Institute of Education

UCL

Preschool Education and Care.

Tarek Mostafa

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- Do the benefits vary according to the socio-demographic characteristics of the pupils?
- What are the challenges to measuring the returns to preschool education and care?
- What are the techniques used to measure the causal effects of preschool education and care?

Pre-School Education and Care: Introduction

Pre-School Education and Care

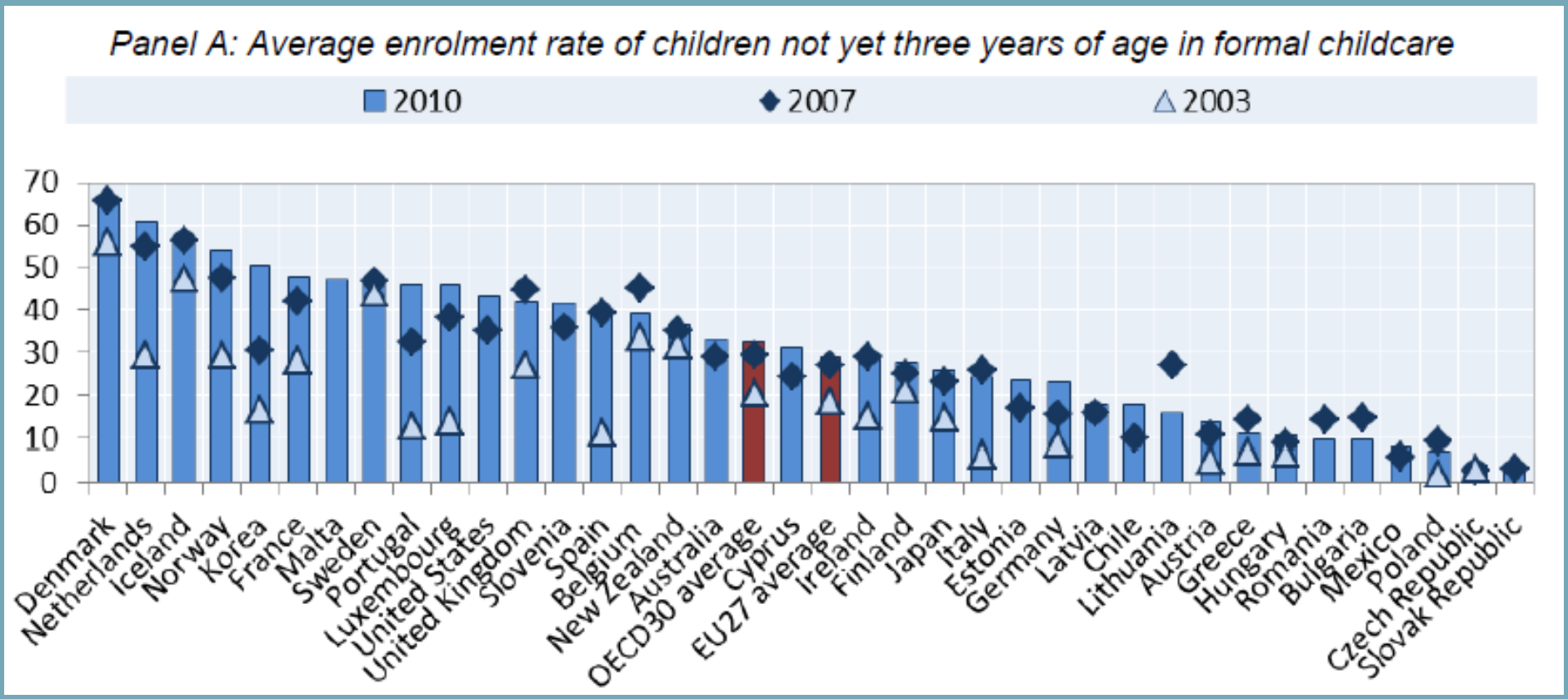
Definitions
Before age 3: Childminders, nursery, parents/grand-parents.

Formal from age 3 (International Standard Classification of Education: ISCED 0):
Initial stage of organized instruction, designed primarily to introduce very young children to a school-type environment and to develop their cognitive, physical, social and emotional skills. Designed for children from age 3 to the start of primary education.

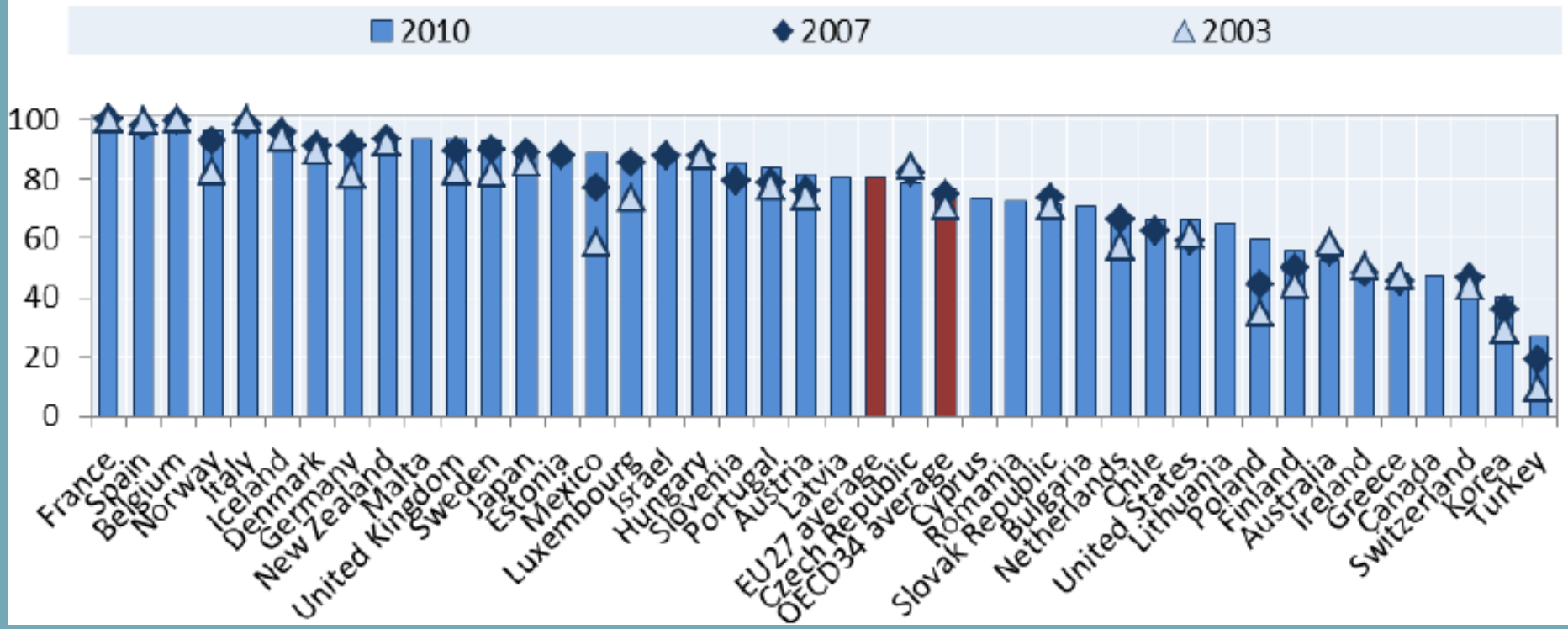
Type of care before age 3 in MCS wave 3.

