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# The Evaluation of English Education Policies

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## Executive Summary

Educational inequalities emerge even before children start school. They remain pronounced in the years of compulsory schooling. Of particular concern are the test score differences associated with family background. Data from the OECD PISA study shows that test score gaps vary systematically by family background across countries with very different education systems.

Educational disadvantages acquired during schooling (and pre-school) strongly impact on whether an individual participates in post-compulsory education. OECD data shows that in many countries the percent of individuals who complete teritiary education is far higher if their parents also have tertiary education. Furthermore, educational inequalities do not stop growing when people have completed their full-time education. Data from many countries show that the probability of undertaking non-formal job-related education is higher for those who already have higher levels of education.

What is the role of policy in reducing these attainment gaps? While policies at all stages of the lifecycle are relevant, we focus on a review of evidence about school-level policies in England. This is because the years of compulsory schooling are a very important time for government intervention in a way that potentially affects all students. Also, there is a body of good evaluation research of school-level policies in England in recent years. We review evidence under the following headings: the efficacy of school resources; market incentives; school autonomy and pedagogical approaches for raising educational attainment in schools.

The evaluation challenge with regard to school resources is that additional resources are often disproportionately allocated to disadvantaged students. Unless this is fully dealt with in the methodological design, one can easily estimate a relationship than is too low. There have been several recent studies looking at this issue for England using a census of all pupils (the National Pupil Database). In general, the studies suggest a modest positive effect of additional school resources. However, the most recent study (Gibbons et al. 2011) suggest that the effect could be much larger – at least for students in disadvantaged, urban areas. In fact, most of these studies suggest that school expenditure has a larger effect on disadvantaged students. This is good news for policies like the Pupil Premium, although it also suggests that cuts to school expenditure are an important concern.

Over the last thirty years, there has been a concerted effort to increase parental choice, competition between schools and accountability for the performance of children. The evidence on school choice suggests that it does not offer the same advantages to those from lower and higher socio-economic groups. This is largely because parents from lower socio-economic groups cannot afford to live close to a very popular school. When schools are over-subscribed, proximity to the school is of key importance. Thus, school choice (although good in itself) does not help to reduce socio-economic gaps in educational achievement. Furthermore, school competition does not appear to improve educational attainment.

One reason why school competition may not be effective is because schools do not have enough autonomy for their day-to-day organization. In some countries, more independent states schools have been allowed to emerge. The rationale is that this greater autonomy will encourage more innovative policies in schools and help to raise standards. In England, these schools are called 'academies' and they were originally established as a replacement for a failing secondary school in an area of disadvantage. Evaluation evidence suggests that these schools started to perform better and also helped to boost the performance of neighbouring schools. As the policy was initially introduced to disadvantaged areas, it has been an instrument to reduce the attainment gap along the socio-economic dimension (when viewed at a national level). However, one has to be careful about any projection of effects from a relatively small number of schools that became academies over this time period. Schools that are currently enrolling on the Academies Programme have very different characteristics (e.g. on average they are less disadvantaged at baseline). Furthermore, the expansion of the programme presents new challenges – for example, for monitoring and accountability; for small schools; for services traditionally provided by Local Authorities to all schools in their area.

Whereas school autonomy seems to have become a popular concept in England since 2000, this is not true of some aspects of school organisation. For example, the National Literacy and Numeracy Strategies were very prescriptive measures to raise standards in literacy and numeracy via pedagogical methods. These Strategies were introduced in the late Nineties but preceded by the 'National Literacy Project' and 'National Numeracy Project' respectively. The fact that these 'projects' were not implemented across all Local Authorities has given researchers scope to evaluate their effectiveness (by comparing schools where the 'literacy hour' and 'numeracy hour' were implemented relative to schools in a comparison group before and after the policy was introduced). Evaluation evidence suggests that these pedagogical approaches were an extremely effective way to raise pupil achievement at a low cost. However, there is still a hard core of students for whom generic pedagogical approaches are not sufficient. One-to-one programmes such as 'Reading Recovery' have been shown to be very effective for these students. However, they are expensive programmes and need to be carefully targeted. Moreover, evidence is needed on the long-term effects of such programmes to help guide future investment decisions.

England offers a useful setting for policy evaluation in education. A large number of policies have been implemented and at least some of these have been rigorously evaluated. There is evidence to suggest that policies can be effective in reducing (or reinforcing) socio-economic gaps in educational achievement. Thus, we should not regard large socio-economic gaps as inevitable. This partly has to do with the choices that are made in educational policy.

# The Evaluation of English Education Policies

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## Acknowledgments

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## 1. Introduction

One key feature of the English education system since the 1988 Education Act has been the design and implementation of a number of educational policies aimed at improving educational standards and achievement.[2] There have been a range of policies introduced at all stages of education, and by now there have been a number of evaluations of these policies.

