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# Evidence For LSE Growth Commission – Human Capital

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# Relevant Issues

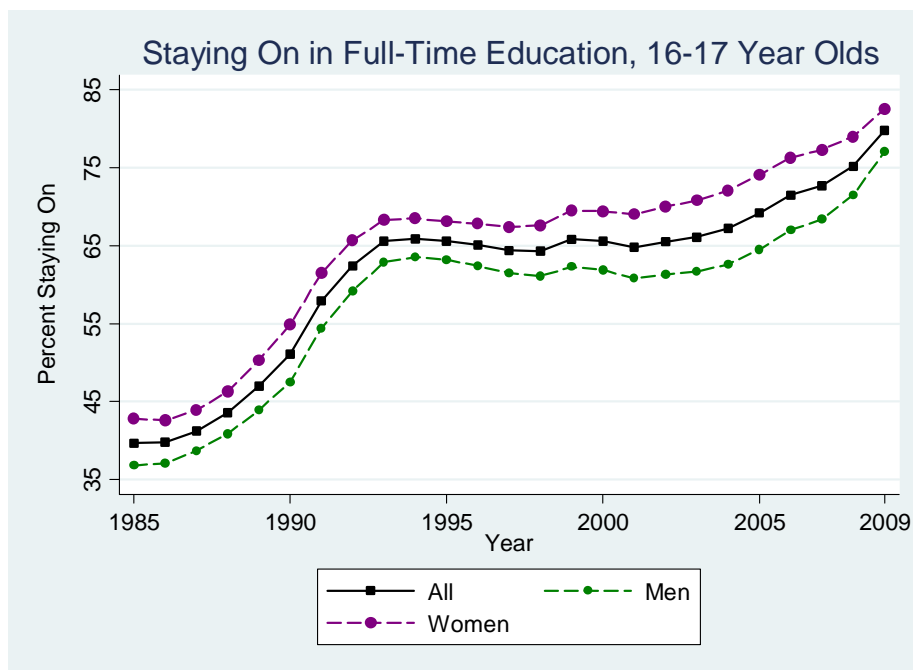
- It is undeniable that the skills and education of the workforce matter for productivity and, in turn, for overall growth.
- The key policy questions concern how those skills and education can be harnessed to generate productivity improvements and growth.
- In the UK context, there are a number of positives and negatives in this regard – on some dimensions we fare well, on others very poorly.
- Use this talk to try to highlight where we do better and worse.

# Outline

- Education participation trends and levels of education in the workforce.
- Trends in differences in wages for different groups.
- Basic skills problems.
- Inequalities in school and school policies.
- Summary.

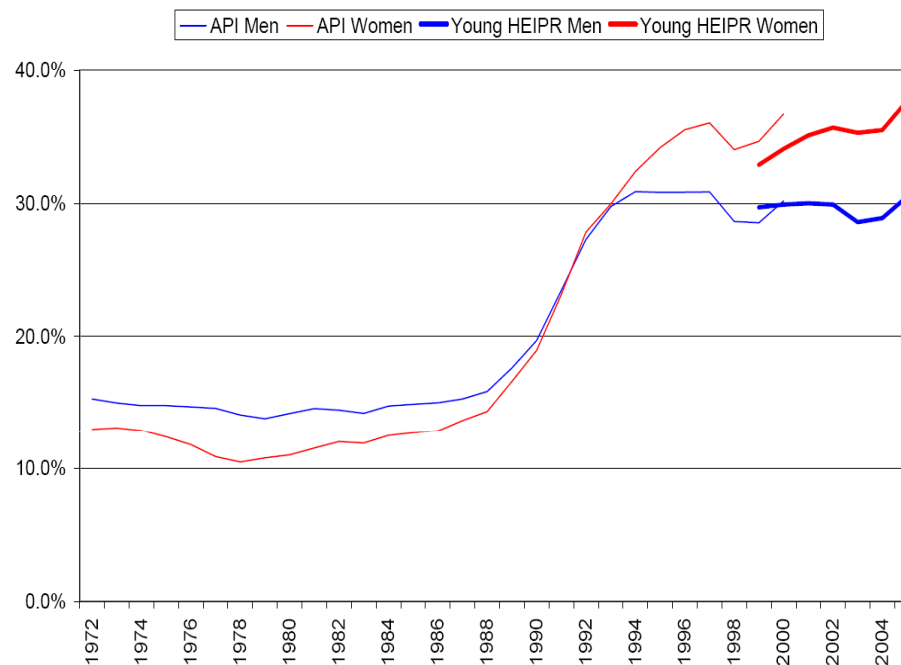
# Staying On and HE Participation

## Staying On Rates



Notes: From DfE: Participation in Education, Training and Employment by 16-18 Year Olds in England

