Early school leaving in a time of recession

Helen Graham and Robert Raeside

Employment Research Institute, Edinburgh Napier University

h.graham@napier.ac.uk

1. Background

Early school leaving in a time of recession

Early school leaving: an issue of policy concern

- Early school leaving = aged 18-24, without at least upper secondary qualifications, and not in education or training

- EU 2020 strategy commitment to reduce to below 10%
    - At the individual level: improving employment prospects, 'breaking the cycle of deprivation'
    - For the economy and society: promoting growth and social cohesion

Research aim

- To use cross-national microdata, as well as national level indicators, to understand the role and interplay of individual (micro) level and national (macro) level factors in understanding early school leaving
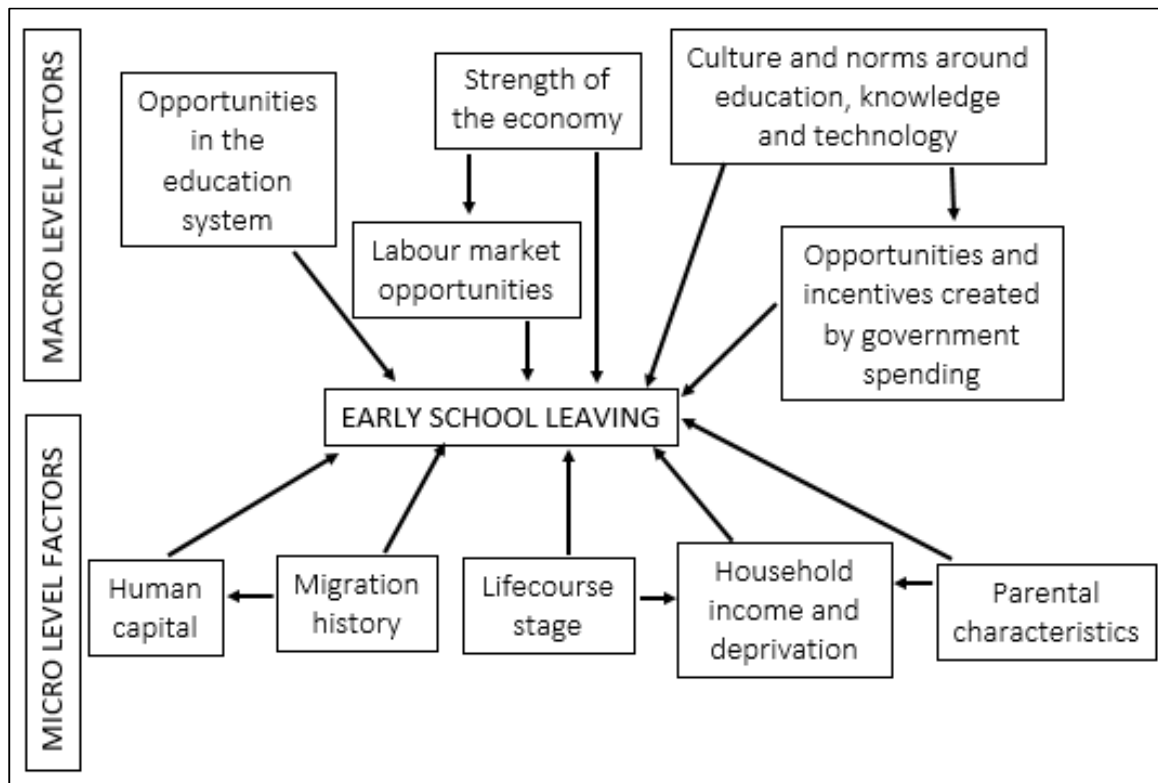
Previous research on education inequalities

- Factors associated with adverse educational outcomes, and inequalities in outcomes
  - Socio-economic background
  - Being a migrant
  - Features of the education system, e.g. hours of schooling, 'tracking', class sizes, education expenditures
  - Labour market structure

Theorising education inequalities

- Macro theoretical perspectives: welfare regimes vs. education regimes
  - Welfare regimes can promote or ameliorate stratification – do education systems do this in the same way?

- Micro perspective: the capability approach (Amartya Sen)
  - Capability is the freedom to pursue valued outcomes (*functionings*)
  - Draw upon *resources*, deployment is shaped by *conversion factors*
  - Education as capability enhancing

The school leaving 'decision'

Early school leaving in a time of recession

Hypotheses – micro level

- Higher levels of personal **human capital** make early leaving **less likely**

- Household **material deprivation** makes early leaving **more likely**

- Those who have formed their **own family with children** are **more likely** to be early leavers

- Those whose **parents** have gained **qualifications** or are in a **professional/managerial job** are **less likely** to be early leavers

- Being an **immigrant** makes early leaving **more likely**

Hypotheses – macro level

- Early leaving will be **less likely** where **education spending** is more generous, but **more likely** where **social expenditure** is higher

- **Vocational opportunities** make early leaving **less likely** but **lifelong learning** opportunities make early leaving **more likely**

- **High unemployment** makes early leaving **less likely**, but **temporary** employment opportunities make it **more likely**

- Early leaving is **more likely** when **economic conditions** are good

- Early leaving is **less likely** where educational attainment and high-skilled labour are the norm

2. Data and methods

Early school leaving in a time of recession

Data - micro

- 2011 EU-SILC microdata (version 2011-3)