In this paper we take the opportunity to critically appraise these evaluations and consider the scope that different policies have had to influence educational achievement. There are now evaluations of policies aimed at different ways of trying to enhance educational performance and/or reduce educational inequalities. Thus, we think it is timely to consider these together, with an aim to develop a better understanding of which kinds of evaluations have been successful and what kinds of policies have delivered education improvements in England.

The structure of the paper is as follows. In the next Section, we describe educational inequalities at different stages of the education sequence as a means of motivating the need for implementation of education policies and for their evaluation. Section 3 focuses in more detail on evaluation of particular school-level policies. Section 4 offers some concluding remarks.

## 2. Educational Inequalities

Inequalities in educational achievement can be identified at different points throughout individuals' lives. Indeed, inequalities in education emerge early in the lifecycle and gaps can and do widen as the education sequence progresses. These inequalities are described in this Section of the paper, with an aim to use them as motivation for why evaluation of

[2] See Machin and Vignoles (2005) for a description of some of these policies and education reforms.

educational policies aimed at alleviating educational inequalities and reducing achievement gaps is an important research area in the education field. The description we offer is ordered by the education sequence that individuals follow, beginning with the pre-school years, moving through the years of compulsory schooling, then on to post-compulsory education and finally to adult, or lifelong, learning.

**Pre-school education gaps**

By now it is well known that gaps in educational achievement are present even before children start school. The environments in which they grow up, and their family background, means that children enter school with differing levels of cognitive (and non-cognitive) skills. Consider the vocabulary skills of five year olds in the Millennium Cohort Study (MCS), as reported in Table 1.[3] The Table (taken from Dustmann et al, 2010) breaks down the MCS vocabulary test by gender and ethnicity. The test scores have been standardised to have a mean of 50 and a standard deviation of 10, so it is evident from the dispersion in the numbers in the Table that sizeable gaps in vocabulary skills exist by gender and across ethnic groups even at the time of school entry.

**Compulsory schooling**

The gaps seen at school entry evolve through the years of compulsory schooling. Some gaps widen and others narrow as children's abilities at school lead them to move up or down the distribution of educational outcomes. This, of course, can be affected by educational policies that have scope to affect educational achievement.

Educational inequalities remain pronounced in the years of compulsory schooling. Consider Figure 1, which shows one example of educational inequality, namely test score differences associated with family background. The Figure shows reading test score differences

[3] The MCS is a longitudinal survey of around 19,000 children born in the UK over a twelve month period from 2000 to 2001. The first survey took place when the children were around nine months old. Follow-up interviews have, at the time of writing, taken place when children were aged three, five and seven.

associated with a one unit increase in the PISA index of economic, social and cultural status (ESCS) for 15 year olds in thirty nine countries, based upon data from the 2009 Programme of International Student Assessment (PISA).[4] The test scores have a mean of 500 and a standard deviation of 100 and the mean score varies significantly by country (as shown on the y-axis of the Figure). In all countries, however, there is a significant positive association between family background measured by the ESCS index and test scores. The mean impact of a unit increase in the index is 38 across countries (i.e. 38 percent of a standard deviation) and the range of estimates goes from 17 (Indonesia) to 52 (New Zealand). The striking finding from the PISA data is that test score gaps systematically vary by family background in countries with very different education systems and where the quality of schooling varies.

**Post-compulsory education**

Educational disadvantages acquired in the years of pre-school and compulsory schooling strongly impinge on whether individuals participate in post-compulsory tertiary education. Figure 2 shows the percentage of individuals who complete tertiary education in thirteen countries broken down by the level of their parents' education. The lightest bar corresponds to parents with the lowest level of education (ISCED 0-2, those with completed education at pre-primary, primary or upper secondary level) and the darkest to those with the highest level (ISCED 5-6, those with a completed tertiary education). The gaps are sizeable and show a consistent pattern across all the countries in the Figure - the percent of individuals who complete tertiary education is far higher if their parents also have a tertiary education.

[4] The PISA ESCS index is derived from the following variables: the International Socio-Economic Index of Occupational Status (ISEI); the highest level of education of the student's parents, converted into years of schooling; the PISA index of family wealth; the PISA index of home educational resources; and the PISA index of possessions related to "classical" culture in the family home. The variable is scaled to have a mean zero and a standard deviation of one, so the numbers in the Figure can be read as a percent of a standard deviation. See OECD (2011) for more information.

**Adult learning**

Educational inequalities do not stop increasing when individuals complete their full-time education. They also tend to widen for adults in their working lives as adult education and training occurs more for those who already have higher education levels. This is shown in Figure 3, which shows the percentage of adults in twenty eight countries who received non-formal job-related education in 2007 by education level. In all cases, this percentage is higher if individuals have higher levels of education.

**Summary**

This Section makes it evident that educational inequalities emerge and persist at all stages of the education sequence. Some educational achievement gaps widen out as individuals progress further through the education sequence, especially those connected to disadvantage. Thus, there is a significant need for careful evaluation of educational policies that are designed to try to affect inequalities in education. The raft of education policies introduced to the English education system in the last fifteen years or so offer a very good setting to consider such evaluation methods, and their success (or otherwise) in enabling us to gain a better understanding of what works in education, and this is what we consider in the next Section of this paper.