## HE Participation



Notes: The Age Participation Index (API) is the ratio of the number of domiciled young people (aged less than 21) who are initial entrants to full time and sandwich undergraduate courses to the 18 to 19 year old GB population. The API was discontinued in 2001 and replaced by the Higher Education Initial Participation Rate (HEIPR) which has a different definition as it covers entrants to HE from a different age range (here from ages 17 to 20).

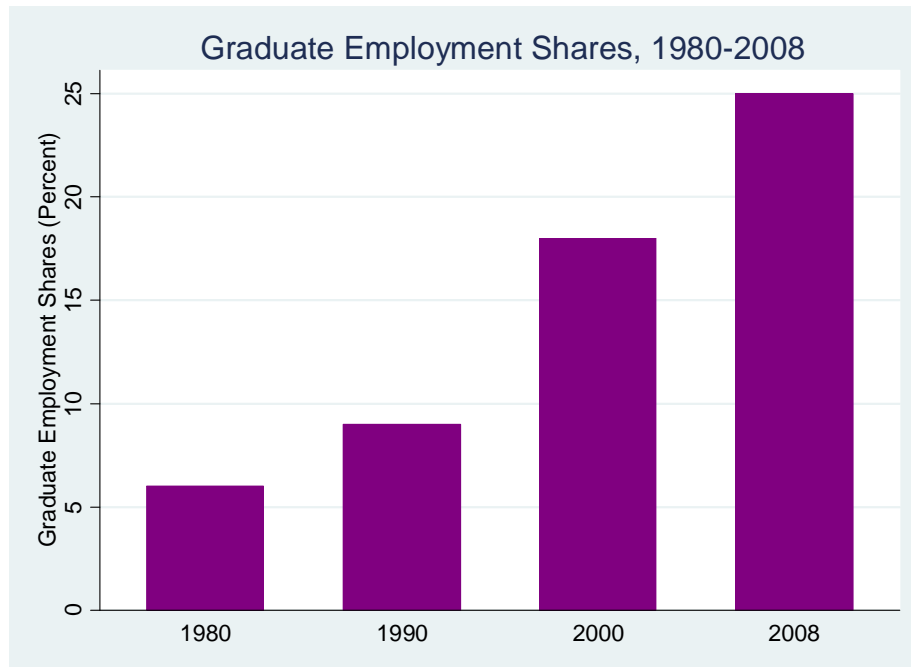
# Changes in Employment Shares By Education, LFS

<b>Men</b>	1981	1986	1991	1996	2001	2006	2011
No Qualifications	0.55	0.44	0.27	0.12	0.10	0.08	0.05
Intermediate A	0.25	0.32	0.48	0.57	0.57	0.54	0.53
Intermediate B	0.13	0.15	0.14	0.15	0.14	0.14	0.11
Undergraduate Degree or Higher	0.07	0.09	0.11	0.16	0.19	0.24	0.31
Of which:							
Undergraduate Degree Only	-	-	-	0.11	0.13	0.15	0.20
Postgraduate Degree	-	-	-	0.05	0.06	0.09	0.10
Sample Size	47860	35131	35547	86232	79911	72654	44724
<b>Women</b>	1981	1986	1991	1996	2001	2006	2011
No Qualifications	0.62	0.51	0.39	0.20	0.13	0.09	0.05
Intermediate A	0.20	0.27	0.37	0.49	0.53	0.52	0.51
Intermediate B	0.15	0.18	0.17	0.19	0.18	0.17	0.14
Undergraduate Degree or Higher	0.03	0.05	0.07	0.11	0.16	0.22	0.30
Of which:							
Undergraduate Degree Only	-	-	-	0.08	0.11	0.15	0.20
Postgraduate Degree	-	-	-	0.03	0.05	0.08	0.10
Sample Size	48704	34730	34855	85792	82375	76051	48183

Notes: From Lindley and Machin (2012), and calculated from Labour Force Surveys (annual for 1981, 1986 and 1991, quarterly thereafter). Employment shares are defined for people in work aged 26 to 60. Intermediate A qualifications include school-level qualification up to A levels (or an equivalent level diploma via further education), whilst intermediate B include professional level qualifications which are not a degree (like teaching and nursing qualifications).