Hypothesis	Variable	EU-SILC variables
Human capital	Successfully completed lower secondary Good health	PE040 PH010
Household resources	Equivalised household income quintile Difficulty making ends meet Severe material deprivation Homeowner household	HX090 HS120 HS011 HS021 HS031 HS040 HS050 HS060 HS070 HS080 HS100 HS110 HH050 HH021
Lifecourse stage	Household type (Lives with parents; lives alone/with other adults; formed own family with children; other)	RB020 RX030 RB030 RB220 RB230 RB220 RB230 RB245 PB200 PB020 PB030 PX030
Parental characteristics	At least one parent has upper secondary qualifications At least one parent in professional/managerial job	RB220 RB230 PE040 PL050/PL051
Immigrant background	Not born in country of residence	PB210

Data - macro

- Data from Eurostat database

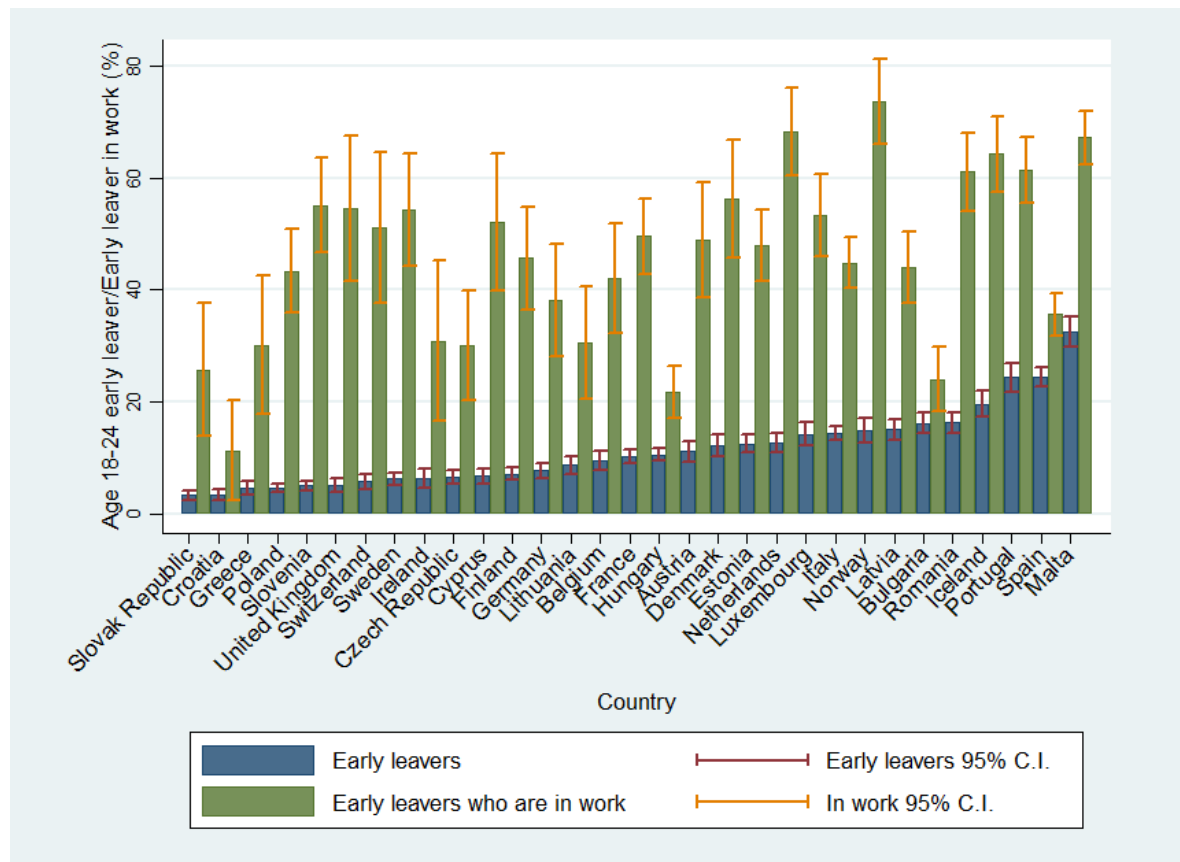| Hypothesis	Variable
Government spending	Education expenditure (% GDP) Primary school teacher to pupil ratio Social expenditure (% GDP)
Education system	Secondary pupils enrolled in vocational education Proportion over 25 engaged in lifelong learning
Labour market opportunities	Youth (20-24) unemployment rate Proportion (age 15-29) employed on a temporary contract Proportion of the population aged 15-24
Strength of economy	GDP growth
Education and employment norms	Over 25s with at least upper secondary education Employment in knowledge-intensive service sectors (% workforce)

All data pertains to 2011

Methods

- 31 countries: EU-28 + Norway, Iceland, Switzerland

- Multilevel modelling
  - Nested data: individuals within countries
  - Random-intercept models to allow intercepts to vary between countries
  - Random-slope models to allow effects to vary between countries
  - Binary outcome: logistic models