Types of care (MCS wave 2)	Freq.	Percent
Not applicable	1,328	8.52
Respondent his herself	235	1.51
Husband Wife Partner	1,539	9.87
Your Mother	1,583	10.15
Your partner's mother	556	3.57
Other relative	345	2.21
Friend neighbour	140	0.9
Registered childminder	649	4.16
Unregistered childminder	130	0.83
Workplace day nursery	86	0.55
Local authority day nursery	43	0.28
Private day nursery creche	928	5.95
not working - main care nk	1,912	12.26
not working - no care	6,059	38.86
unspecified	57	0.37
Total	15,590	100

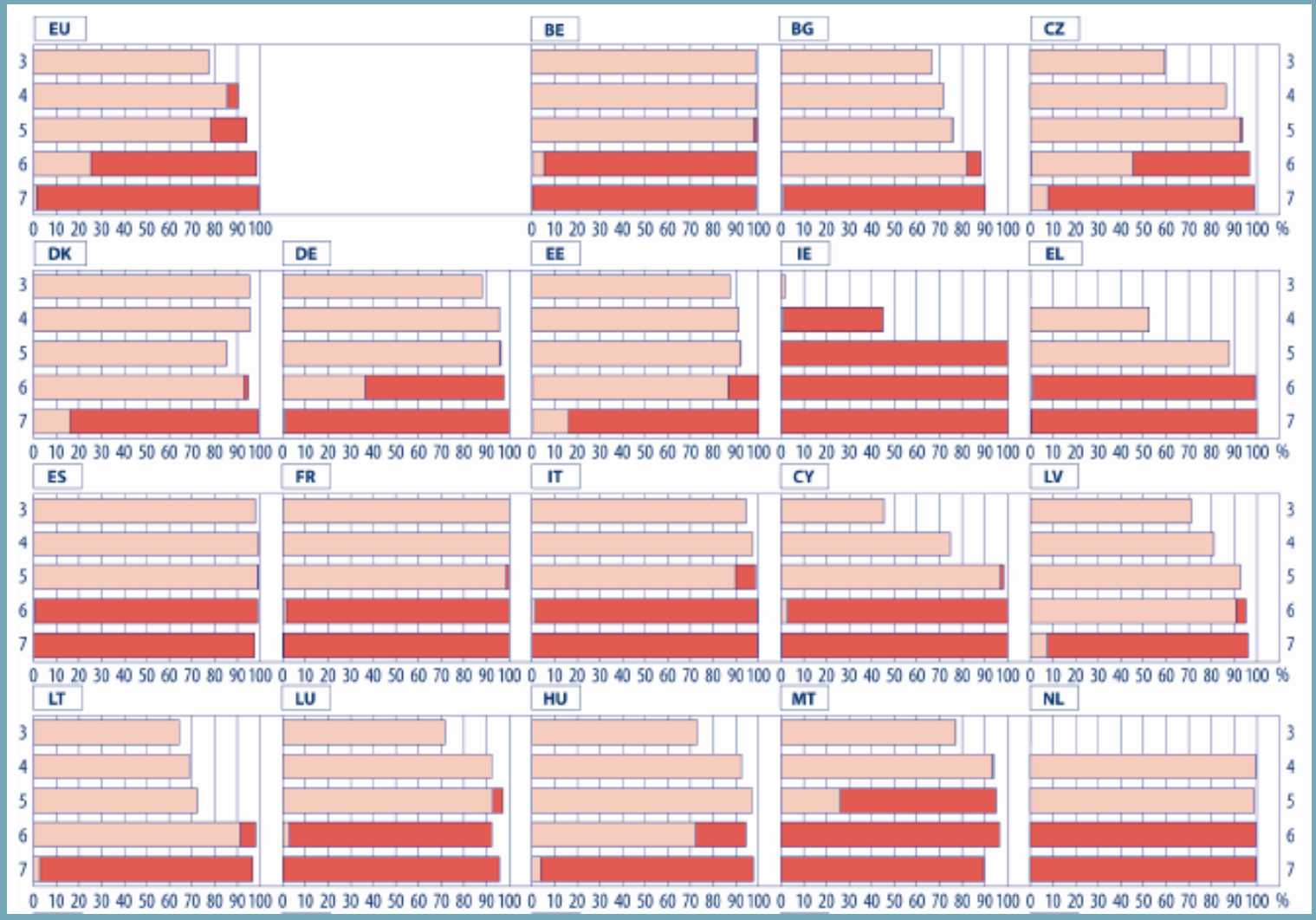
PSEC in Europe

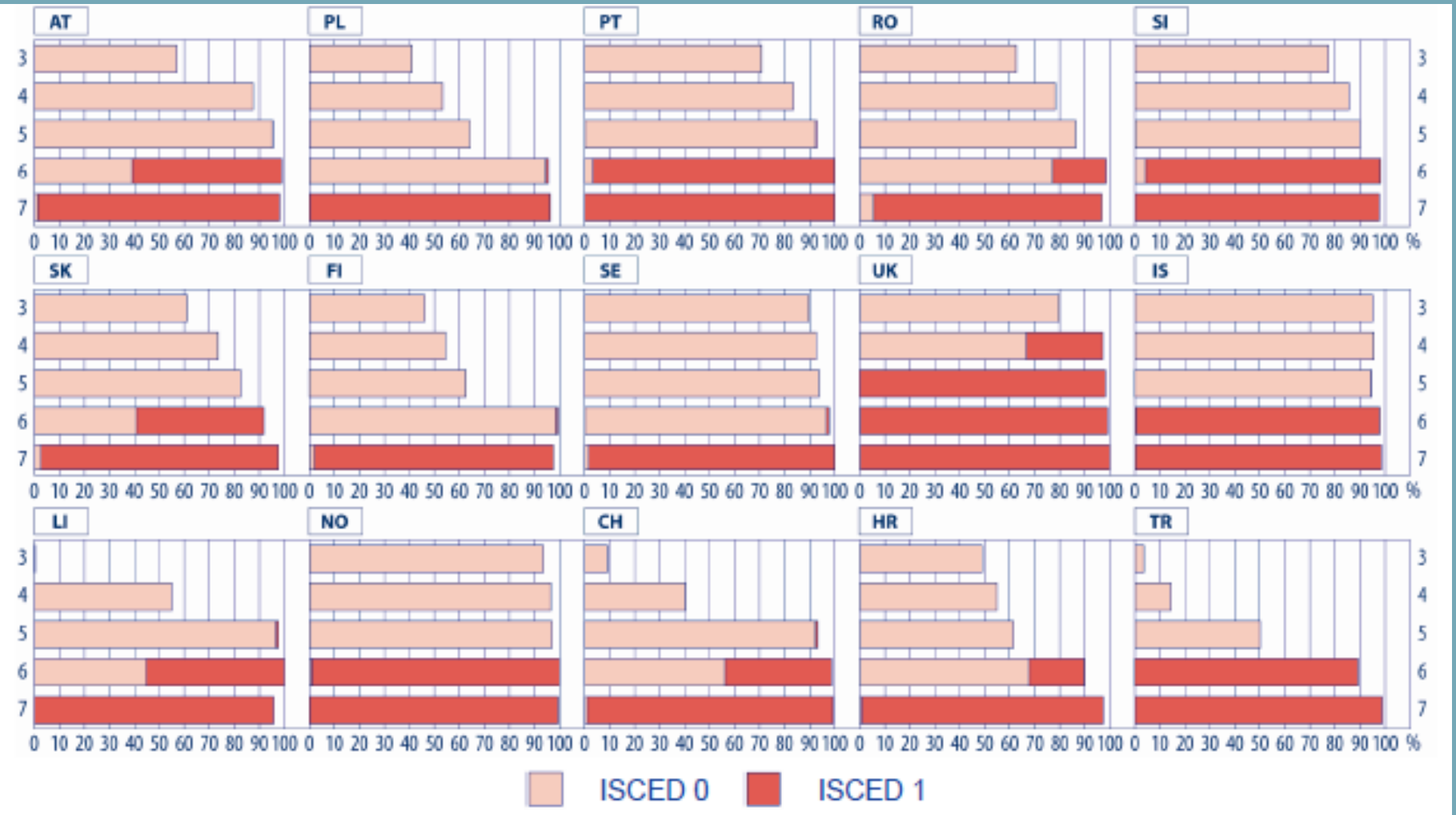

Panel A: Average enrolment rate of children not yet three years of age in formal childcare
2010
2007
2003
70
60
50
40
30
20
10
0
Denmark
Netherlands
Iceland
Norway
Korea
France
Malta
Sweden
Portugal
Luxembourg
United States
United Kingdom
Slovenia
Spain
Belgium
New Zealand
Australia
OECD30 average
Cyprus
EU27 average
Ireland
Finland
Japan
Italy
Estonia
Germany
Latvia
Chile
Lithuania
Austria
Greece
Hungary
Romania
Bulgaria
Mexico
Poland
Czech Republic
Slovak Republic

Panel B: Average enrolment rate of children aged three to five years of age in pre-school educational programmes



Age of starting ISCED 1





Source: Eurostat, UOE (data extracted July 2011).