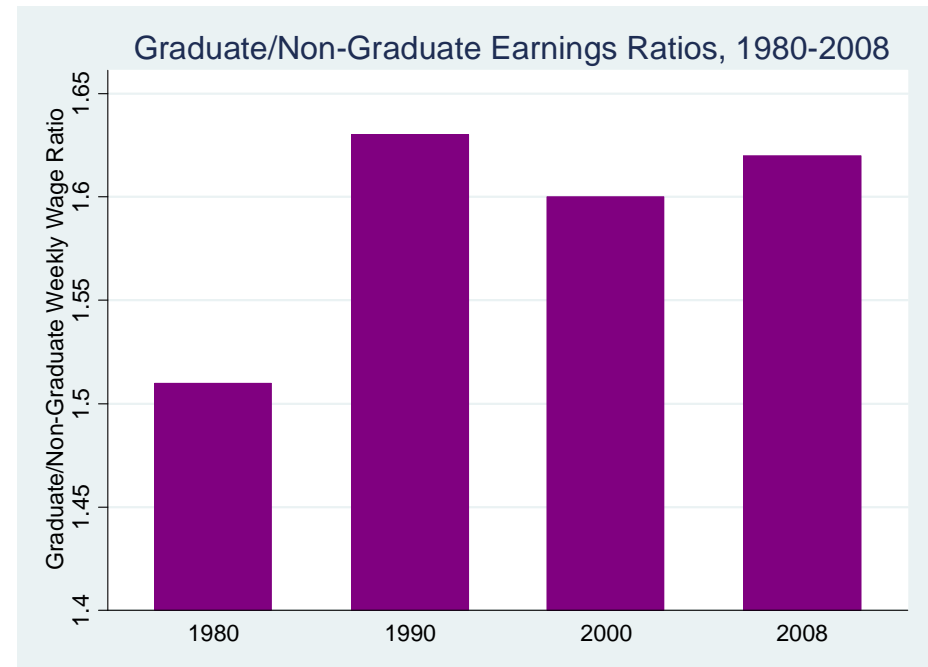
# Changes in Graduate Employment Shares and Relative Wages