- Estimated in Stata 14, using `melogit`

3. Results

Early school leaving in a time of recession

Early leaving across Europe

There is variation between countries in early leaving, and in the proportion of early leavers who are not in employment
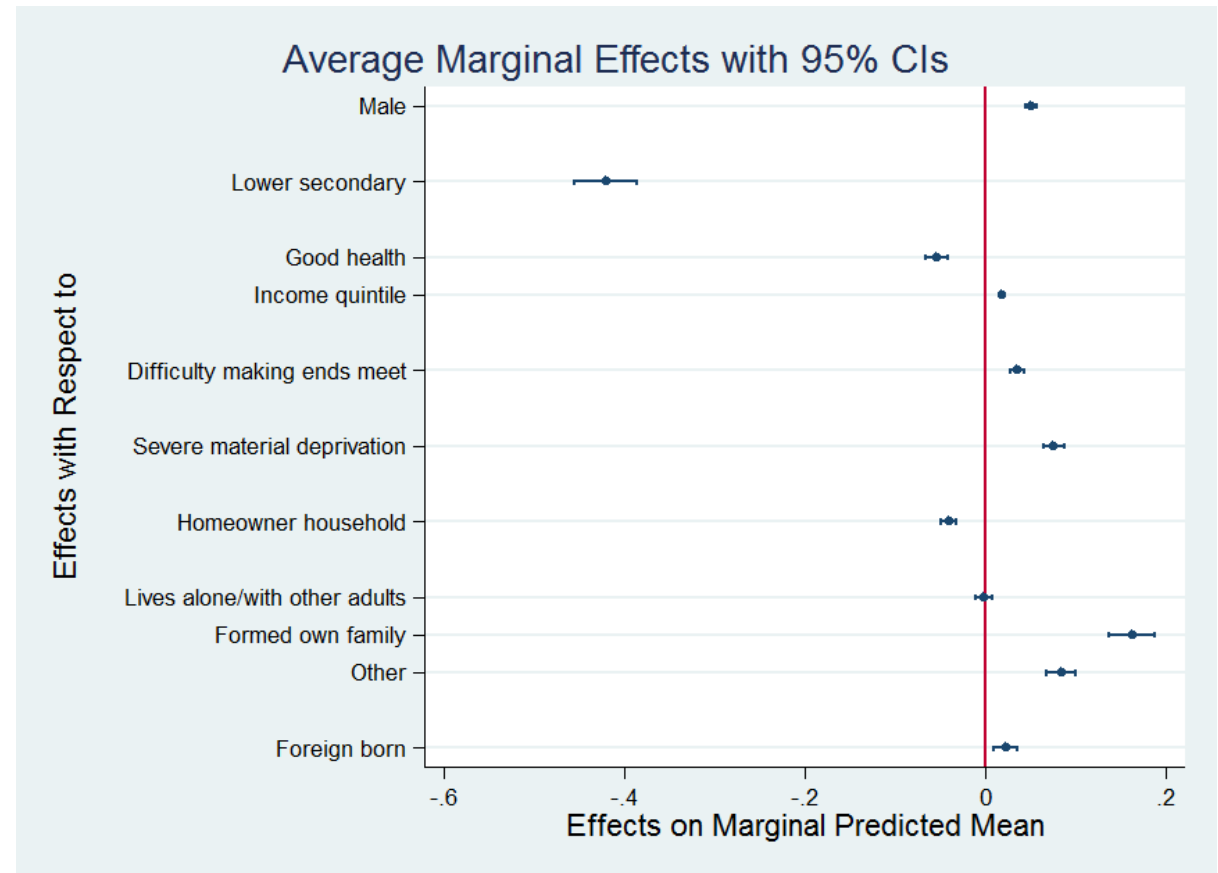
Early school leaving in a time of recession

Regression results 1

- Logistic random-intercept model

- Dependent variable: early school leaving (=1)

- Sample: all 18-24 year olds

	Intercept only model	+ micro level variables	+ macro level variables
Male		1.910***	1.911***
Attained lower secondary qualifications		0.0614***	0.0615***
Good (or very good) general health		0.554***	0.552***
Equivalised HH income quintile		1.251***	1.251***
Has difficulty making ends meet		1.616***	1.616***
Experiences severe material deprivation		2.277***	2.267***
Homeowner household		0.615***	0.615***
Household circumstances (ref = living with parents)		-	-
Living alone or with other adults		0.972	0.975
Formed own single/couple parent household		4.286***	4.268***
Other		2.427***	2.407***
Not born in country of residence		1.303***	1.302***
Spending on education			0.819**
Primary school pupil to teacher ratio			0.948**
Spending on social protection			0.974
Secondary pupils in vocational education			0.993
Lifelong learning			1.036**
Temporary employment 15-29			0.989**
Population aged 15-24 years			0.835**
GDP growth rate			1.168***
Upper secondary attainment			0.959***
High-tech employment in service			0.994
N	38025	38025	38025
Deviance	24868.2	20768.4	20711.6
Change in deviance		4099.8	56.8
Intra-class correlation	0.117	0.119	0.014
AIC	24872	20794	20758
BIC	24889	20905	20954