Public expenditure as % of GDP (2010)

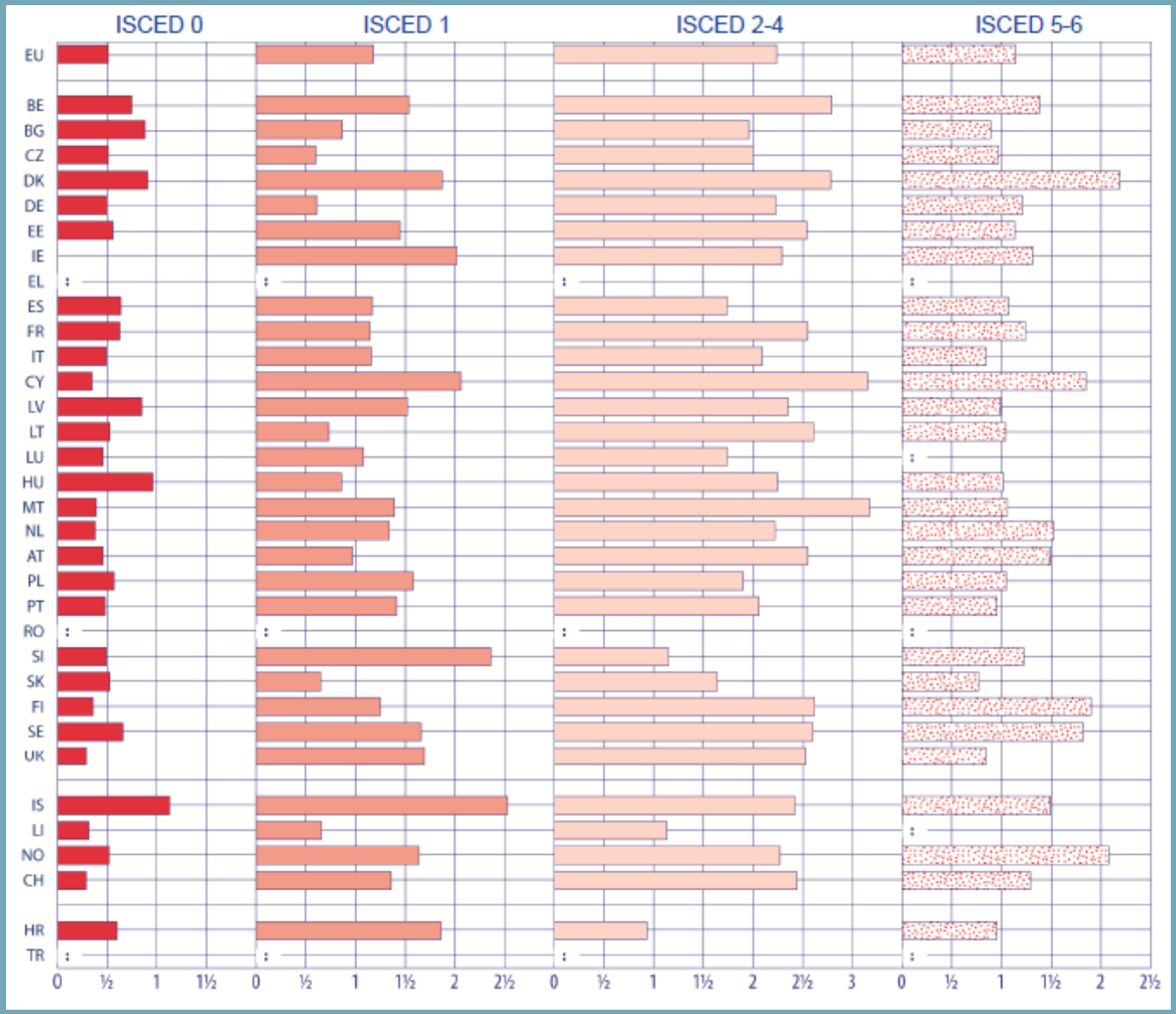
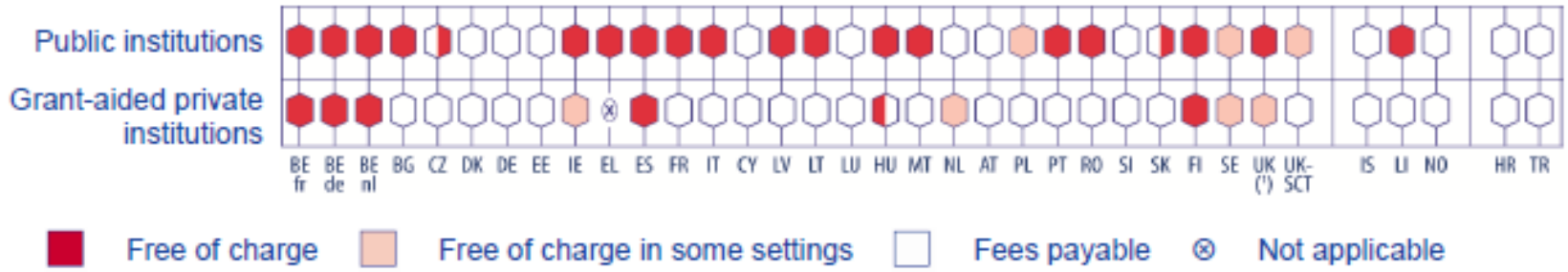


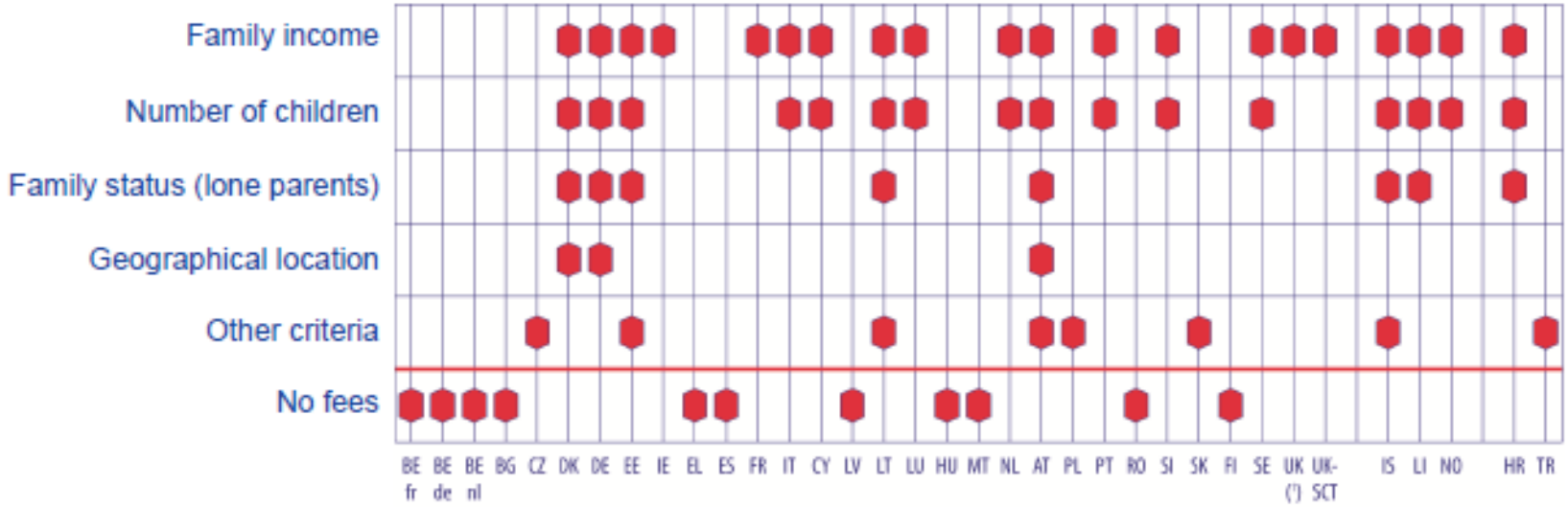
Figure D6: Free and fee-paying pre-primary provision offered in education-oriented pre-primary institutions (ISCED 0), 2010/11



Source: Eurydice.