## Graduate Employment Shares



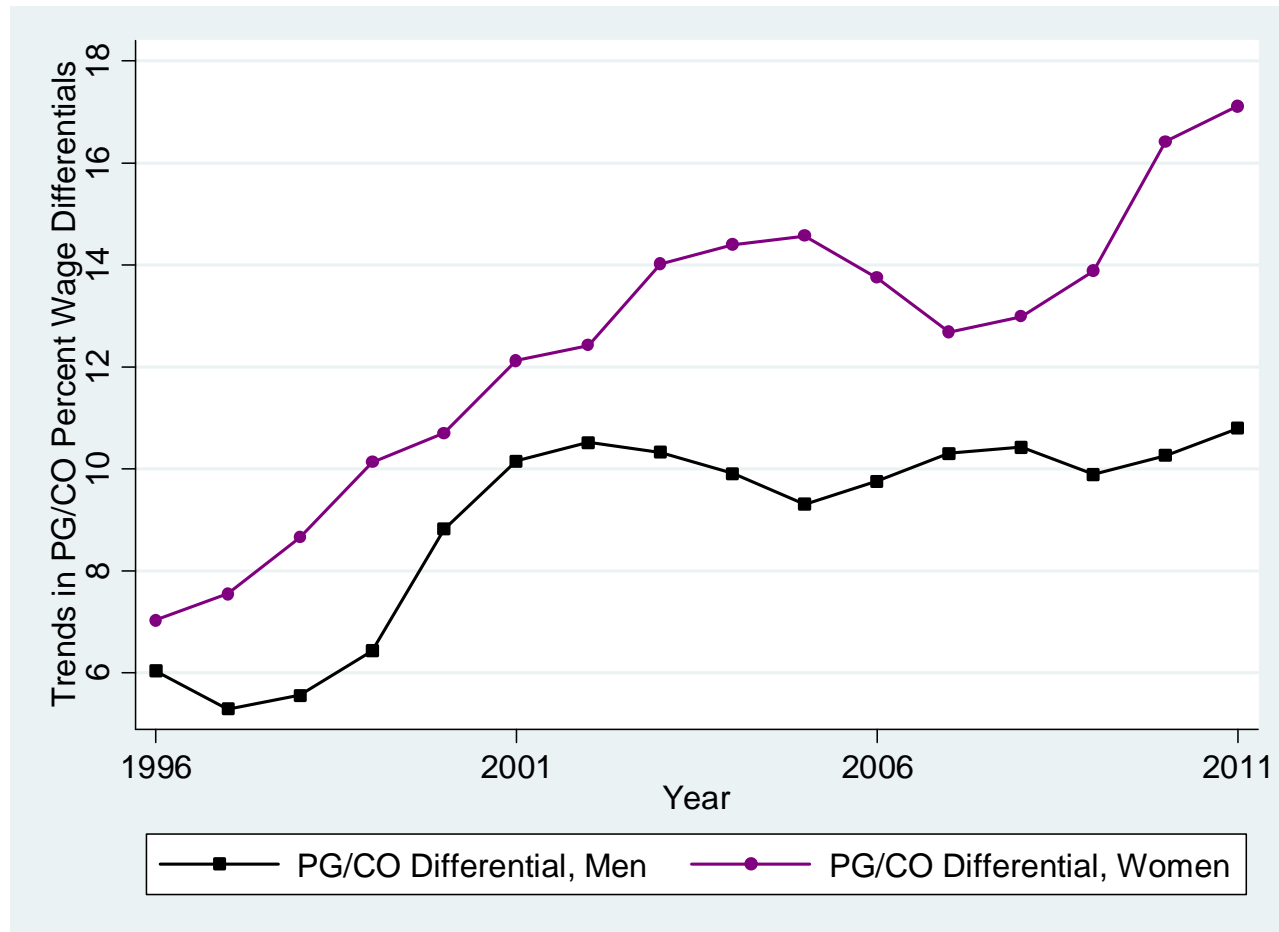
Notes: Based on General Household Survey data. Updated from Machin and Vignoles (2005).

## Graduate Wage Differentials



Notes : Graduate/non-graduate earnings differentials derived from General Household Survey data. Earnings for full-timers and the ratios are derived from coefficient estimates on a graduate dummy variable in a semi-log earnings equation controlling for age, age squared, gender and living in London. Updated from Machin and Vignoles (2005).

# Trends in Postgraduate/Undergraduate Wage Differentials



Notes: From Lindley and Machin (2012), composition adjusted from regressions that standardise for no qualifications, intermediate B, age, age squared, region, marital status, private sector and white.

# Intermediate Education

- The intermediate qualifications group have been losing out, in part because they do not have the requisite skills to use the new technologies that graduates are benefiting from. In this group, there are a lot of people with poor levels of education and skills (and more than in other countries).
- There are big deficiencies in basic skills – literacy, numeracy, ICT – amongst this group and the no qualifications group that contribute to this.
- This long tail in the lower part of the basic skills distribution is present in the UK (and in other places like the US) but not in countries whose education system seems to deliver better outcomes lower down the education distribution (Sweden, Germany, Finland).