Exponentiated coefficients
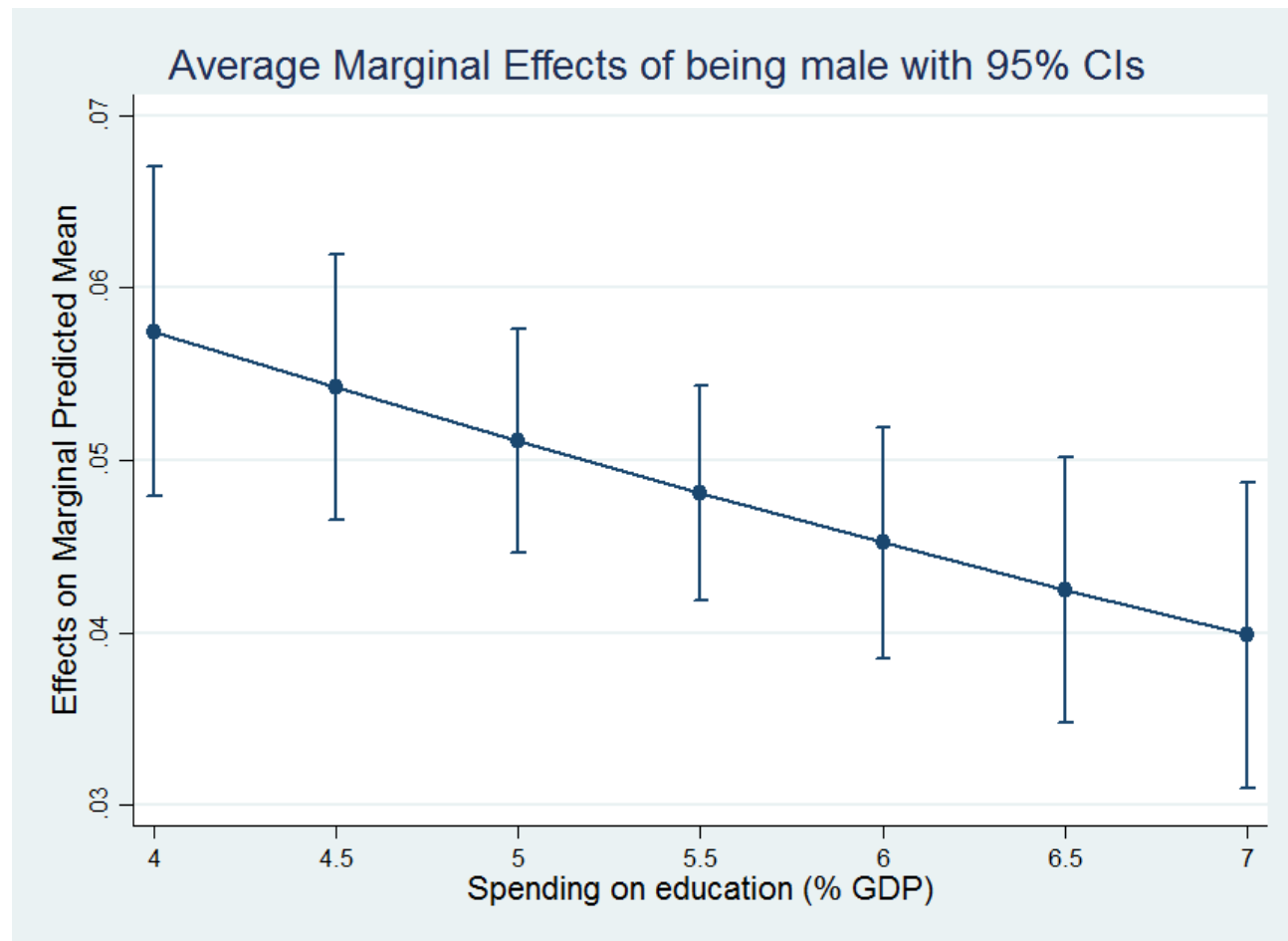* p<0.05 ** p<0.01 *** p<0.001

Average Marginal Effects – micro level characteristics

- Largest impact on predicted probability is completing lower secondary (-.4)

- Family formation also important predictor (+.2)