UK (1) = UK-ENG/WLS/NIR

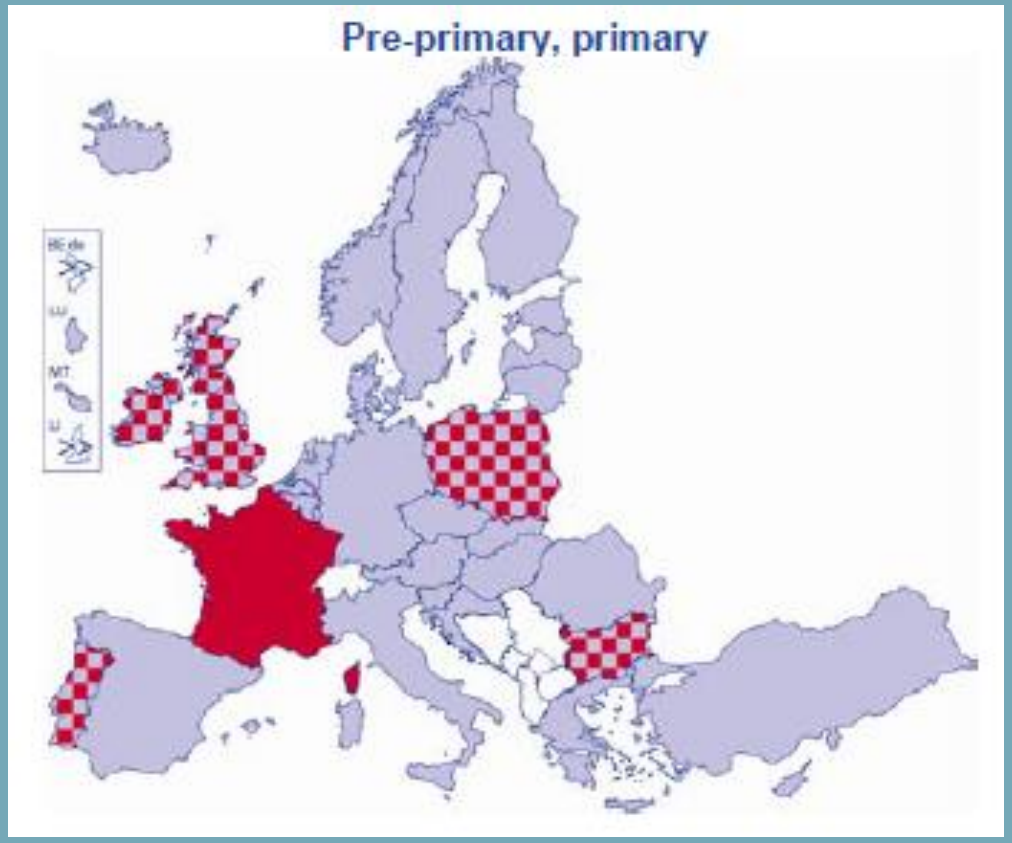
Figure D7: Factors taken into account in offering reductions or exemptions of fees in public and private grant-aided education-oriented pre-primary institutions (ISCED 0), 2010/11



Source: Eurydice.

UK (1) = UK-ENG/WLS/NIR

Structure of teacher education



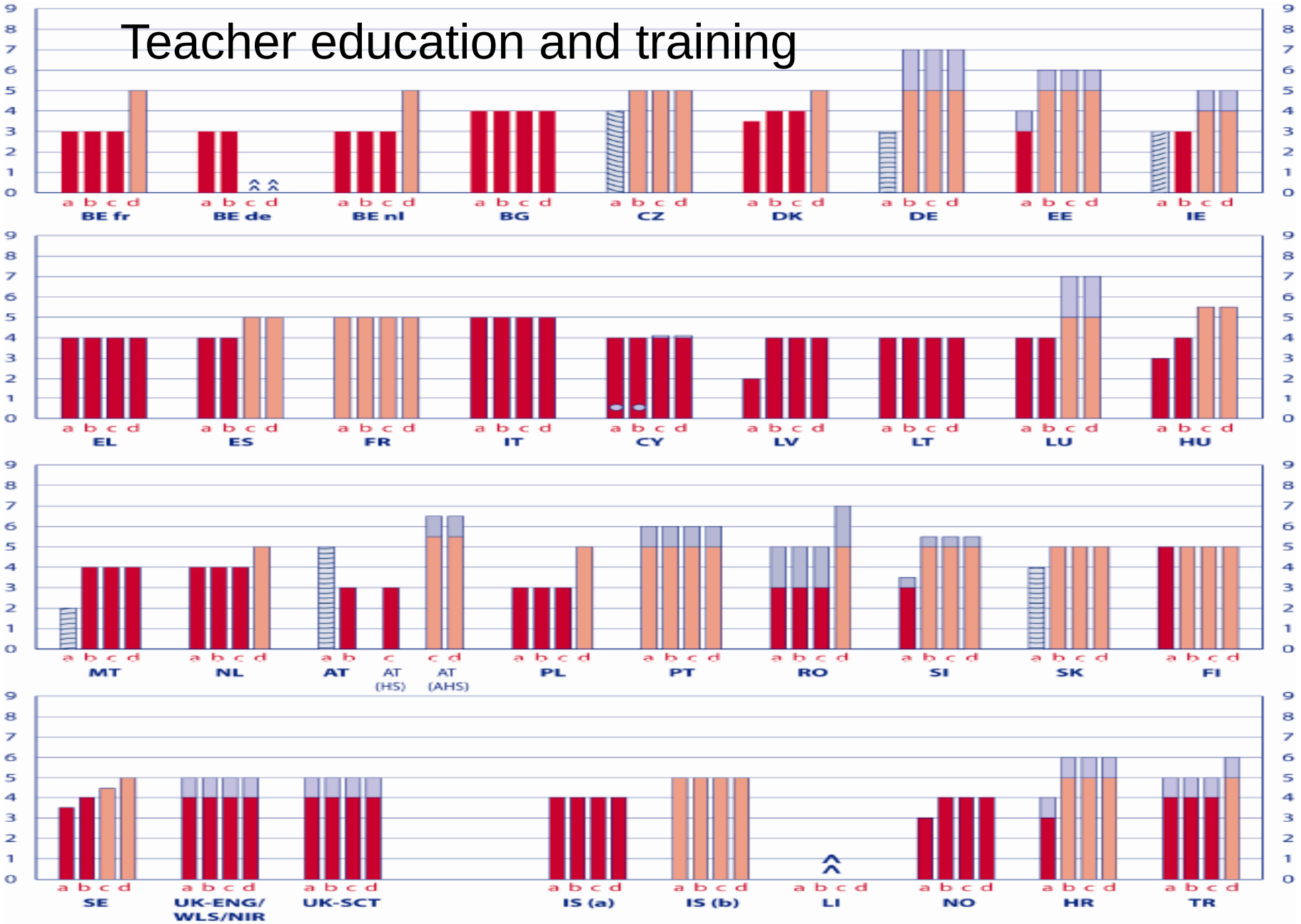
Concurrent

Consecutive

>> Teacher education abroad

The concurrent model involves general education and mastery of the particular subject(s) that trainees will teach when qualified; students learn the professional aspects of teaching from the start of their higher education studies. Under the consecutive model, students obtain an academic degree (bachelor's or bachelor's + master's) before embarking on their professional studies.

