together. This strategy allowed us to investigate how different types of family resources, measured by different parental characteristics, are related to young people's early labour market outcomes. Employing this approach also facilitated our understanding of whether the role of subjects and grades in explaining the differences by parental background varies depending on the parental background measure used. We checked the robustness of our results by creating an index of SES which combined the three variables (results available on request) and the results confirmed the patterns identified in the analyses which used the three separate SES variables. The results of these latter analyses are more intuitive because they refer to specific groups of people (instead of referring to numbers in an index) and for this reason we have decided to proceed with this option.

Finally, we ran additional models accounting for further education attained after leaving school. However, although an important factor in itself (i.e. additional education yielded better labour market outcomes), this variable did not change our main conclusions related to our variables of interest (i.e. parental background factors, gender and subjects). For this reason, the results of these models are presented in the supplementary material.

## Results

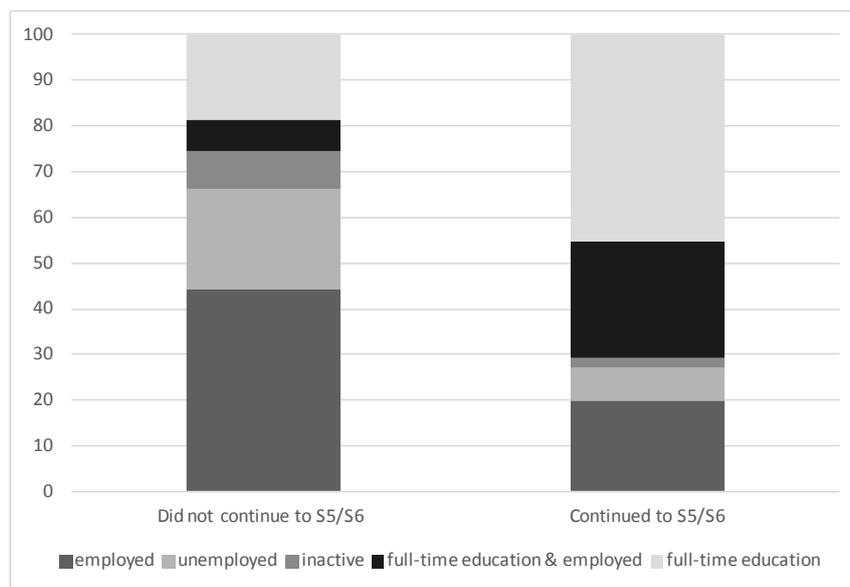
### Post-school destinations

Figure 1 shows the post-school destinations for the two groups of school leavers analysed in the study. Among young people who did not continue to S5/S6 (18% of our sample), 3 to 4 years after leaving school, about 26% were enrolled in full-time education. The most common post-school destination for this group was 'employment', with about 44% of respondents reaching this destination. However, a

considerable percentage of S4 leavers, namely 22%, were unemployed and another 8% inactive. Among those who continued to S5/S6, 45% of them were in full-time education and 25% were studying and employed. The remaining 30% were not currently in full-time education: 20% of them were in employment, about 2% inactive and 7% unemployed.

Our study focuses on those young people who were not enrolled in full-time education (employed and unemployed or inactive) at the time of the 2011 Census.

**Figure 1. Post-school destinations of S4 and S5/S6 leavers**



**Source:** SLS (N<sub>GR1</sub>=840 & N<sub>GR2</sub>=3656);

Among employed young people, we examined their occupational status measured by the ISEI classification. Overall the mean ISEI score for both groups of school leavers is low: about 29 for the first group and 32 for the second group, and a standard deviation of 12. Among the most common occupations around these averages were sales and retail assistants, hairdressers and barbers, kitchen and catering assistants, waiters and waitresses.

## Gross associations between gender, parental background, subjects and labour market outcomes

### 1. Activity status

Table 2 shows the gross associations between gender, parental background and probability of being unemployed/inactive. Regarding gender, although the results showed a positive association (with females being more likely to be 'not in

employment'), this was not statistically significant. Based on more detailed analyses not shown here, we found that women were significantly more likely to be inactive and less likely to be unemployed than men. However, gender differences disappear when the two statuses of unemployment and inactivity are merged together.

With respect to the parental background, there is a clear indication that in both groups, regardless of the parental background dimension considered, school leavers from more disadvantaged backgrounds are significantly more likely to be unemployment/inactive. The strongest association was displayed by those whose parents were in long-term unemployment or never worked (around 38 percentage points higher than those with parents in managerial or professional occupations), followed by those with low educated parents and living in social housing.