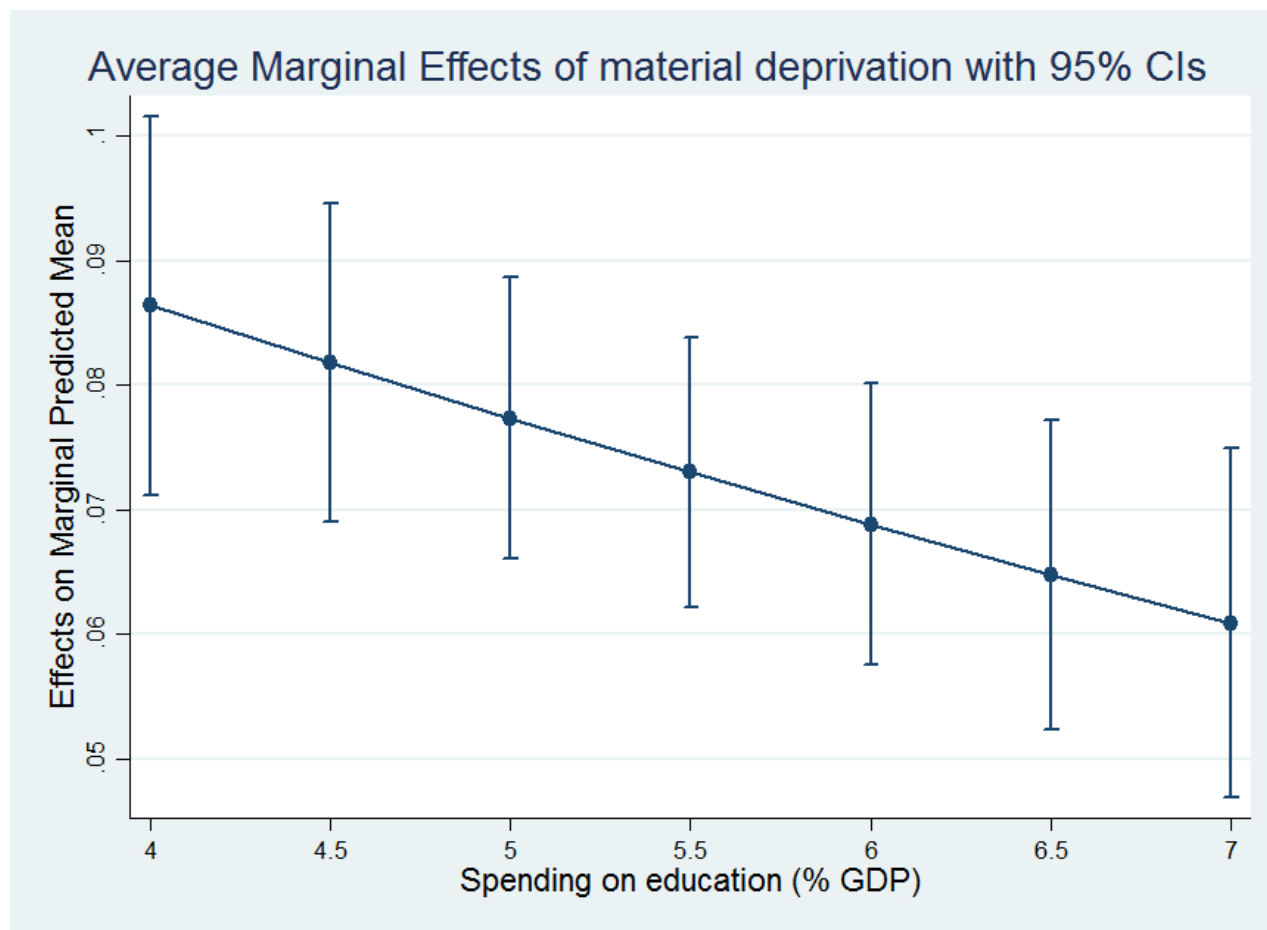Early school leaving in a time of recession

AME of gender at different spending levels

- Being male increases the probability of early leaving at all levels of government spending on education, but the impact is higher at lower spending levels
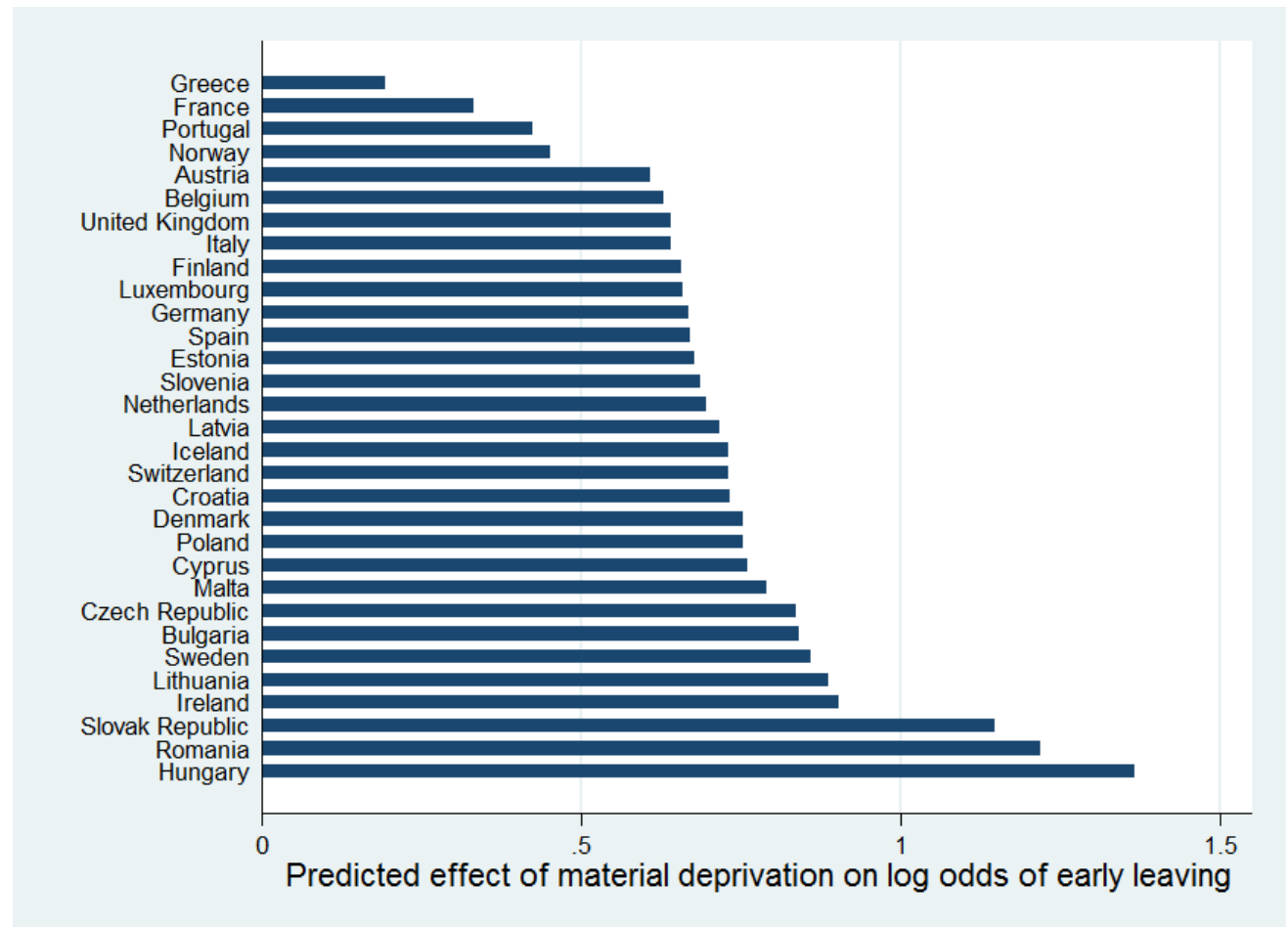
02/03/2017