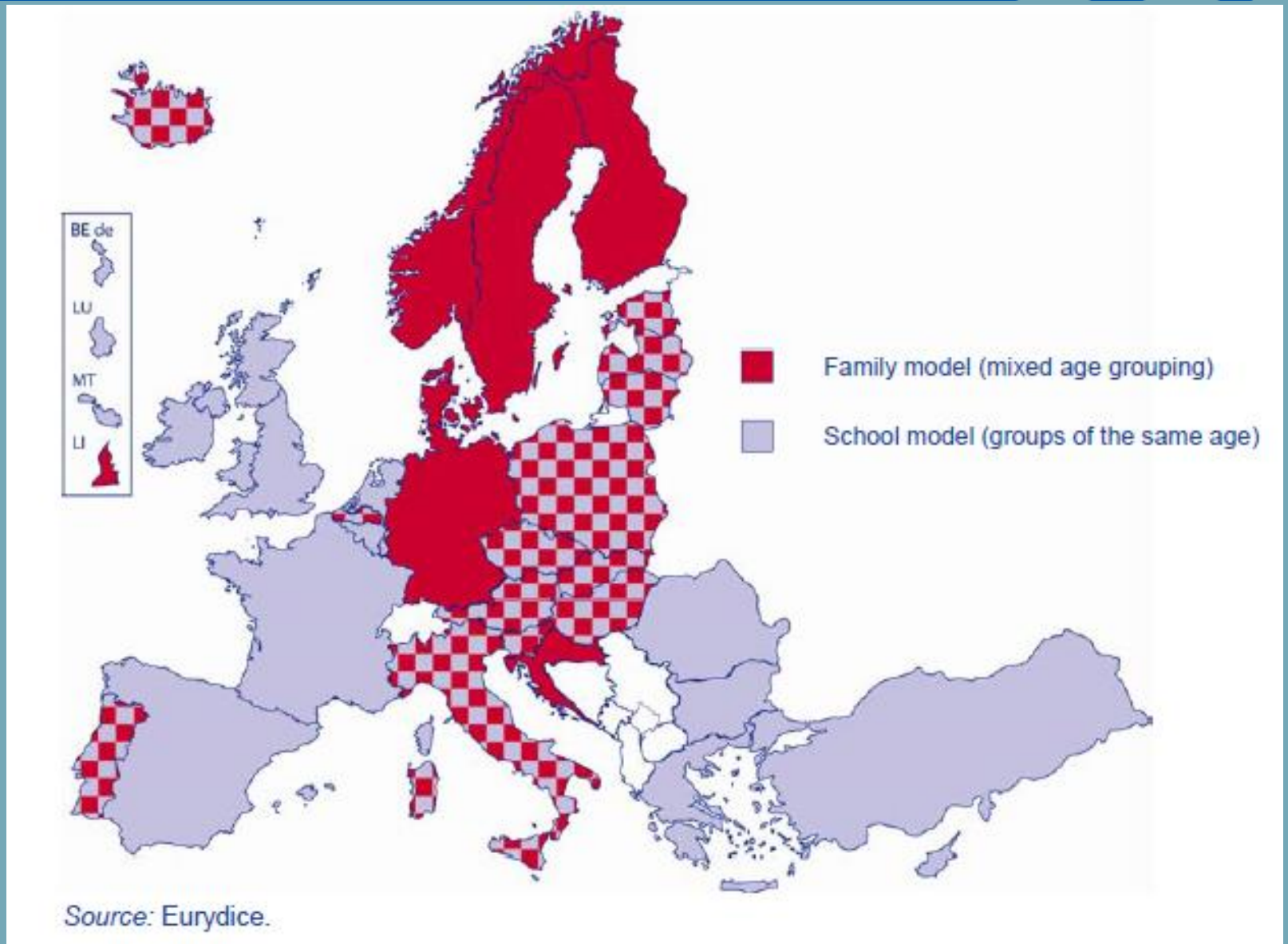
Teacher education and training



To teach at level: a Pre-primary b Primary c Lower secondary d Upper secondary

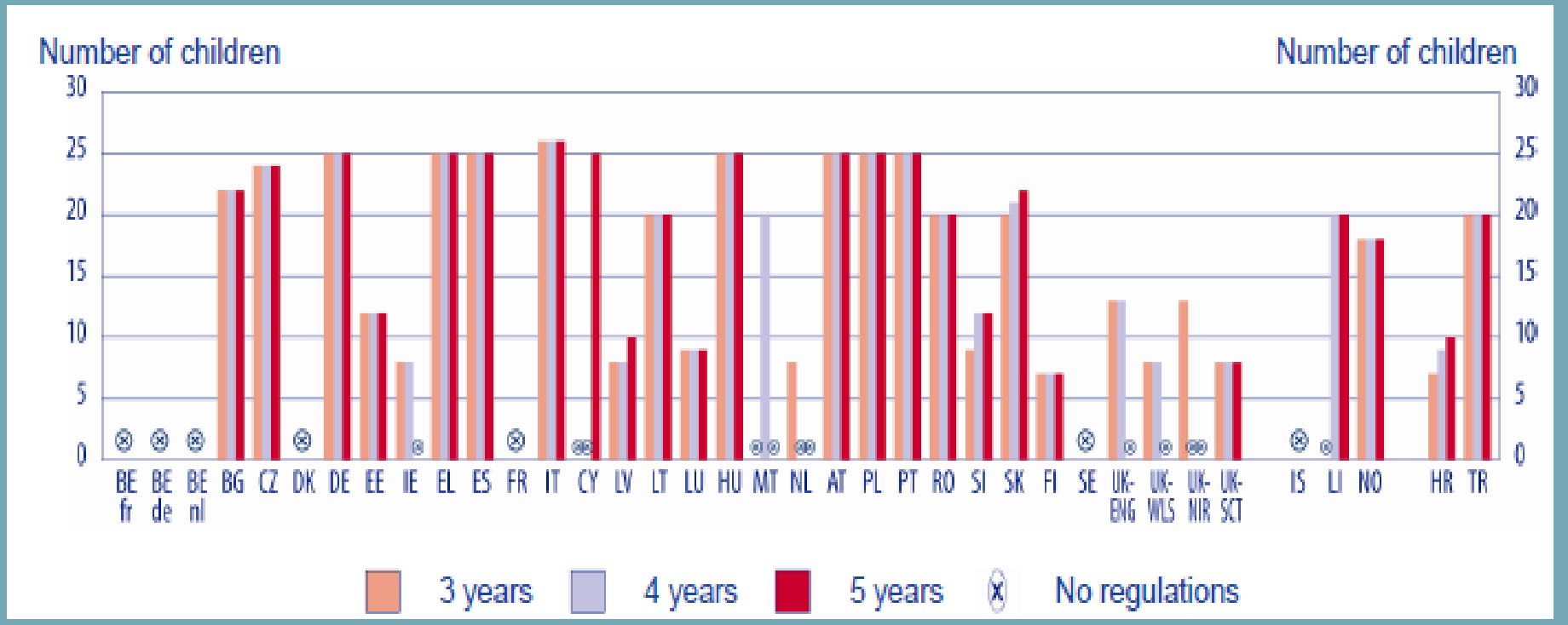
Qualification needed: ISCED 3/4 Bachelor's level | Master's level Study abroad | Induction { after ITE during ITE