**Table 2. Gross association between gender, parental background factors and probability of not being in employment (Average Marginal Effects, AMEs)**

	<b>S4 leavers</b>	<b>S5/S6 leavers</b>
<b>Gender (ref.: male)</b>		
Female	0.0209 (0.0423)	0.00357 (0.0293)
<b>Parental class (ref.: Managerial &amp; professional)</b>		
Intermediate	-0.0772 (0.0550)	0.0269 (0.0373)
Routine and Semi-routine	0.137** (0.049)	0.111*** (0.0335)
Long-term unemployed/Never worked	0.387*** (0.0962)	0.376*** (0.0798)
<b>Parental education (ref.: Higher degree)</b>		
No qualifications	0.306*** (0.0689)	0.223*** (0.0498)
Standard Grades	-0.0157 (0.0629)	0.0756 (0.0380)
Highers	-0.0295 (0.0675)	0.0455 (0.0395)
<b>Social rent (ref.: no)</b>		
Yes	0.212*** (0.0405)	0.202*** (0.0333)

**Source:** SLS;

**Note:** N<sub>GR1</sub>=574, N<sub>GR2</sub>=1008; SE in brackets; + p<0.1 \* p<0.05 \*\* p<0.01 \*\*\* p<0.001; AMEs from separate models which estimate the predicted probabilities for each social group without any other variable included.

Table 3 shows the association between specific subjects, when all the subject dummy variables are included in the model, and the probability of being

unemployed/inactive. We only present the subjects which showed a significant association either for the first or the second group or for both. In the first group, having studied a Science subject (Physics, Biology and Chemistry), History and Business reduced the chance of being unemployed/inactive, with Physics showing the strongest association, namely a reduction of 19 percentage points compared to those who have not studied this subject. In the second group (S5/S6 leavers), Maths and Business appeared to be the only subjects associated with a lower chance of not being in employment. In addition, in both groups, grades appeared to reduce the chance of not being in employment with a somewhat stronger association displayed by the first group. Unsurprisingly, higher grades are also negatively associated with the probability of being unemployed/inactive.

**Table 3. Gross association between subjects, grades and probability of not being in employment (AMEs)**

	<b>S4 leavers</b>	<b>S5/S6 leavers</b>
<b>Subjects</b>		
Maths	0.00488 (0.0724)	-0.154*** (0.0389)
Physics	-0.193*** (0.0534)	-0.0945 (0.0574)
Biology	-0.0995* (0.0462)	-0.00476 (0.0452)
Chemistry	-0.116* (0.0501)	0.00511 (0.0571)
History	-0.163*** (0.0467)	0.021 (0.0452)
Business	-0.164*** (0.0446)	-0.0854* (0.0441)
<b>Grades</b>	-0.00316*** (0.00025)	-0.000691*** (0.00014)

**Source:** SLS;

**Note:** NGR1=574, NGR2=1008; SE in brackets; + p<0.1 \* p<0.05 \*\* p<0.01 \*\*\* p<0.001

## **2. ISEI**

Turning to the analysis of occupational status, we only found a significant positive gender association among S4 leavers (Table 4). This positive association may be related to the fact that women tend to be concentrated in jobs in the service sector to a greater extent than men (e.g. retail assistants vs. carpenters, joiners and other technical occupations). Within the same group of leavers there are no significant differences in occupational status by social background, except for those whose parents lived in social housing. In this case, the ISEI score of young people who lived with parents in social housing was on average 2.6 units lower compared to those

whose parents did not live in social housing. Stronger differences by parental background appeared among S5/S6 leavers, particularly by parental education, with school leavers whose parents had no educational qualifications or only had achieved Standard Grades showing an average ISEI score between 3 and 4 units lower than school leavers whose parents had a higher degree. Also, the occupation status of those from routine and semi-routine backgrounds or whose parents lived in social housing was on average 2.7 and 2.5 units lower compared to their reference categories. When interpreting these results, it is important to keep in mind that the average ISEI score is 29 for the first group and 32 for the second group. Therefore, a higher ISEI, although indicating a higher occupational status, still remains within a group of rather low status occupations. To give a more intuitive understanding, a difference of around 3-5 ISEI points could be a difference between being a hairdresser/barber and a transport conductor. Nevertheless, the differences presented here are average differences which are influenced by the whole distribution of ISEI and not by differences between specific discrete units.

**Table 4. Gross association between gender, parental background factors and occupational status (ISEI, OLS coefficients)**

	<b>S4 leavers</b>	<b>S5/S6 leavers</b>
<b>Gender (ref.: male)</b>		
Female	2.215* (1.120)	0.129 (0.880)
<b>Parental class (ref.: Managerial &amp; professional occupations)</b>		
Intermediate	-0.169 (1.534)	-0.738 (1.157)
Routine and Semi-routine	-1.000 (1.337)	-2.738* (1.010)
Long-term unemployed/Never worked	-2.607 (3.420)	-1.784 (2.699)
<b>Parental education (ref.: Higher degree)</b>		
No qualifications	-0.803 (1.959)	-4.060** (1.517)
Standard Grades	-0.253 (1.666)	-3.224** (1.169)
Highers	-0.313 (1.785)	-1.407 (1.222)
<b>Social rent (ref.: no)</b>		
Yes	-2.560* (1.117)	-2.490* (1.013)