Average Marginal Effects of being male with 95% CIs

Effects on Marginal Predicted Mean vs Spending on education (% GDP)

AME of deprivation at different spending levels

- The impact of material deprivation is also mediated by government spending on education

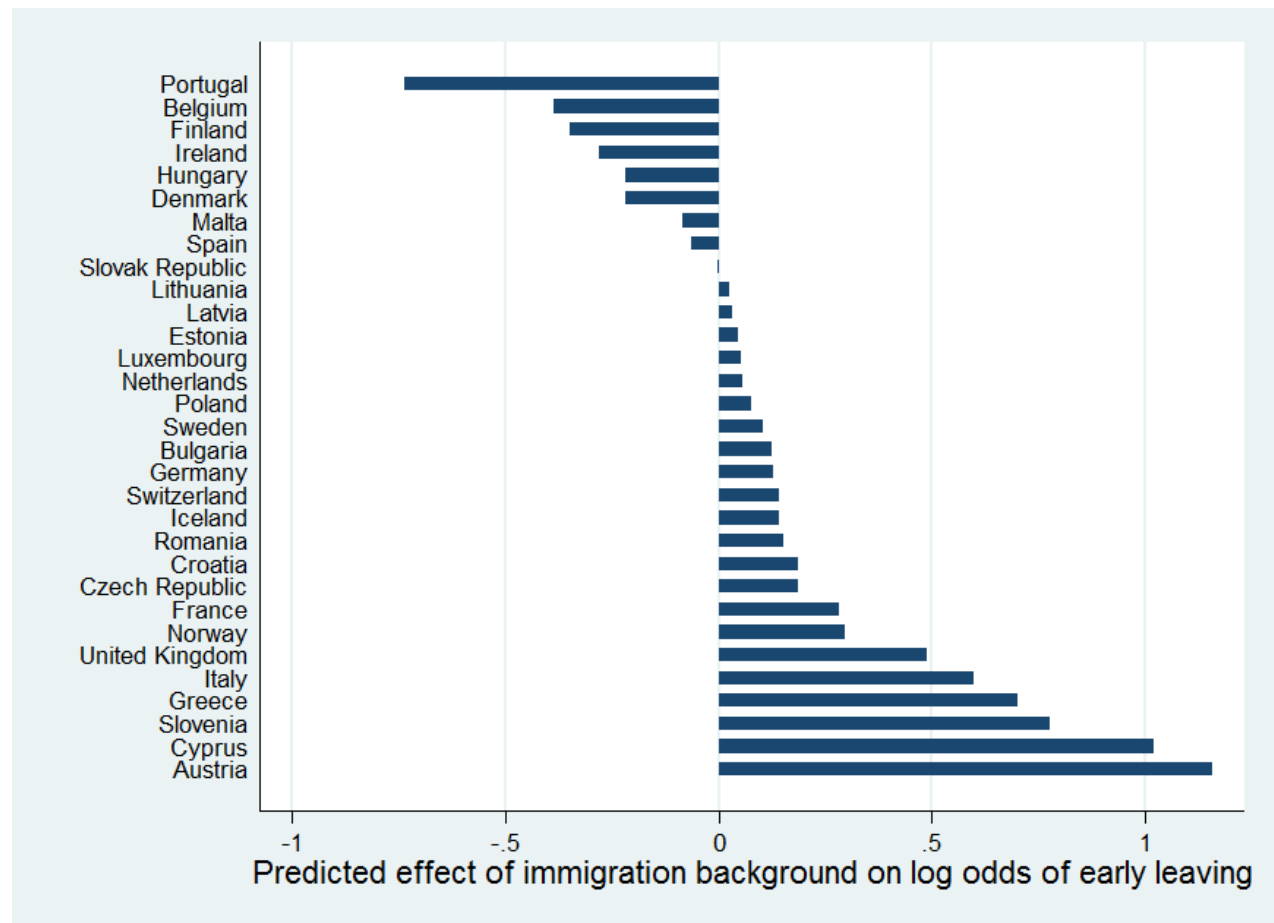Average Marginal Effects of material deprivation with 95% CIs

Material deprivation: fixed + random effects

- Random intercept model: does impact of material deprivation vary between countries?