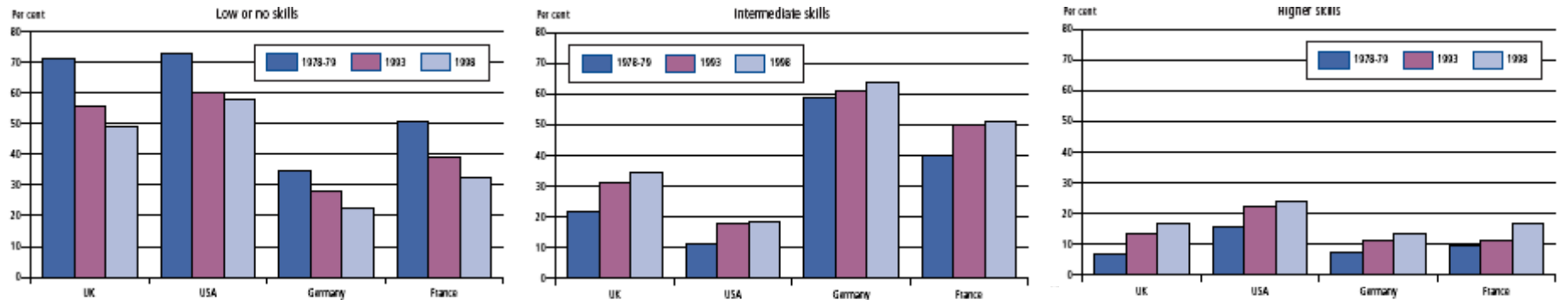


# Basic Skills Problems

	% of Adults Below IALS Level 2					
	Numeracy			Literacy		
	Age 16-25	Age 26-35	Age 36-45	Age 16-25	Age 26-35	Age 36-45
Netherlands	8	7	10	8	6	9
Sweden	5	4	7	4	5	7
Germany	4	5	6	9	12	14
Ireland	18	20	23	16	16	21
Great Britain	22	20	20	17	18	17
United States	26	20	18	23	20	19

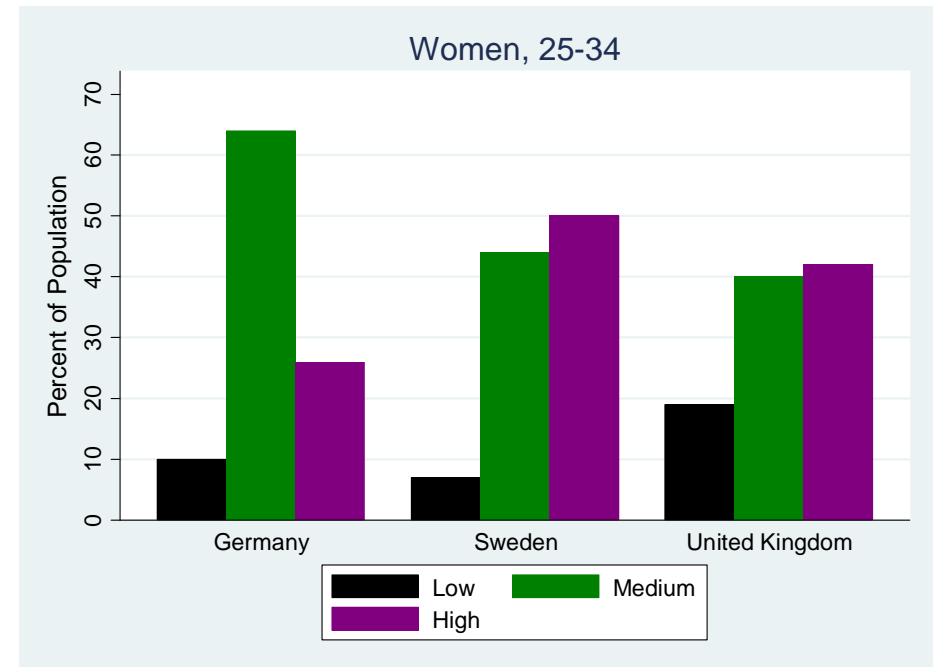
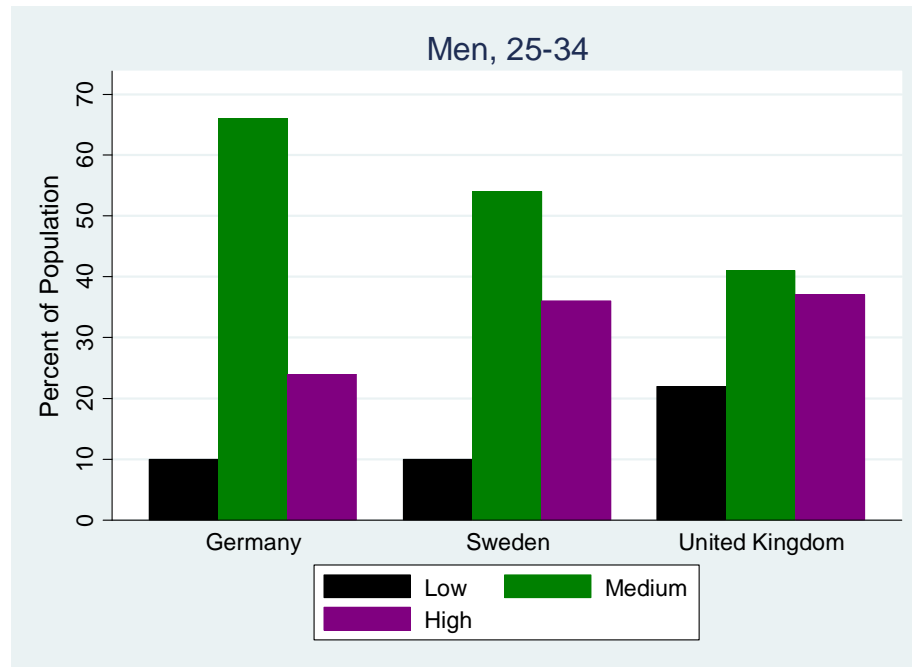
Notes: From Machin and Vignoles (2005).