**Source:** SLS;

**Note:** N<sub>GR1</sub>=428, N<sub>GR2</sub>=821; SE in brackets; + p<0.1 \* p<0.05 \*\* p<0.01 \*\*\* p<0.001

Regarding subject choices (Table 5) in the first group, only those who studied Business showed a significant higher occupational status (2.9 higher on average). However, in the second group, the only significant associations were negative associations with studying Geography or Languages, indicating a lower occupational status for those taking these subjects. A closer examination of these results suggests that the evidence about the negative association between these subjects and young people's destinations is weak. Given that Languages and Geography were the least common subjects taken by school leavers in the second group (Table A1 in appendix), the statistical evidence based on a small number of cases concentrated in a few low-status occupations is unable to capture the variety of occupations potentially available to these young people. Taking this into account, we conclude that there is not enough evidence for a consistent pattern regarding the relationship between subject choice and ISEI in the second group. As in the case of employment status, grades showed a significant association (this time a positive association), indicating that the higher the grades, the higher the ISEI score.

**Table 5. Gross association between subjects, grades and occupational status (ISEI, OLS coefficients)**

	S4 leavers	S5/S6 leavers
<b>Subjects</b>		
Geography	-0.818 (1.323)	-5.571*** (1.834)
Languages	-0.160 (1.183)	-3.532** (1.617)
Business	2.898** (1.243)	0.982 (1.188)
<b>Grades</b>		
	0.0267* (0.00958)	0.0112** (0.00374)

**Source:** SLS; Note: SE in brackets;

**Note:** N<sub>GR1</sub>=428, N<sub>GR2</sub>=821; SE in brackets; + p<0.1 \* p<0.05 \*\* p<0.01 \*\*\* p<0.001

## Multiple regression analysis

### The net effect of school curriculum and the relative importance of curriculum and grades for labour market outcomes

We started our analysis by running a baseline model which included gender, each of the social background characteristics separately and the indicator of 'long-term illness' (M1). Then, building on M1, we analyse a series of nested models: M2 included 'subjects', Model 3 excluded 'subjects' and included 'grades', Model 4 included both 'grades' and 'subjects' and M5 added to M4 'highest educational

attainment obtained after leaving school (this final model is only included in the supplementary material).

This approach aimed to test the relative importance of grades and subjects in predicting young people's labour market outcomes. We did so by comparing the fit of the models above. For parsimony, in Table 6 we present the results of the deviance tests based only on the 'parental social class' measure (the results based on the other two measures of social origin resemble the ones presented here). Regarding activity status, in the first group, Models 2 to 4 (which include subjects and grades separately and together) fitted better than the basic model including only control variables. However, the model including grades and subjects together (M4) did not fit better than the model including grades only (M3). In other words, adding subjects does not improve the model fit compared to the model with grades only. We found a similar pattern when comparing the models predicting ISEI for the first group with the difference that, for this second outcome, there was even stronger evidence that the subjects did not improve the fit of the model.

Also for the second group (S5-S6 leavers), in the activity status analysis, all three models (M2-M4) improved the fit of the model. However, unlike the analyses related to the first group, the combined model (M4) fitted better than the grades-only model (M3) but did not fit better than the subjects-only model (M2). Therefore, for the second group, there is evidence that subjects have a stronger predicting power than grades. The same pattern was supported in the ISEI models. These tests suggest that, overall, 'grades' have a stronger predictive power for the labour market outcomes of the first group while 'subjects' improve the prediction of the same outcomes in the second group.

Table 6. The relative importance of grades and subjects in explaining activity status and ISEI. Models comparison via likelihood ratio test.

	Activity status		ISEI	
	GR1	GR2	GR1	GR2
<b>M2</b> (Subjects only) <b>vs M1</b>	chi2(12) = 54.82***	chi2(12)= 34.17***	chi2(12) = 10.17	chi2(12)= 32.15**
<b>M3</b> (Grades only) <b>vs M1</b> (baseline model)	chi2(1) = 76.39***	chi2(1) = 12.13***	chi2(1)= 6.13*	chi2(1)= 4.20*
<b>M4</b> (Grades & subjects) <b>vs M1</b>	chi2(13) = 96.29***	chi2(13) = 37.51***	chi2(13) = 15.29	chi2(13)= 32.57**
<b>M4 vs M2</b>	chi2(1) = 41.47***	chi2(1) = 3.34+	chi2(1)= 5.12*	chi2(1)= 0.42
<b>M4 vs M3</b>	chi2(12) = 19.20+	chi2(12)= 25.38*	chi2(12)= 9.16	chi2(12)= 28.37**