Grouping methods in Pre-primary ed

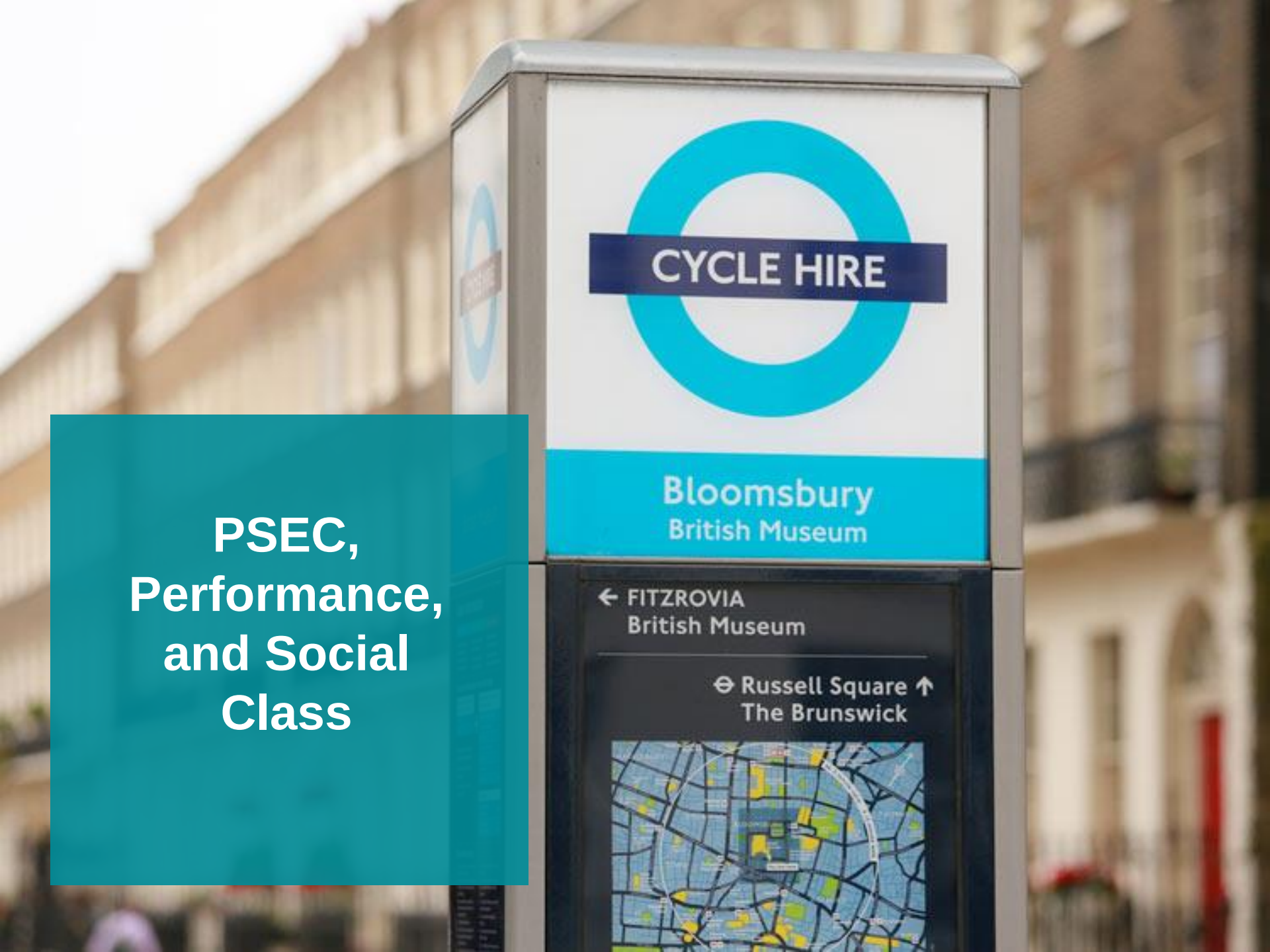


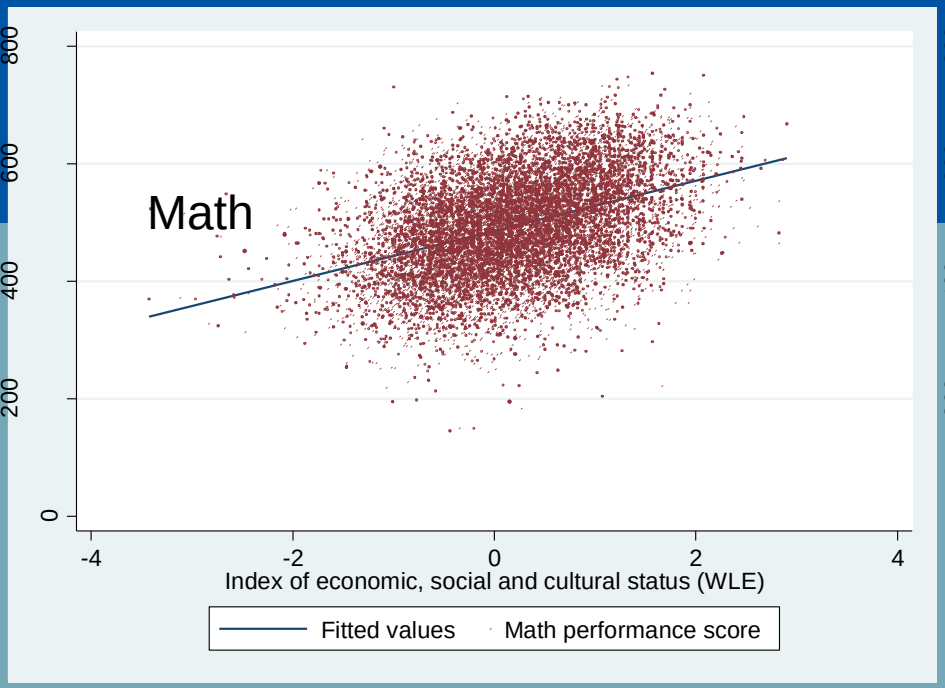
Source: Eurydice.