# UK Has Traditionally Had More Low Level Achievers



Notes: Crafts and O' Mahoney (2001). Higher-level skills: USA — Bachelor degrees and above; UK — first degrees and above, membership of professional institutions; Germany — Hochschulabschluss and Fachhochschulabschluss; France — 0.25 of baccalauréat + 2 ans, Diplôme superior and En cour d'études initiales. Intermediate vocational qualifications: USA — Associates degrees and 50 per cent of those designated 'some college but no degree'; UK — TEC HNC/HND, teaching and nursing, BTEC ONC/OND, City & Guilds, apprenticeships; Germany — Meister/Techniker gleichwertig Fachschulabschluss, Lehr-/Anlehrausbildung gleichwertig Berufsfachschulabschluss, berufliches Praktikum; France — Cap, BEP ou autre diplôme de ce niveau, baccalauréat, brevet professionnel ou autre diplôme de ce niveau and 0.75 of baccalauréat + 2 ans.

# UK Still Has More Low Level Achievers, 2009 ELFS



Notes: Calculated from European Labour Force Survey. Native born population aged 25-34. Low is ISCED 1 or 2 - completion of pre-primary, primary or upper secondary education; Medium is ISCED 3-4 - completion of upper secondary or post-secondary non-tertiary education; and High is ISCED 5-6 - completion of tertiary education.

# Low Level Achievers

- These skill shortfalls in the middle and lower part of the education distribution have meant that graduates have been doing very well.
- Thus, wage inequality has risen sharply as employers increasingly demand graduates who have the skills to work with new technologies.
- Moreover, the scope for productivity gains from a well trained and skilled non-graduate workforce has been diminished (unlike, for example, Germany where the manufacturing base has stayed higher and where there is a bigger core group of skilled mid-level workers).