**Source:** SLS; Note: + p<0.1 \* p<0.05 \*\* p<0.01 \*\*\* p<0.001; Activity status, N<sub>GR1</sub>=574, N<sub>GR2</sub>=1008; ISEI, N<sub>GR1</sub>=428, N<sub>GR2</sub>=821. The baseline model (M1) includes parental social class, gender and illness

We now turn to examine the effect of specific subjects on young people's labour market outcomes, net of the effect of parental social characteristics, gender, 'long-term illness' and grades. Our findings show that, in relation to employment status, among S4 leavers, the Sciences effect is partly explained by social background characteristics and grades (Model 4, Tables S1-S3, supplementary material). This means that the effect of these subjects is more a manifestation of the academic ability and social advantage of students taking them than a manifestation of a 'true' value of certain subjects in the labour market. In this first group, only History and Business remained statistically significant after controlling for the other variables. The nature of these two subjects is very different (one being an academic subject while the other more vocationally-oriented) and they may provide different signals to employers. While Business is a subject whose content can be more easily directly applied to the labour market, understanding the importance of having studied History for improving employment chances remains a puzzle. It may simply be a 'status' indicator, since history is one of the subjects which are more likely to be studied by middle class children and it is one of the subjects 'facilitating' entry into higher education.

Among S5/S6 leavers only the effect of Maths remains significant after having taken into account individual characteristics and grades. This result confirms previous research which also found that having studied Maths improved labour market

outcomes (in particular earnings). Given that this association was found only in relation to the activity status but not in relation to the occupational status, this suggests that those studying Maths have a wider array of jobs (but not necessarily higher status jobs than the ones open to other young people) in which they can be employed. When the outcome analysed was occupational status, only the negative associations of Languages and Geography in the second group remained significant. As mentioned above, this result should be interpreted with caution given the small number of cases involved.

Overall our results seem to suggest that, even though only a few specific subjects have been found to be associated significantly with labour market outcomes, the number and/or combination of subjects may be more important to explain the labour market outcomes of this second group (as suggested by the results of the deviance tests).

## The role of school curriculum and grades in explaining the parental background differences in labour market outcomes

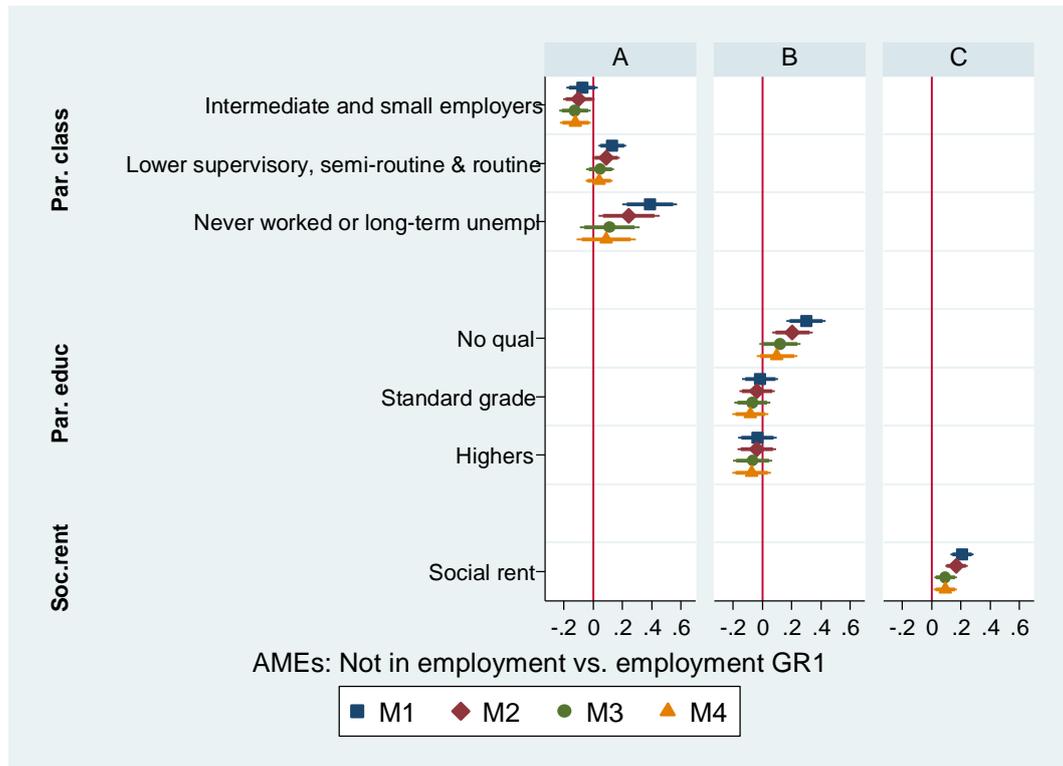
### 1. Activity status

We turn now to discuss the extent to which subject choices and exam grades explain the observed gender and social class inequalities (full results are presented in the tables in the supplementary material). The gender differences in occupational status found in relation to the S4 leavers remained largely unchanged when curriculum and grades were introduced in the model. However, this was not the case for parental background differences. The following figures present differences in the three social background dimensions (i.e. parental social class, parental education and social rent) compared to their reference category. In all figures, we follow the order of models (M1-M4) presented in the previous section. Panels A-C visually separate the models to emphasise the fact that we run separate models for each of the three parental background dimensions.