- Most countries have similar effect of material deprivation, although there are some exceptions

Foreign born: fixed + random effects

- In some countries, foreign born young people are actually less likely to be early leavers

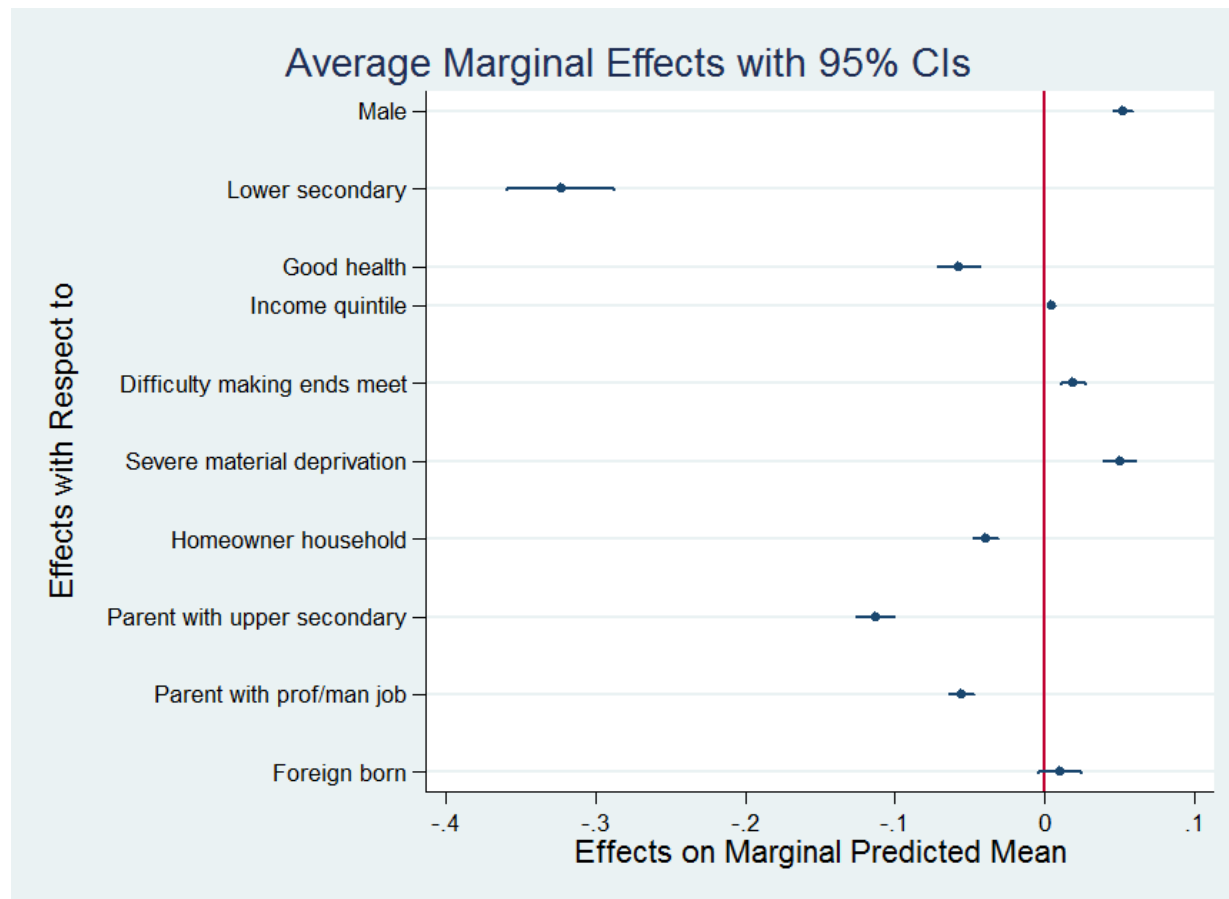Predicted effect of immigration background on log odds of early leaving

Regression results 2

- Logistic random-intercept model

- Dependent variable: early school leaving (=1)

- Sample: 18-24 year olds with parents in household

	Intercept only model	+ micro level variables	+ macro level variables
Male		2.164***	2.167***
Attained lower secondary qualifications		0.0818***	0.0818***
Good (or very good) general health		0.499***	0.499***
Equivalised HH income quintile		1.066***	1.068***
Has difficulty making ends meet		1.338***	1.338***
Experiences severe material deprivation		1.899***	1.896***
Homeowner household		0.598***	0.597***
At least one parent with upper secondary qualifications		0.264***	0.266***
At least one parent in professional/ managerial job		0.378***	0.376***
Not born in country of residence		1.155	1.149
Spending on education			0.813**
Primary school pupil to teacher ratio			0.982
Spending on social protection			1.005
Secondary pupils in vocational education			0.990*
Lifelong learning			1.055***
Temporary employment 15-29			0.986***
Population aged 15-24 years			0.841**
GDP growth rate			1.199***
Upper secondary attainment			0.975***
High-tech employment in service			0.981*
N	31487	31487	31487
Deviance	19078.2	15317	15271.8
Change in deviance		3761.2	45.2
Intra-class correlation	0.120	0.086	0.013
AIC	19082	15341	15316
BIC	19099	15441	15500