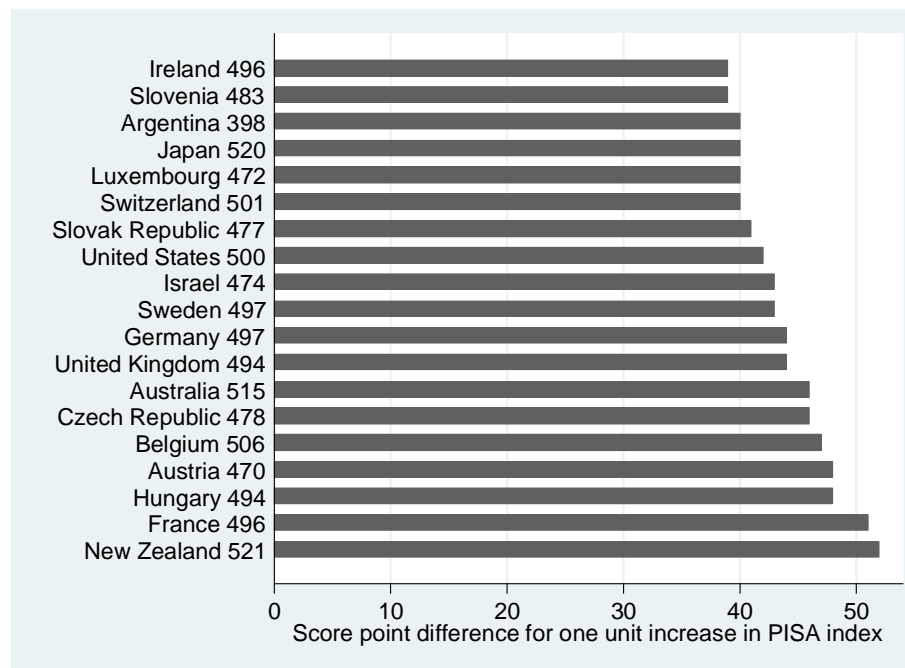
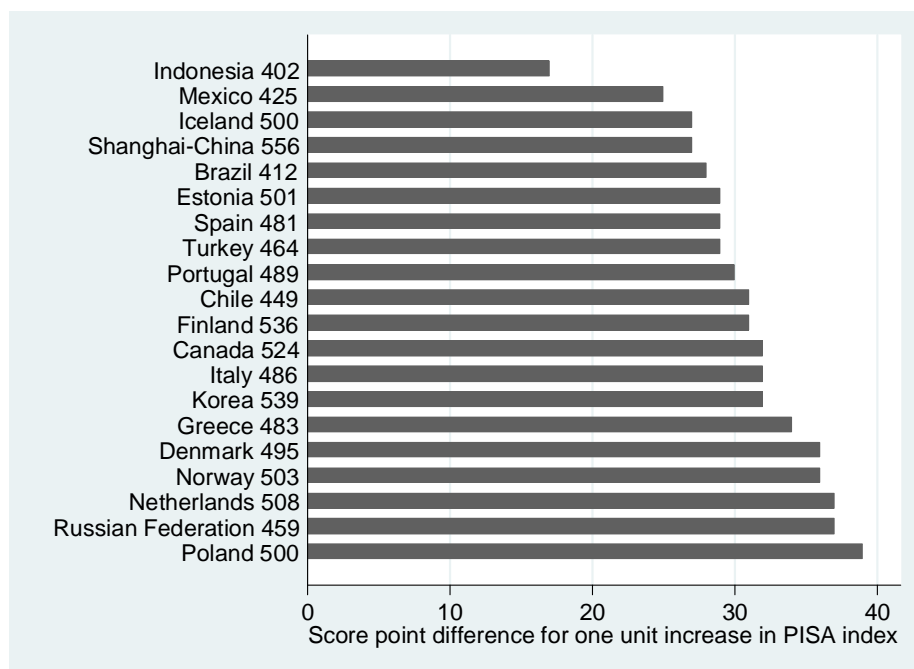
# Low Level Achievers

- Also, within the hard core group of low achievers are the NEETs (those not in employment, education or training). Especially young men.
- The problems of low achievement for part of the education distribution can, in part, be traced back to the compulsory school system.

# Schools

- The pattern from schools confirms this. The UK again has pupils that do very well, but a lower tail that do not.
- In PISA, for example, children in private schools do just as well as high achievers elsewhere and significantly better than state school children (PISA test scores are standardised to a mean of 500, and the private/state gaps in reading, maths and science in PISA 2009 are 61, 56 and 73 respectively).
- At the same time, the UK has one of the highest gradients with respect to family background in the PISA data.

# PISA 2009 Reading Test Score Gradients in Family Background



Notes: From Machin and McNally (2012). Source is OECD (2011), Education at a Glance, Paris. The Figure shows the score point difference in reading performance associated with one unit increase in the PISA index of economic, social and cultural status. Mean reading scores are shown by country names (the standardised mean across all PISA countries is 500, with standard deviation of 100).

# Schools

- This naturally leads on to the question of what can be done in schools to better reach the low achievers.
- There is a huge academic literature on what works better in generating improved outcomes.
- The recent English experience has also been interesting in this regard as a number of education policies have been introduced in attempts to drive up standards.
- These include policies organised around: incentives (for schools, teachers and pupils); choice and competition; changing school structures to generate more autonomy and improved governance; curriculum change.



# Schools

- There are some general conclusions that can probably be drawn:
  - i) Schools matter, but not as much as the family environment (as stressed by the school effectiveness area).
  - ii) The educational achievement of boys relative to girls, especially boys from poor backgrounds, has significantly deteriorated.
  - iii) Teachers matter for raising pupil achievement.

# Schools

- iv) Policies on incentives, choice and competition show mixed evidence and, in that mixed evidence, some suggestions of rising inequality in educational outcomes.
- v) Non-targeted throwing money at schools does not seem very effective. May be linked to managerial quality in schools.
- vi) In some scenarios, altering school types may work, but the jury is out on this as most changes that have been evaluated are relatively recent (like the academies programme in England and charter schools in the US).