Recommended number of children per qualified adult



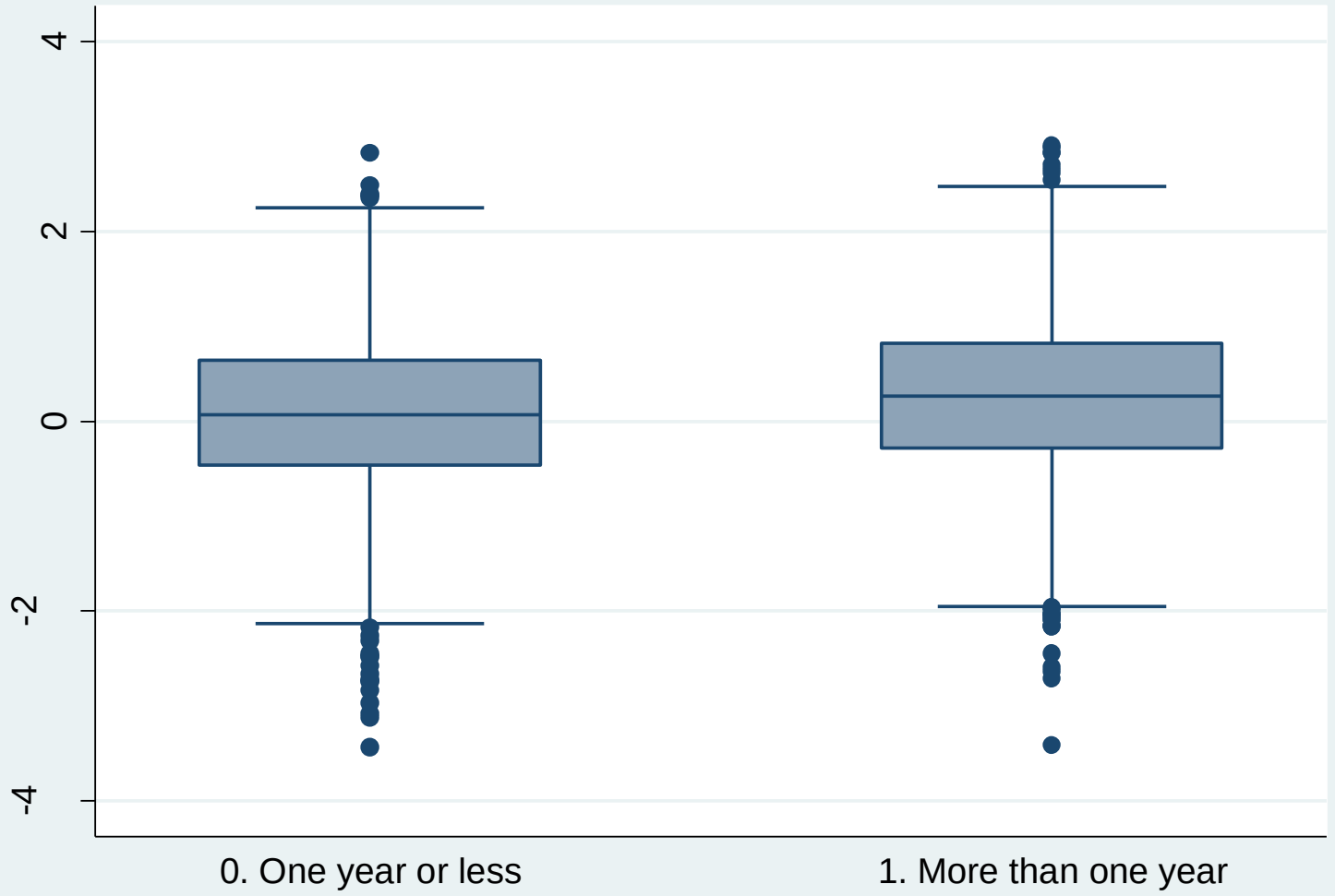
PSEC, Performance, and Social Class



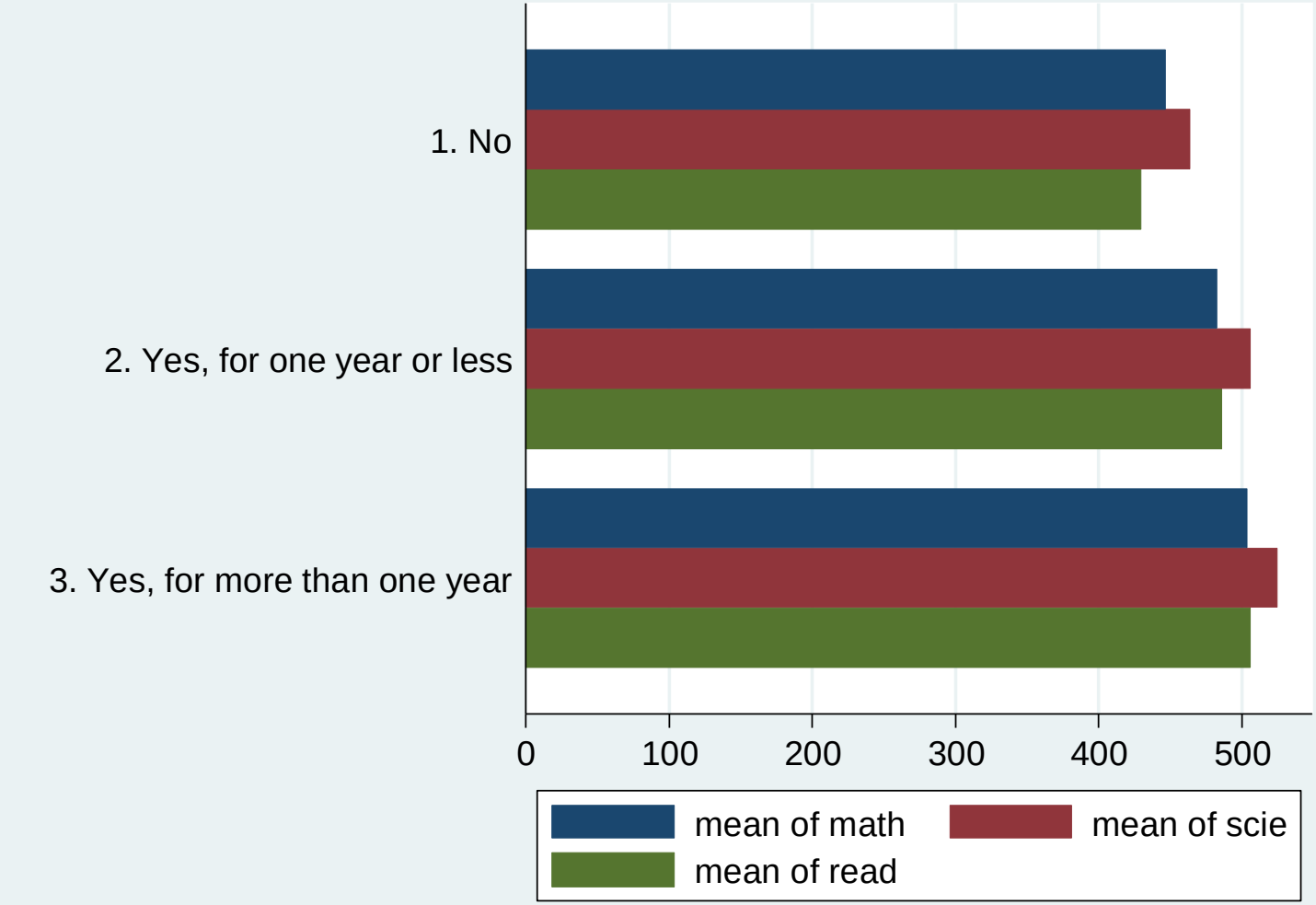


Relation between performance scores and ESCS in PISA (UK)

PSEC participation and social class (UK 2009)

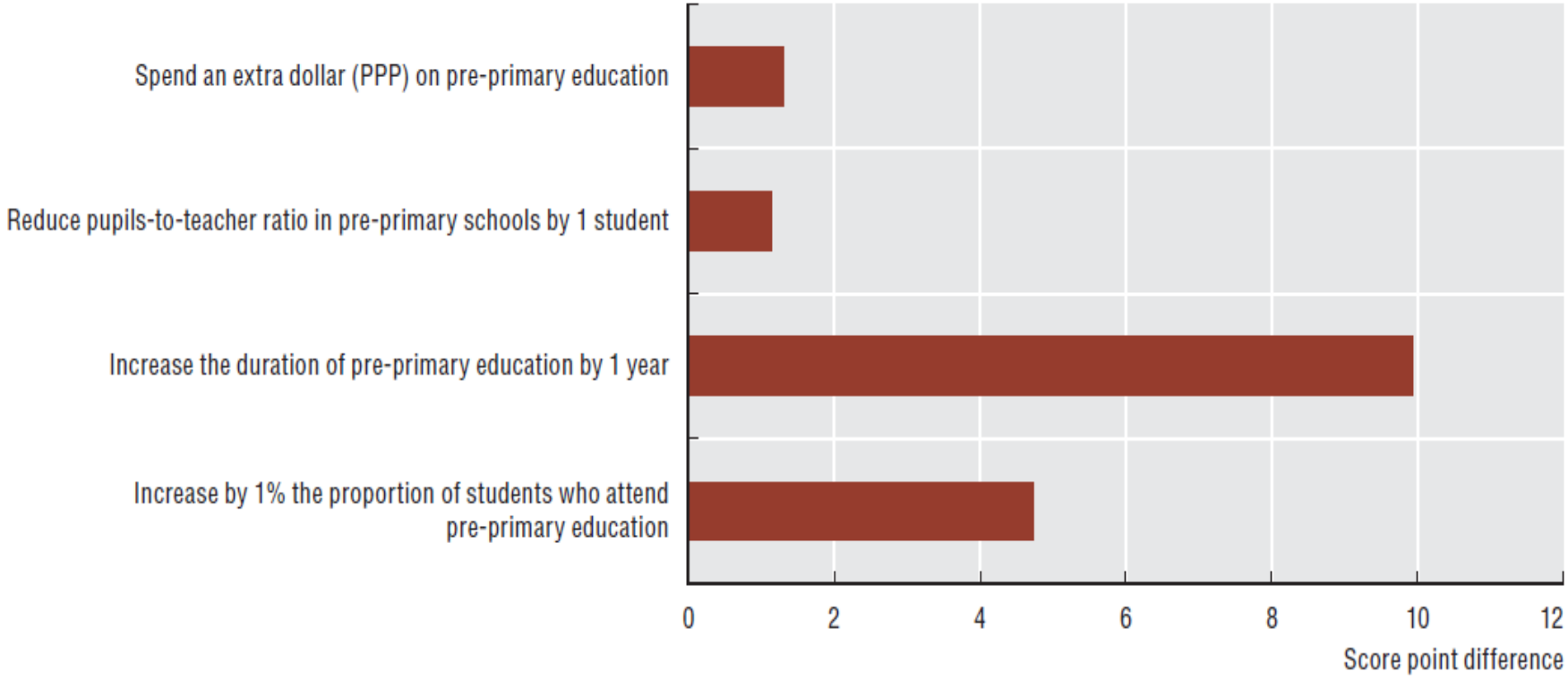


Performance scores by PSEC participation in PISA 2009 (UK).