**3. Policy Evaluation Relating to Schools in England**

Although policies at all stages of the lifecycle are relevant for improving educational attainment and reducing inequality, in this Section we focus on school-level policies in England. This is because the years of compulsory schooling are a very important time for

government intervention in a way that potentially affects all students.[5] It is also because, in addition, there is a body of good evaluation research of school-level policies in England in recent years. We need to be selective of policy areas to be able to offer a rigorous critical appraisal and so we therefore have chosen to discuss policies and their evaluation under the following headings: the efficacy of school resources; market incentives; school autonomy; and pedagogical approaches for raising educational attainment in schools.

**School Resources**

One of the perennial debates in the economics of education literature is whether additional school expenditure has an effect on raising pupil attainment. It is also important to ask whether such policies can be implemented in a way to reduce the kinds of attainment gaps discussed earlier.

The relevant question is not about spending *per se* (which of course is necessary) but whether additional spending can be cost effective at the typical levels found in developed countries. Internationally, there are many studies about school expenditure but there are different views about how to best interpret results. Hanushek (2008), for example, argues that accumulated research suggests no clear, systematic relationship between resources and student outcomes. However, others place more weight on studies with a particularly strong methodological design that show positive effects (e.g. the class size studies of Angrist and Lavy, 1999; Krueger, 1999; Krueger and Whitmore, 2001).

The difficult empirical issue in this area is that additional school resources are often disproportionately allocated to disadvantaged students. Unless this is fully dealt with in the methodological design, the relationship between resources and attainment is easily obscured. The positive association between school resources and educational disadvantage is counter-balanced against the negative association between educational disadvantage and educational attainment. The net result can easily be an observed association between school resources and educational attainment that is too low and does not reflect the true

[5] Students are not forced to attend pre-primary education or to stay in education beyond age 16. The compulsory years of education are the only time that government education policies can potentially affect all students.

causal relationship.[6] It is very difficult to prove that this particular problem has been overcome, particularly where it is not possible to implement randomised controlled experiments. Yet as the third biggest category of government expenditure (in the UK)[7], it is important to get a sense of whether an increase or a reduction of spending is likely to affect student outcomes – which are so important for the future of the economy as well as for the individual's future prosperity.

There have been several recent studies looking at this issue for English using a census of all pupils (the National Pupil Database) and expenditure data for all schools. The English National Curriculum is divided into four 'key stages', at the end of which students are evaluated by their teachers (at age 7 and 14) or they undertake national tests that are externally set and marked to the school (at age 11 and 16). Two studies that evaluate the relationship between expenditure and attainment in secondary school are by Levačić et al. (2005) and Jenkins et al. (2006). They look at outcomes at age 14 (end of Key Stage 3) and age 16 (end of Key Stage 4) respectively. Both studies find a small positive effect of resources on pupil attainment. A difficulty is that they use political control as an instrument for school expenditure. This involves making the assumption that political control of a Local Authority only influences pupil-level outcomes through school expenditure. However, Holmlund et al. (2008) show that changes in political control are correlated with changes in the demographic characteristics of Local Authorities, even when the sample is restricted to Local Authorities where the election outcome is 'close' and there is a small difference in the share of seats of the two largest parties.

Government initiatives have provided a better framework to examine causal effects in this context. Machin et al. (2004, 2010) evaluate a flagship policy of the Labour government in the early 2000s – the Excellence in Cities (EiC) programme for English secondary schools. In this programme, schools in disadvantaged, mainly urban, areas of England were given extra resources to try to improve standards. Initially most of the funding was directed at core strands (Learning Support Units; Learning Mentors; a Gifted and Talented Programme). Over time, schools were allowed greater flexibility in how to use the funding. The methodological approach is based on 'differences-in-differences', where schools in the 'treatment group'

[6] Holmlund et al. (2010) illustrate that this is an important concern in an English context.
[7] This refers to education spending as a whole, although most education spending is at school-level.

were compared to schools in appropriately defined comparison group before and after the policy came into effect. Similarly to the study by Levačić et al. (2005), they find evidence for small average effects of additional resources for maths but not for English.