# Summary

- There are good and not so good aspects of the human capital structure of the UK population in terms of scope to improve growth.
- We do well at the top end of the education distribution, producing highly skilled, internationally competitive graduates.
- In the middle and at the bottom end, we do much less well, and have more low achievers than in other countries. Basic skills problems are a serious issue, in the lower part of the ability distribution.



# Summary

- Thus, graduates have done much better more recently, and non-graduates have lost out, most likely with negative consequences for productivity and at the same time inequality has risen.
- With careful, evidence based thought and policy design, it should be feasible to improve the skills base to generate growth, without having to experience the additional cost of rising inequality.

# Back Up Slides

# What Are The Skills and Tasks Implying Postgraduates Are More in Demand Than Undergraduates? [2006 Skills Survey, GB]

Skill/Job Task	Postgraduates	Undergraduate Only	Gap (Standard Error)	Regression Corrected Gap (Standard Error)
<b>Cognitive Skills</b>				
Literacy	4.067	3.763	0.304 (0.079)	0.299 (0.079)
Simple Numeracy (Basic Arithmetic)	3.606	3.583	0.026 (0.094)	0.023 (0.093)
Advanced Numeracy (Maths and Statistics)	3.004	2.715	0.289 (0.104)	0.285 (0.103)
<b>Problem Solving Skills</b>				
Thinking of Solutions to Problems	4.311	4.277	0.035 (0.064)	0.037 (0.064)
Analysing Complex Problems	4.179	3.880	0.299 (0.083)	0.291 (0.083)
<b>People Skills</b>				
Making Speeches/Presentations	3.658	3.148	0.510 (0.095)	0.496 (0.095)
Teaching People	4.023	3.843	0.180 (0.086)	0.187 (0.085)
Dealing With People	4.658	4.684	-0.026 (0.047)	-0.017 (0.047)
<b>Firm Specific Skills</b>				
Knowledge of Products/Services	3.817	3.831	0.014 (0.091)	-0.002 (0.091)
Specialist Knowledge or Understanding	4.704	4.548	0.156 (0.055)	0.158 (0.055)
<b>Computer Usage</b>				
Using a Computer or Computerised Equipment	4.607	4.384	0.223 (0.068)	0.234 (0.068)
Proportion That Do Not Use a Computer	0.019	0.045	-0.025 (0.014)	-0.027 (0.014)
Simple (General Purpose) Computer Users	0.074	0.109	-0.035 (0.021)	-0.044 (0.021)
Moderate Computer Users	0.428	0.486	-0.058 (0.035)	-0.047 (0.034)
Complex Computer Users	0.479	0.361	0.118 (0.034)	0.118 (0.033)
<b>Routineness of Job</b>				
Performing Short Repetitive Tasks	2.689	2.890	-0.202 (0.073)	-0.204 (0.073)
Variety in Job	4.315	4.195	0.119 (0.061)	0.129 (0.061)
Sample Size	257	1095		

# Graduate Education by Family Income

<b>HE Qualifications (by Age 33/34) and Family Income, British Birth Cohorts</b>									
	1958 Birth Cohort, NCDS (in 1991)				1970 Birth Cohort, BCS (in 2004)				Cross-Cohort Change
	Lowest 20 Percent	Middle 60 Percent	Highest 20 Percent	HE Inequality	Lowest 20 Percent	Middle 60 Percent	Highest 20 Percent	HE Inequality	HE Inequality
<b>Men</b>									
a) Pr[Degree]	0.10	0.15	0.30	0.20 (0.03)	0.10	0.18	0.38	0.28 (0.03)	0.08 (0.04)
b) Pr[Undergraduate Degree]	0.08	0.11	0.22	0.14 (0.02)	0.07	0.13	0.24	0.17 (0.03)	0.03 (0.04)
c) Pr[Postgraduate Degree]	0.02	0.04	0.08	0.06 (0.02)	0.03	0.06	0.15	0.12 (0.02)	0.06 (0.03)
<b>Women</b>									
a) Pr[Degree]	0.09	0.08	0.26	0.17 (0.03)	0.12	0.23	0.36	0.24 (0.03)	0.07 (0.04)
b) Pr[Undergraduate Degree]	0.06	0.06	0.18	0.12 (0.02)	0.08	0.14	0.25	0.17 (0.03)	0.05 (0.04)
c) Pr[Postgraduate Degree]	0.02	0.02	0.07	0.05 (0.02)	0.04	0.08	0.12	0.08 (0.02)	0.03 (0.04)