Figure 2 presents parental background differences in the probability of not being employed for the S4 leavers. As already discussed in relation to the gross associations, the most salient differences appeared between the top and the bottom categories of the social background variables (M1), with those from more disadvantaged backgrounds being more likely to be unemployed/inactive. Regarding the extent to which these inequalities are explained by school curriculum and grades, the results for the S4 leavers below show a common pattern, namely that grades explain more than curriculum. For example, in panel A, the significant difference between those whose parents never worked or are long-term unemployed compared to those from professional and managerial backgrounds (M1) becomes not statistically significant only when we include grades (M3 or M4) but remains significant when we include subjects without grades (M2). The same pattern is visible when looking at the differences by parental education (i.e. no qualifications vs. higher

degree) and by living arrangements (whether in social housing or not) displayed in panels B and C. Interestingly, the difference related to living in social housing remains statistically significant even after we include subjects and grades together.

Figure 2. Models estimating the probability of being not in employment, GR 1



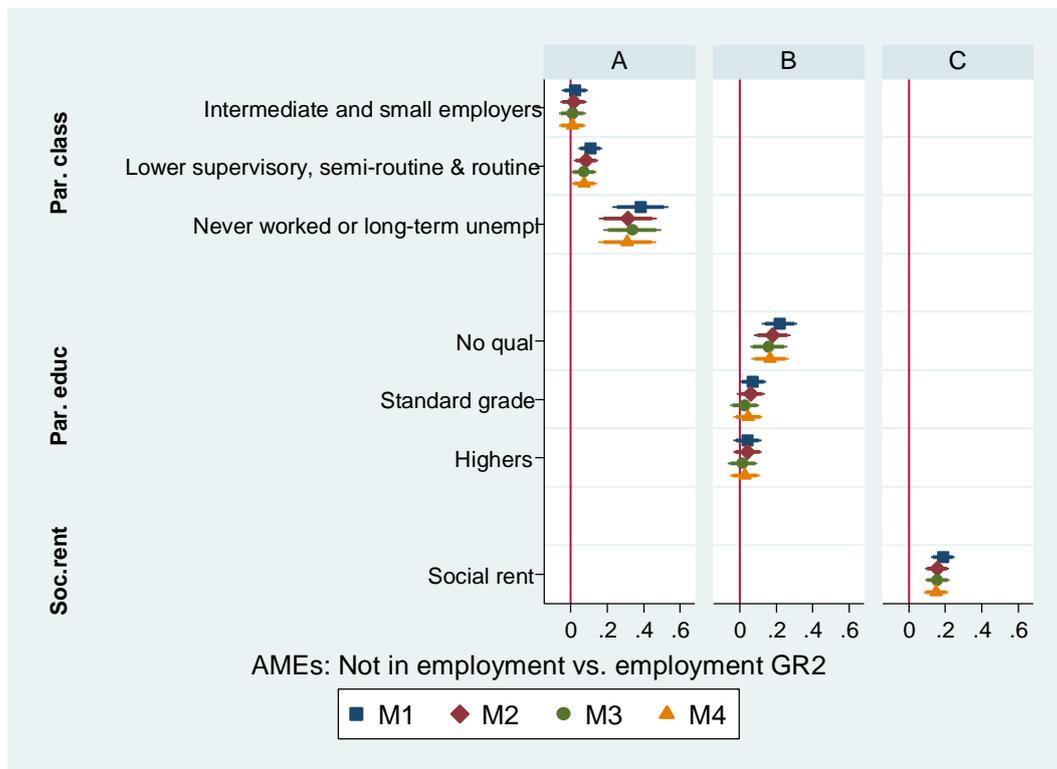
Source: SLS

Note 1: M1 baseline model which controls for gender and long-term illness, M2= M1 + school subjects, M3= M1 + exam grades and M4= M1 + school subjects + exam grades; 90% CI (thick arms) and 95% CI (narrow arms); N=574.

Note 2: Predicted probability of being unemployed/inactive of the reference categories (baseline models): Managerial & professionals: 0.32; Higher degree: 0.33; No social rent: 0.29.

The results for the S5/S6 leavers (Figure 3) show similar patterns to the ones described above with the largest differences being between the top and the bottom social groups. However, subjects and grades are both rather weak in explaining these differences. Thus, for example, 'subjects' (M2) reduce the social class gap by only 7 percentage points and 'grades' only by 4 percentage points (M3), leaving a difference of 31 percentage points unexplained (M4). Even if in this case subjects explained slightly more than grades, this is not consistent across the other two parental background measures, showing similarly weak mediation effects of both factors.