The studies looking at resource effects for primary schools (Gibbons et al, 2011; Holmlund et al. 2010) find that effects are substantially higher for economically disadvantaged students. For secondary schools, both Machin et al. (2010) and Levačić et al. (2005) find that resource effects are higher for disadvantaged students (although this is not found by Jenkins et al, 2006). These findings are encouraging for policy because they suggest that mechanisms have been in place to ensure that disadvantaged students benefit disproportionately from increasing school resources. This helps to reduce the attainment gap between socio-economic groups from what it might otherwise be. On the other hand, it is interesting that both Machin et al. (2010) and Levačić et al. (2005) find that high ability students from disadvantaged backgrounds are most likely to benefit from these policies. Machin et al. (2010) highlight a particular group of concern – low ability students from disadvantaged backgrounds. These are 'hard to reach' students who may require more resource-intensive programmes. Another important question is what to make of an effect that appears to be small (at least on average). Levačić et al. (2005) find that spending £100 more per pupil would raise maths attainment by 0.04 of a level whereas Machin et al. (2011) find that spending £120 more per pupil raises maths attainment only by 0.01 of a level (after about 3 years of the policy).[8] Bradley and Taylor (2010) look at whether the same policy (Excellence in Cities) and the 'Specialist Schools' policy had an effect on student outcomes at age 16.[9] They also report evidence of only modest effects.

To conduct an accurate Cost-Benefit Analysis, we need information both on costs and how estimated educational benefits translate into a range of later outcomes – for example, further education, probability of employment, wages, crime. Generally, it is not difficult to estimate the costs of a policy. However, it is often difficult to estimate future benefits. In the absence good information, Machin et al. (2010) ask how much the average benefits in

[8] In the Key Stage attainment tests, progress is measured in 'levels'. At each Key Stage, the National Curriculum defines the level at which students are expected to achieve. In the Key Stage 3 test (i.e. the test used in Levačić et al. (2005) and Machin et al. (2011)), most children achieve within the range of levels 3-8.

[9] Specialist schools are state-maintained secondary schools with a designated subject specialism. They need to apply for specialist status and, if successful, receive significant additional funding.

terms of exam achievement would have to translate into higher wages for the policy to break-even. In line with the literature, they assume an average rate of return to a year of schooling to be about 8 per cent. Using the Family Resources Survey data for England and Wales, they obtain a wage profile (an average of weekly earnings by age, for all individuals). If pupils were to obtain the equivalent benefit of a whole year of education at age 14 and then started work at age 16, the lifetime benefit of this extra year is estimated to be about £20,000.[10] According to the National Curriculum a one level improvement corresponds to about 2 years of schooling. If this is true, the benefit of EiC is about 0.02 of a year of schooling (i.e. 0.01 x 2) – which comes to about £400 over the lifetime (i.e. 0.02 x £20,000). This is very similar to the cost of EiC policy (£120 x 3). This very simple analysis suggests that EiC policy breaks even if improvement in Key Stage 3 results corresponds to years of schooling in the way suggested by the National Curriculum. Even if this is way off the mark, benefits of improved attendance at school and higher achievement at age 14 may lead to economic benefits in the short and long term that we do not observe – for example, increased probability of staying on at school beyond compulsory school-leaving, higher probability of employment, lower probability of turning to crime.

There have been two recent papers about the effects of school expenditure in primary schools (Holmlund et al. 2010; Gibbons et al. 2011). Holmlund et al. (2010) use the National Pupil Database between 2002 and 2007 – a period of time in which there was a large increase in school expenditure in England. They find evidence of a consistently positive effect of expenditure across subjects. The magnitude is a little bigger than that found for secondary schools but still modest. Gibbons et al. (2011) uses a very different strategy than that used for other papers and the study applies to schools in urban areas that are close to Local Authority boundaries. The percentage of poor children in these schools is much higher than the national average (28% are eligible to receive free school meals, compared to 16% nationally). The strategy uses the fact that closely neighbouring schools with similar pupil intakes can receive markedly different levels of core funding if they are in different education authorities. This is because of an anomaly in the funding formula which provides an 'area cost adjustment' to compensate for differences in labour costs between areas

[10] The estimated benefit is calculated based on the weekly earnings of all individuals in the Family Resources Survey (2002/03) between the age of 16 and 64. The Net Present Value of an extra year of schooling at age 14 is then calculated using a discount rate of 3.5% - the recommended discount rate in the UK HM Treasury Green Book (http://greenbook.treasury.gov.uk).

whereas in reality teachers are drawn from the same labour market and are paid according to national pay scales. The study shows that schools on either side of Local Authority boundaries receive different levels of funding and that this is associated with a sizeable differential in pupil achievement at the end of primary school. For example, for an extra £1,000 of spending, the effect is equivalent to moving 19% of students currently achieving the expected level (or grade) in Maths (level 4) to the top grade (level 5) and 31% of students currently achieving level 3 to level 4 (the expected grade at this age, according to the National Curiculum). Bearing in mind that a one level improvement in the National Curriculum has been interpreted as equivalent to two years of schooling (discussed above) and that each extra year of schooling has an estimated benefit over the lifetime of £20,000, the cost of additional school resources can be easily justified in a cost-benefit framework.