Exponentiated coefficients
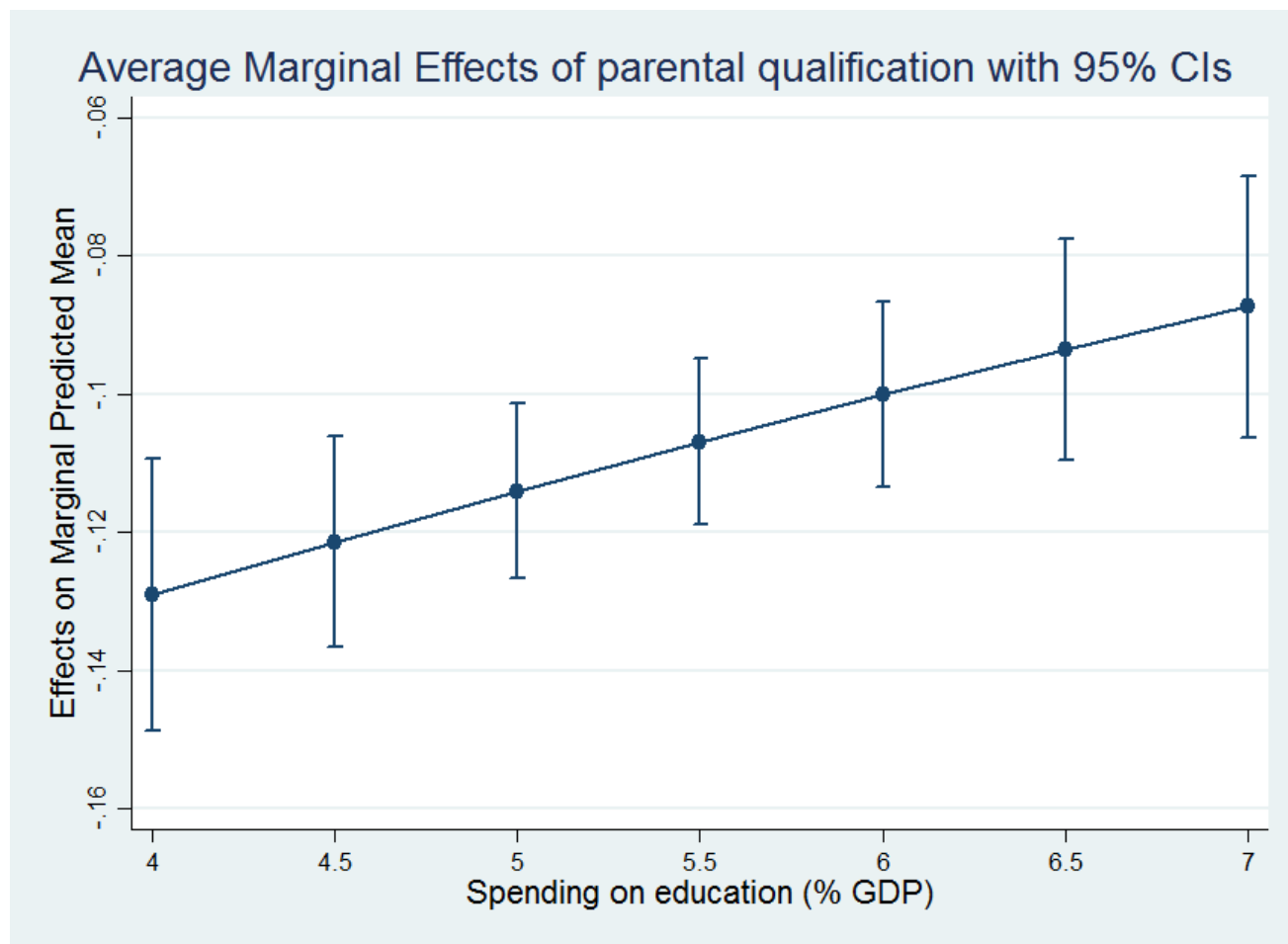* $p<0.05$ ** $p<0.01$ *** $p<0.001$

Average Marginal Effects – micro level characteristics

- The AME of having a parent with upper secondary qualifications (+.1) is roughly twice the AME of having a parent with a professional or managerial job (+.05)

Average Marginal Effects with 95% CIs

Early school leaving in a time of recession

AME of parental qualification at different spending levels

- The impact of having a parent with at least upper secondary qualification is lower at higher levels of government spending on education

Average Marginal Effects of parental qualification with 95% CIs

4. Conclusions and discussion

Hypotheses – micro level

- Higher levels of personal **human capital** make early leaving **less likely** ✓

- Household **material deprivation** makes early leaving **more likely** ✓

- Those who have formed their **own family with children** are **more likely** to be early leavers ✓

- Those whose **parents** have gained **qualifications** or are in a **professional/managerial job** are **less likely** to be early leavers ✓

- Being an **immigrant** makes early leaving **more likely** ✓

Hypotheses – macro level

- Early leaving will be **less likely** where **education spending** is more generous, but **more likely** where **social expenditure** is higher ✓

- **Vocational opportunities** make early leaving **less likely** but **lifelong learning** opportunities make early leaving **more likely** ✓

- **High unemployment** makes early leaving **less likely**, but **temporary** employment opportunities make it **more likely** ✗ (less likely)

- Early leaving is **more likely** when **economic conditions** are good ✓

- Early leaving is **less likely** where educational attainment and high-skilled labour are the norm ✓

Limitations

- Accuracy of early leaving variable (and others)

- Parental characteristics – only if they are in the household

- Weighting?