Figure 3. Models estimating the probability of being not in employment, GR 2



Source: SLS

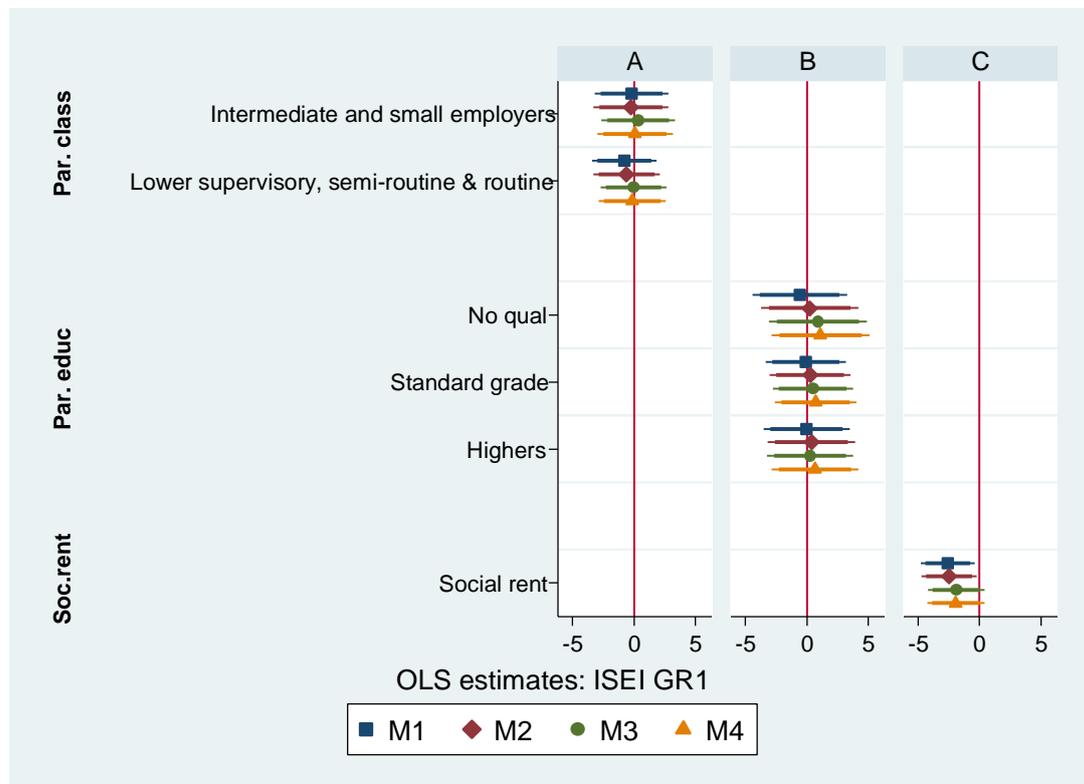
Note 1: M1 baseline model which controls for gender and long-term illness, M2= M1 + school subjects, M3= M1 + exam grades and M4= M1 + school subjects + exam grades; 90% CI (thick arms) and 95% CI (narrow arms); N=1008.

Note 2: Predicted probability of being unemployed/inactive of the reference categories (baseline models): Managerial & professionals: 0.25; Higher degree: 0.24; No social rent: 0.26.

## 2. ISEI

Figure 4 shows parental background differences in the occupational status attained by S4 leavers. Among the three parental background dimensions, only 'social rent' showed a significant difference, indicating that the occupational status of those whose parents lived in social housing was on average 2.6 units lower than those whose parents did not. Introducing 'subjects' in the model does not make much difference (M2), while, after controlling for grades (M3 & M4), this social difference drops and becomes not statistically significant. Therefore, for the S4 leavers, similarly to the activity status outcome, grades have a stronger power in explaining the existing social background differences.