Taken together, the papers suggest that there is important heterogeneity in the effects of pupil expenditure with stronger effects in poorer areas (which is good for reducing the attainment gap between socio-economic groups). They suggest that school resources can, in an appropriate setting, matter a lot and that government cuts in this area are of real concern.[11]

**Incentives**

Over the last thirty years, there has been a concerted effort to increase parental choice, competition between schools and accountability of schools for the performance of children. If the 'market' works well, parents should be able to make an informed choice about what school to send their child and schools should have an incentive to improve performance because their funding is linked strongly to pupil numbers and information is made available to parents through the accountability framework (school inspections and publication of 'league tables' of school performance).

[11] In education, nominal spending is staying constant (apart from the 'pupil premium'). However, simple calculations suggest that even schools benefiting from the 'pupil premium' will experience a real decrease in funding because of high inflation.

Legislation from the 1980s has enabled parents to apply to any state school. Schools are only permitted to discriminate if there is over-subscription and according to an enforced Code of Practice. The most important over-subscription criteria is usually proximity to the school. Evidence that parents act on available information in making these choices is shown in the literature relating school quality to house prices. In England, the positive relationship between school quality and house prices is shown by Gibbons and Machin (2003), Rosenthal (2003) and Gibbons et al. (2009).[12] Burgess et al. (2009) also show that academic standards are important in both parents' stated and revealed preferences for school choice. Of course, the link between choice and parental income means that many parents are unable to exercise meaningful choice because of their lower income (i.e. they cannot afford to live very close to a popular school). Furthermore, West and Pennell (1999) show that higher socio-economic groups have better information and understanding of school performance. Thus, 'school choice' (although good in itself) does not offer the same advantages to those from lower and higher socio-economic groups. It does not help to address attainment gaps by family background.

Parental choice and incentives for schools to perform well should give rise to competition between schools. In the international literature, there have been many attempts to investigate whether increased competition gives rise to improved educational attainment. However, the international evidence is 'voluminous and mixed' (Gibbons et al. 2008) and there are few papers in England. Bradley et al. (2001) look at this at school-level (for secondary schools) and find that schools with the best examination performance have grown more quickly. They argue that increased competition between schools led to improved exam performance. The first pupil-level analysis on this subjects relates to primary schools in the South East of England (Gibbons et al. 2008). The authors find no relationship between the extent of school choice in an area and pupil performance. The study also suggests that there is no causal relationship between measures of school competition and pupils' educational attainment. The only case where choice and competition might be beneficial is in the case of faith schools.[13] This might because many faith schools are

[12] See reviews of the wider literature in Black and Machin (2010) and Machin (2011).

[13] Faith primary schools are attended by about a fifth of all pupils. One third are Catholic Schools (voluntary aided) and two-thirds are Church of England schools (under more direct control from the Local Authority), with a very small number of schools aiming to educate children of other faiths. Such schools can only discriminate

voluntary aided and have great autonomy than other state schools (e.g. there is less representation from the Local Authority on the board of governors; they control their own admissions, although they must adhere to the Code of Practice). Therefore in might be the case that competition would play a more important role in school performance if schools were more autonomous.

**School autonomy**

In most countries, state schools operate within a framework imposed on them by their jurisdiction in terms of rules about teacher pay and conditions, admissions, the curriculum, composition of the governing body and so on. In some countries, more independent state schools have been allowed to emerge. For example, there are 'charter schools' in the US, 'free schools' in Sweden and 'academies' in England (since the year 2000). The details vary between countries but in all cases, the general idea is that a new school type emerges where schools that are funded by the state are given more autonomy than the typical state schools in how they are allowed to operate.[14] The rationale is that this greater autonomy will encourage more innovative policies in schools and help to raise standards. They may also increase competition between schools in the local area, thereby raising attainment.

In England, 'academies' are managed by their sponsors and any governors they appoint. They have responsibility for employing all staff, agreeing pay and conditions, freedom over most of the curriculum (except for core subjects) and all aspects of school organisation. Originally, academies were established as a replacement for a failing secondary school in an area of economic disadvantage. Details of how the system operated are well documented by Wilson (2011). More recently the nature of the academies programme has changed with the prospect of becoming an academy school becoming much more widely available.

by religion in the event of over-subscription. As a result, many of these schools have a significant minority of children from other faith traditions than their own.

[14] See Machin and Vernoit (2011) for a more detailed discussion of how greater autonomy exists in one particular type of these newer kinds of schools, academies in the English secondary school sector. In a nutshell, there is more autonomy as compared to a traditional state school in that there is less control from the Local Authority, as admissions and teacher hiring are under school control, governing bodies are both more diverse and have more responsibility for school polices and the curriculum followed can be more broadly defined (as the National Curriculum is only followed in english, maths, science and ICT).

Machin and Vernoit (2010) show that schools that have recently expressed an interest in converting to an academy are characterised by a more advantaged student intake (e.g. a lower proportion eligible to receive free school meals) and higher educational attainment.