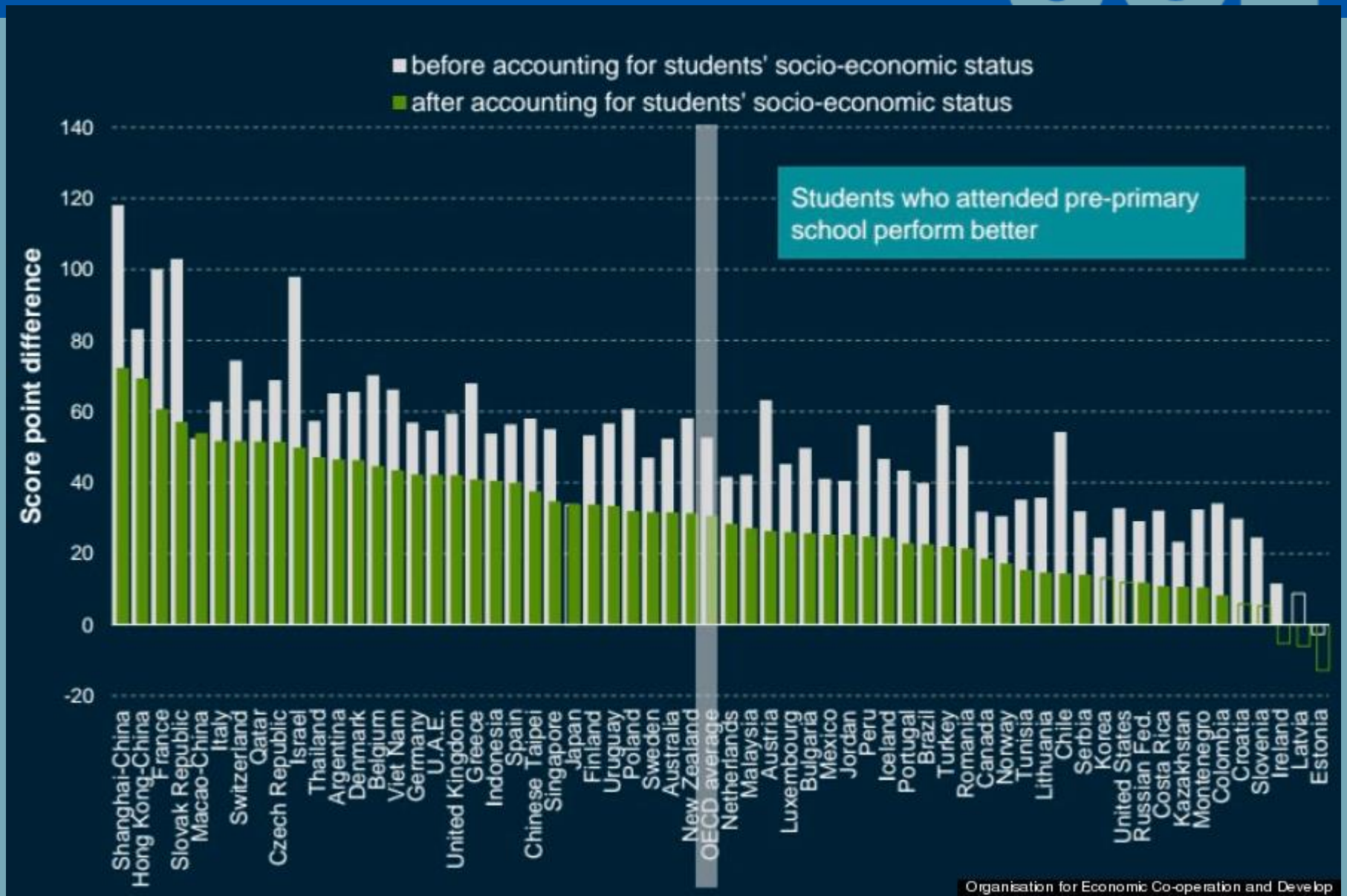


Influence of pre-primary education policies on PISA results 2009

This figure compares the score point difference in PISA results generated by different pre-primary education policies.



Difference in math performance for those who attended PSEC vs. those who did not attend. PISA (2012).



The Benefits of PSEC

Benefits of PSEC

- Cognitive skills: Literacy, numeracy, completed schooling, grade repetition, school placement.
- Non-cognitive skills: child health, behaviour, earnings, labour market participation, reduced welfare receipt, improved attention and discipline.
- Parental employment: Mainly maternal employment

The effects do vary by social class, maternal education, ethnicity, short/long-term.

PSEC benefits

Investments in early life have higher returns than those in later stages. (Cunha & Heckman 2007, Heckman 2008).

Reasons:

1- Early childhood is a sensitive period.

2- Early investments will increase the returns to future investments.

References

- Cunha, Flavio and Heckman, James (2007). “The technology of skill formation.” *American Economic Review 97(2), 31-47.*

- Heckman, James J. (2008). “Schools, skills, and synapses.” *Economic Inquiry 46(3): 289-324.*

Evidence

- Bingley &Westergaard (2012): PSEC positively associated with completed schooling. Higher benefits for disadvantaged children.
- Dumas & Lefranc (2012): lower grade repetition, higher scores, high school graduation, higher wages.
- Havnes & Mogstad (2012): higher attainments and labour market participation, reduction in welfare receipt. Effects were larger for children of low educated mothers.

- Cascio (2009, 2010): long term effect, reduction in high school dropout, lower incarceration (effects only found for white), no long term effects on earnings employment of receipt of welfare.
- Dhuey (2011): finds marginal long term effects on college graduation and earnings for Hispanic men (but not white or Black men).
- Spiess et al (2003): finds positive effects of PSEC on track placements. Immigrant children more likely to be in the middle track of Gymnasium is they attended PSEC.

- Fredrikson et al. (2010) PSEC closes a portion of the language gap between immigrants children and those with native-born parents.
- Berlinski et al. (2009): PSEC improves attention at school, test scores, class participation, and discipline.
- Baker et al (2008), Gelbach (2002): PSEC has a positive effect on maternal employment. Problem of causality.
- Datta Gupta and Simonsen (2010): those attending PSEC don't differ from those cared for by parents, but those in day care have behavioural problems.

- Felfe & Lalive (2011): PSEC has small developmental benefits for the average child but strong and lasting benefits for disadvantaged children.
- Magnuson et al. (2007 a and b): PSEC attendance for one year before kindergarten improves math and reading skills. However, some of the gains dissipate by fifth grade.
- Figlio & Roth (2009): attending PSEC reduces behaviour problems and grade repetition.
- Gormley et al. (2008): positive effects on socio-emotional development with larger benefits to disadvantaged children.

Measuring the Returns to PSEC Attendance

Measuring the returns to PSEC

- Causation vs. correlation.

Example: price of ice cream and swimming suits.

1- Confounders

2- Reverse causation

- Defining PSEC: formal, informal, regulated, unregulated.
- Data availability: participation, cost, availability of PSEC, type, parental social background.

Techniques

- Controlled trials
- Instrumental variables
- Regression discontinuity
- Difference in Differences
- Fixed effects models

Randomised Controlled Trials

- Randomly sampling two or more small samples. Provide a treatment to one of the samples.
- Wait for a certain period of time then measure the effects of the treatment.

- Examples: Perry experiment 1962 (preschool education for disadvantaged minorities in US). 123 children in Michigan. Positive effects up till age 40 include: educational attainments, employment and earnings, reduced criminality.

- Limitations: small sample, pupils moving in and out of treatment and control groups, pupils in the control group mimicking those in the treatment group, ethical issues, expensive, time consuming.

Instrumental variables

Example: measuring the effect of education on earnings.
Education is highly endogenous => challenge to measure a causal effect.
All determinants might affect earnings directly except changes in compulsory education laws.

Dumas & Lefranc (2010) exploit regional variations in the expansion of PSEC in France in the 1960s to identify exogenous variations in attainments.

Limitations: instrument validity and strength, external validity.

Regression discontinuity

- Uses a very large sample of children and restricting the sample based on a cut-off criteria.
- Example Gormley et al. (2005 & 2008): use of birthday cut-off to identify variation in PSEC attendance.

Difference in Differences

- The use of this techniques requires:

1- A sample with at least two observations in time: period 1 and period 2.

2- A treatment which affects a portion of the sample in period 2.

Period 1 => identification of initial differences between treatment and control groups

Period 2 => identification of the effect of the treatment.

Example: Drange & Kjetil (2010), using data from two districts in Oslo. The reform eliminated payments required from parents and was implemented progressively starting with one of the districts.

Limitation: the treatment and control groups should not be affected by any chocks other than the treatment.

Fixed effects models

- If we have a sample of individuals nested with larger units (siblings within families, students within schools), it is possible to eliminate the effect of the characteristics of these larger units by including unit-dummy-variables.

- Example Berlinski et al. (2008): use data with siblings and family fixed effects to address selection into preschool.

Tarek Mostafa

University College London

Institute of Education

Department of Quantitative Social Science

t.mostafa@ioe.ac.uk

www.tarekmostafa.net