Figure 4. Models estimating occupational status (ISEI), GR 1



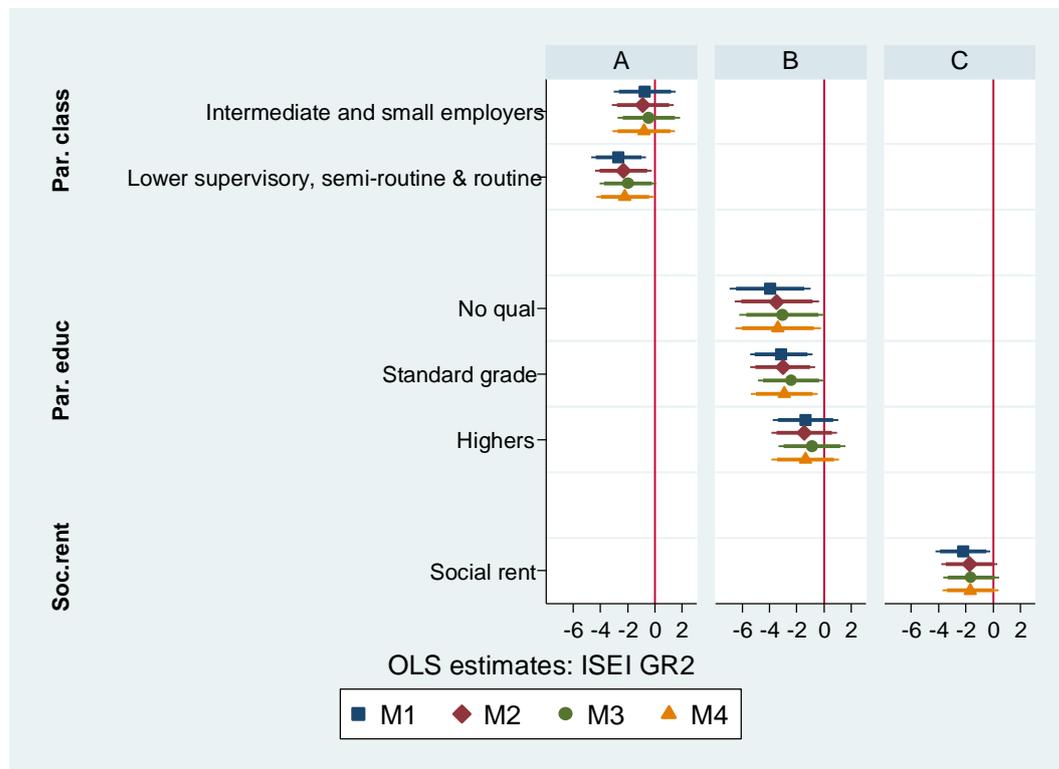
**Source:** SLS

**Note 1:** M1 baseline model which controls for gender and long-term illness, M2= M1 + school subjects, M3= M1 + exam grades and M4= M1 + school subjects + exam grades; 90% CI (thick arms) and 95% CI (narrow arms); N=428.

**Note 2:** Predicted ISEI score of the reference categories (baseline models): Managerial & professionals: 29.5; Higher degree: 29.1; No social rent: 30.

Finally, Figure 5 shows the corresponding results for the occupational status outcome of the S5/S6 leavers. Here we found differences across all social background factors. However, while the differences by social rent were equally explained by subjects and grades, the differences by parental social class and education were explained more by grades alone (M3) than by subjects alone (M2). As in the case of the S4 leavers, curriculum plays a very small role in explaining the social class differences in the S5-S6 school leavers' occupational status.

Figure 5. Models estimating occupational status (ISEI), GR 2



Source: SLS

Note 1: M1 baseline model which controls for gender and long-term illness, M2= M1 + school subjects, M3= M1 + exam grades and M4= M1 + school subjects + exam grades; 90% CI (thick arms) and 95% CI (narrow arms); N=821.

Note 2: Predicted ISEI score of the reference categories (baseline models): Managerial & professionals: 32.8; Higher degree: 33.6; No social rent: 32.2.

## Conclusions

This study provided new evidence about the extent of gender and social inequalities in school leavers' labour market outcomes and the role that curriculum choices play in explaining these inequalities in Scotland. The Scottish context is of particular interest both from an international and national perspective.

Internationally, the Scottish education system is an example of low stratified system, characterised by little differentiation of institutions (if we exclude a minority of people who attend the independent or college sectors) and general school curricula. However, there is considerable differentiation within schools in the number and types of subjects studied by students in their final years of secondary school. This factor has been largely overlooked by research which has investigated inequalities in

school-to-work transitions by focusing on the divide between vocational and academic education and between more or less stratified systems.

Nationally, the Scottish system has been diverging for some time from the English system which has witnessed an increase in school differentiation (see for example the creation of academies and free schools), in the use of standardised testing, and more prescriptive curricula. In particular, in England there has been an increasing emphasis on reinstating a more traditional academic curriculum, emphasising the centrality of subjects such as English literature over subjects such as business and media studies. Instead, in Scotland recent curriculum reforms have strengthened flexibility in curriculum choices, blurred disciplinary boundaries and emphasised the importance of individualised educational programmes. Against this background, research has provided strong evidence that having studied an academic curriculum gives an advantage to middle-class people when applying to go to university. However, it is still unclear whether curriculum choices may explain unequal labour market outcomes among young people who did not continue in higher education.

In our paper, we aimed to fill this gap in both the international and national literature by assessing whether differences in subject-specific curriculum choices may explain gender and social inequalities in school leavers' labour market outcomes. The analyses were carried out separately for lower-secondary school leavers and upper-secondary leavers. The results show similarities between these two groups in the patterns of inequalities but also interesting differences in relation to the role of curriculum for young people's labour market outcomes.