Machin and Vernoit (2011) provide evidence on the effects of the programme for schools that because academies between school years 2002/3 and 2008/9. All these schools were secondary schools. They use the pupil census (the National Pupil Database) to implement a difference-in-differences approach. That is, they estimate the impact of academy school conversion on the school's pupil intake and performance by comparing average outcomes in these schools relative to an appropriately defined comparison group, before and after the conversion took place. They adopt a similar approach to look at the effect of academy school conversion on neighbouring schools.

There are three main findings. First, there was a step-change in the pupil intake of schools after they converted to academy status. They started to attract and admit higher ability pupils. Second, these school also started to perform significantly better in GCSE exams (even accounting for their improved intake).[15] Moreover, the achievement gains were most marked in schools that made the biggest move in autonomy (i.e. changing from a community school to an academy, as compared to moves to academy status from being voluntary controlled or aided, from being a foundation school or from being a city technology college). Third, neighbouring schools started to perform better even though they were left with a lower pupil intake. The positive impact on neighbouring schools may be because of increased choice and competition and/or the sharing of academy school facilities (and expertise) with the wider community.

Thus, the idea of granting schools greater autonomy seems to have worked well in England. Furthermore, because the policy was initially targeted at disadvantaged areas, it has been an instrument to reduce attainment gaps along the socio-economic dimension (when viewed at a national level). However, one has to be careful about any projection of effects from a relatively small number of schools that became academies over this time period. Schools that are enrolling into the Academies Programme now have different characteristics

[15] GCSE stands for General Certificate of Secondary Education. The exams are undertaken by pupils in their final year of compulsory schooling when they are aged 16.

(e.g. on average they are less disadvantaged at baseline) and it might be that the Programme has different effects in such schools. Furthermore, concerns about the future include whether centrally provided services provided by Local Authorities (e.g. for students with special needs) will be undermined if too many schools become academies; whether small schools will have the people and infrastructure to cope with new responsibilities; whether more centralised regulation (i.e. a national Schools Commissioner rather than the Local Authority) will be effective in identifying and dealing with problems that might arise. A crucial aspect of markets that is hard to operationalize in the public sector is the exit of schools (or management) that are doing badly for their students. It remains difficult, unpopular and slow to close down schools, even if they are performing badly.

**Pedagogy**

Whereas school autonomy seems to have become a popular concept in England since 2000, this is not true of some aspects of school organisation. There have been very prescriptive measures to raise standards in literacy and numeracy via pedagogical methods.

Top-down policies to influence the teaching of literacy and numeracy in primary schools were first introduced in the late 1990s to some Local Education Authorities (LEAs) in England. For the most part, these were a handful of inner city LEAs – 12 LEAs with respect to the 'literacy hour' and 13 LEAs with respect to the 'numeracy hour'. There was very little geographic overlap regarding where these policies were implemented. The background to these initiatives was concerns about poor standards of literacy and numeracy in English schools. Subsequently both these policies were rolled out nationally as the 'National Literacy Strategy' and 'National Numeracy Strategy' respectively (in 1998 and 1999 respectively).

The core of these initiatives was a daily 'literacy hour' and 'numeracy hour' to be taught in primary schools. They aimed to improve the quality of teaching through more focused instruction and effective classroom management. Both the 'literacy hour' and 'numeracy hour' were supported by a framework for teaching, which sets out termly objectives for the

5-11 age range and provides a practical structure of time and class management. With regard to the 'literacy hour' a range of texts were specified and teaching objects set out at three levels (text, sentence and word) to match the text types studied. The daily literacy hour was divided between 10-15 minutes of whole class reading or writing; 10-15 minutes whole-class session on word work (phonics, spelling and vocabulary) and sentence work (grammar and punctuation); 25-30 minutes of directed group activities (on aspects of writing or reading) and a plenary session at the end for pupils to revisit the objectives of the lesson, reflect on what they have learnt and consider what they need to do next. The framework document for the 'numeracy hour' also contained a booklet of examplar lessons and training on strategies to teach mental calculation. The hour itself consisted of a three-part template for daily mathematics lessons, starting with 10-15 minutes of oral/mental arithmetic practice, then direct interactive teaching of whole classes and groups, and finally 10 minutes of plenary review.

Neither the literacy nor numeracy hour represented an increase in the overall time allotted to teaching these subjects. But both represented a dramatic change in how these subjects were taught. This is explained in detail by Machin and McNally (2008) with respect to the literacy hour.

Since the National Strategies were preceded by *de facto* pilot projects (although they were not seen to be such at the time), there has been opportunity to evaluate their effectiveness via a difference-in-differences strategy. That is, one can compare educational attainment at the end of primary school in 'treatment schools' to schools in an appropriately defined comparison group, before and after the 'pilot' project was introduced. Machin and McNally (2008) evaluate the 'literacy hour' using this methodology.[16] The results point to a significant impact of the literacy hour with their being a 2-3 percentage point improvement in the reading and English skills of primary school children affected by the introduction of the policy. Perhaps of most significance is that effects are generated at an extremely low cost per pupil. The main costs were local centres and literacy consultants in each Local Authority, with some funding to schools for teacher training and resources. Machin and McNally (2008) estimate costs of only about £25 per pupil whereas (discounted) labour

[16] Very similar results are found for the 'numeracy hour' in subsequent analysis (available on request).

market benefits for the improvement in reading are estimated at between £69 and £179 per year of working in the labour market.

Although the National Literacy and Numeracy Strategies are likely to be responsible for a considerable proportion of the improvement in educational performance of primary schools in the 2000s, there is a hard core of students for whom generic pedagogical approaches are not sufficient. About one-fifth of students still do not attain the government targets of 'level 4 or above' by the end of primary school (in the National Curriculum, 'level 4' is the expected level of knowledge and skills at this age). Another more recent initiative to try to address this was the 'Every Child a Reader' programme introduced to schools in some Local Authorities in the mid-late 2000s. The core of this initiative is Reading Recovery, which provides children in the greatest difficulty with daily one-to-one tuition for up to 20 weeks. The programme has been evaluated by a consortium of research institutions (Tanner et al. 2010). The economic evaluation (by researchers at IFS[17]) is also based on a difference-in-differences methodology (as described above). They find that schools introducing the policy had significantly better educational attainment for children at age 7 in reading and writing (i.e. the end of Key Stage 1). The overall effect is similar to the 'literacy hour' in that it increases the proportion of students achieving the expected standard by about 2 percentage points. However, it is considerably more expensive. The programme costs £3,000 per child in the first year and £2,600 per child thereafter. The future benefits depend on how long the effects endure for. The authors estimate that for the policy to break-even, it would have to increase the probability of obtaining better formal qualifications at age 18 by at least 4 percentage points.

Slavin et al. (2011) review a wide range of evidence on programs to help struggling readers (using international evidence). This includes one-to-one programmes like Reading Recovery but also one-to-one teaching programmes by para-professionals/volunteers; small group tutorials; classroom instructional approaches; and instructional technology. The review is very positive about the effectiveness of programmes like Reading Recovery. The authors conclude that there should be a strong focus on improving classroom instruction and then providing one-to-one tutoring to students who continue to experience difficulties. Given the

[17] http://www.ifs.org.uk/pr/ecar_2011.pdf

likely costs involved (as documented by the IFS researchers for England) compared to the costs of more classroom instructional methods (like the literacy and numeracy hours), it would seem that the optimal programme would only implement one-to-one tuition in a context where classroom instructional methods had already been improved as much as possible. However, these more expensive programmes (if well targeted) might be especially helpful for 'hard to reach' students who are not helped sufficiently by more generic programmes. If they are successful, they might reduce problems much further down the line such as drop-out at age 16/17 (which is a bigger problem in England than in many other European countries). Another question is whether such programmes really need to be prescribed from central government or whether they can be left to individual schools. Arguments for intervention at a central or local level are economies of scale in the provision of relevant infrastructure (e.g. training programmes) that are difficult to organize by practitioners at a school level, who are mainly occupied with day-to-day activities in their own school. However, too much prescription (especially from a high-level of government) can mean that schools do not have the flexibility to adapt programmes in a suitable way for their own circumstances and takes away the professional autonomy sought after in other areas of educational policy. A more highly skilled and trained teaching workforce might remove the need for prescribed methods of classroom instruction. There is little research for England showing the importance of teacher quality because the relevant data is not made available to researchers (and not collected at classroom level).[18] However, the importance of teacher quality is well illustrated in other countries such as for the US. For example, Rivkin et al. (2002) show that having a teacher at the higher end of the quality distribution is very important for raising student achievement. However, the cost of recruiting, retaining and on-going training of teachers is expensive. Furthermore, a consequence of the increase in graduate opportunities over recent decades (especially for women) is that it is more difficult to attract and retain high qualified people in teaching.

[18] While the new School Workforce Census will certainly help researchers, it is still the case that teachers are not linked to classes they teach. There can be many classes in a year group.

## 4. Conclusions

In this paper, we began by describing educational inequalities that appear at all stages in the lifecycle and used this as a motivation for then discussing evaluation of various school-level policies in England. It is clear that educational attainment gaps along various dimensions are evident from the earliest time these are measured and throughout the lifecycle. Of special concern for social mobility is the gap according to family background. We therefore review various school-level policies that have been implemented in England where there is at least some economic evaluation of a high standard, with the aim of seeing how they have scope to impinge on educational inequalities. We are necessarily selective and consider evaluations in the areas of school resources, market incentives, school autonomy and pedagogical approaches in turn.

There have been several recent studies about the effects of school resources on educational attainment. Quite often, they find evidence of a modest effect of school resources on educational attainment. The exception is the recent study by Gibbons et al. (2011), which suggests larger effects. This study applies to schools in urban areas and is of particular interest because of the larger proportion of disadvantaged students in these areas. In fact, several of these studies suggest that expenditure effects are larger for economically disadvantaged students. This suggests that school resource policies can help to reduce attainment gaps by family background (especially if deliberately introduced to do so). This is good news for the Pupil Premium policy, although worrying because school expenditure will fall in real terms for most schools.