While we found very little evidence of gender differences in school leavers' labour market outcomes, our analysis found strong parental background differences, in particular between the most disadvantaged and the most advantaged. Young people from the most disadvantaged social groups, especially from jobless families and families with low educated parents, were significantly more likely to be unemployed or inactive. This is a striking result especially in relation to S4 leavers whose labour market outcomes were observed after 3-4 years since leaving school. Our data show that, despite policy efforts to tackle issues of poverty and exclusion among young people in Scotland, intergenerational transmission of disadvantage is still a pressing issue. Some social-origin differences were also found in young people's occupational status (i.e. those from more disadvantaged backgrounds had lower ISEI score) but those differences were more salient among the S5/S6 leavers than among S4 leavers.

In relation to the importance of curriculum choices for young people's labour market destinations, 'curriculum' was found to be more important in predicting labour market outcomes among upper-secondary leavers while grades were more important in predicting the same outcomes among lower-secondary leavers. This result holds in both the analysis of activity status and occupational status. Only a few subjects remained significant after controlling for 'grades', i.e. History and Business for S4

leavers and Maths for S5/S6 leavers. In both cases this only held when activity status was examined. While the significant and positive effect of Maths is not surprising since it has been found in other studies, the significance of having studied Business and in particular History is interesting. Understanding the role of these subjects would require some further investigation. For Business, it would be important to discern which branch of business education provides good labour market rewards (i.e. accounting, economics or management). For History, the issue to explore is whether the positive effect of this subject is simply signalling to the employer some form of social and cultural distinction associated with academic knowledge.

We carried out several analyses to assess the role of school subject choices (and attainment) in explaining social class differences in young people's labour market outcomes. The differences by parental background identified for the S4 leavers were only partly explained by curriculum choices and more strongly explained by attainment. This result offers support to the current policy emphasis on improving school attainment of children from disadvantaged social origins as a way to enhance their labour market opportunities and, more generally, their life chances.

Interestingly, our data suggest a different story in relation to S5/S6 leavers. The results of the multiple regression analyses showed that parental background differences in S5/S6 leavers' labour market outcomes could be explained by school curriculum and grades to a similar extent. However, both factors explained only a small part of these differences. Significant social inequalities remained even after accounting for curriculum and grades (more so in relation to employment chances). For this group of school leavers, other factors associated with family advantage (such as family networks) may play a role in facilitating access to employment.

In conclusion, inequalities in school-to-work transitions in Scotland can be only partly explained by curriculum choices. Unlike previous studies, which found a strong effect of curriculum choice on entry to higher education (Iannelli, Smyth and Klein, 2016), our results show that subjects matter much less for employment chances. The general nature of school curricula and the lack of standardisation of certifications in Scotland may be unable to provide clear signals about school leavers' knowledge and skills to future employers. The development of a stronger vocational route through the growth of Modern Apprenticeship programmes and the regionalisation of colleges has been the main answer of the current Scottish Government to youth employment problems and to employers' needs. However, the success of these initiatives will be determined by their capacity to provide a valuable alternative to school-based and higher-education learning for young people from all social backgrounds without creating further avenues for social inequalities to emerge.

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## Appendix

Table A1. Descriptive statistics for school leavers not in full-time education in 2011; S4 leavers & S5/S6 leavers

	S4 leavers	S5/S6 leavers
<b>Variables</b>		
<b>Gender</b>		
Female	36.6	44.4
Male	63.4	55.6
<b>Parental social class</b>		
Managerial & professionals	24.7	36.7
Intermediate	21.1	22.3
Routine and Semi-routine	49.5	37.0
Long-term unemployment/ Never worked	4.7	3.9
<b>Parental education</b>		
No qualifications	23.3	15.1
Standard grade	40.1	35.5
Highers	23.9	28.1
Higher degree	12.7	21.3
<b>Social rent</b>		
No social rent	56.3	70.9
Social rent	43.7	29.1
<b>Long-term illness</b>		
Yes	5.9	5.1
No	94.1	94.9
<b>Highest education achieved</b>		
standard grade or les	71.3	45.8
GSVQ Foundation or Intermediate	13.8	9.7
Highers & other level 2	9.1	39.8
Post-secondary & tertiary	5.9	4.7
<b>Subjects studied</b>		
English	90.2	48.1
Maths	87.6	38.8
Physics	23.0	11.2
Chemistry	21.4	10.0
Biology	33.5	17.3
Geography	29.3	5.6
History	28.8	13.0
Languages	52.9	8.3
Cultural studies	59.4	36.5
Business	27.4	17.3
Technical	58.5	22.4
Other	59.2	25.9
<b>Total UPS/UCAS</b>	106.9 (59.9)	100.0 (114.2)
<b>Activity status</b>		
Employed	61.3	68.9
Unemployed	27.9	24.0
Inactive	10.8	7.0
<b>ISEI</b>	28.8 (11.2)	31.7 (12.5)
<b>Total N</b>	<b>574</b>	<b>1088</b>

Source: SLS; standard deviation in brackets