The evidence for the effects of choice and competition suggests that higher socio-economic groups benefit more from school choice and competition does not seem to raise educational standards. However, this might be because many schools have not had enough flexibility to respond to competitive pressures. The evidence on school autonomy (i.e. in the context of 'the academies programme') suggests that this produced positive educational achievement gains both for participating schools and their neighbours in the areas where

they were first introduced. It can be viewed as a policy with some redistributive effects because academies were first introduced to disadvantaged areas. However, the early effects of academies cannot be extrapolated to a much bigger programme that no longer targets particular areas. The expansion of the programme presents new challenges – for example for monitoring and accountability; for small schools; for services traditionally provided by Local Authorities to all schools in their area.

Pedagogical approaches have been shown to be important for improving educational attainment. Classroom instructional methods (as manifest in the National Literacy and Numeracy Strategies) can be extremely cost-effective. However, they will not necessarily be enough to lift the performance of hard-to-reach children. If we are serious about improving the prospects of these children, then programmes like Reading Recovery may be necessary. Although they are expensive, they have been shown to be effective and may be important for reducing serious problems down the line such reducing the number of people who are 'not in education, training or employment' at a young age. The need to actually prove such effects (to help future investment decisions) is why longitudinal studies and high quality economic evaluation should remain high on the policy agenda.

Finally, it is worth remarking that England offers a useful setting for an appraisal of evaluations of education policies, due to the quest for evidence based policy formation and because of the large number of policies that have been implemented. However, the policies that seem to work best are those where a need or intervention can be identified (e.g. because things are not working properly) and so one needs to be careful to recognise that their scope to generate educational improvements is often place and context specific. There is therefore a need to be very careful indeed if one wishes to try to generalise the results from economic evaluations of education policies like the ones described in this paper to other settings.

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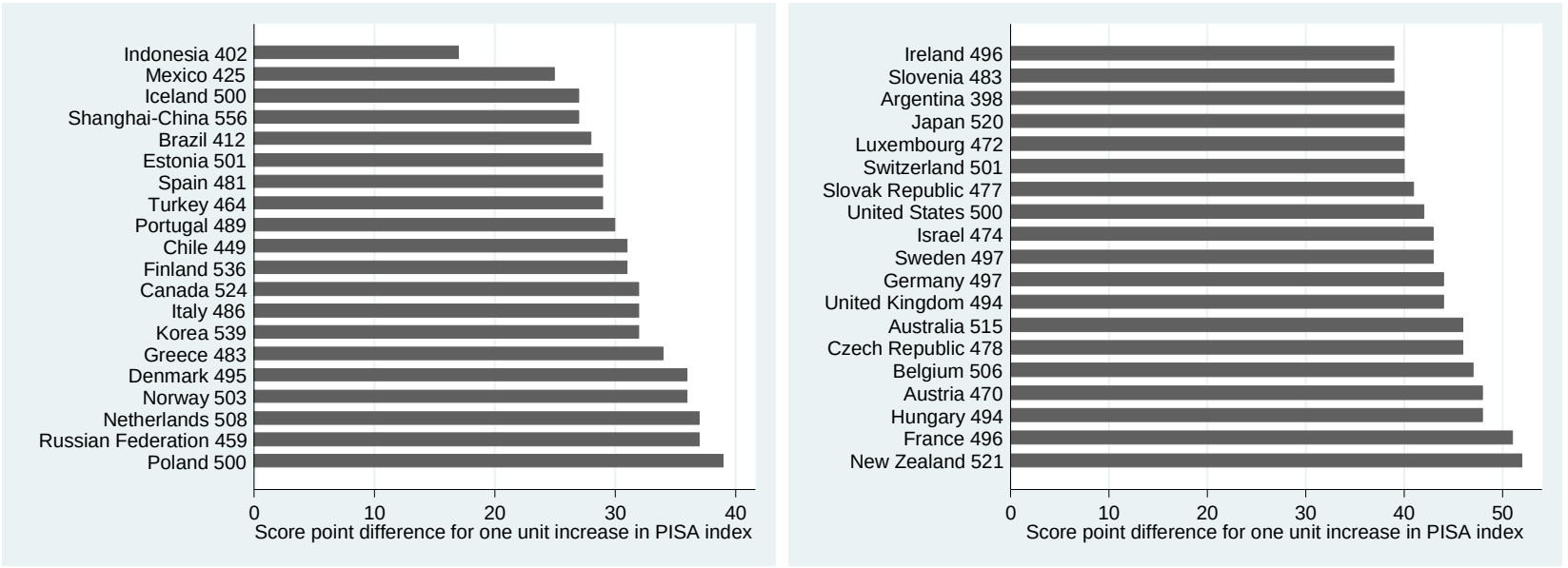
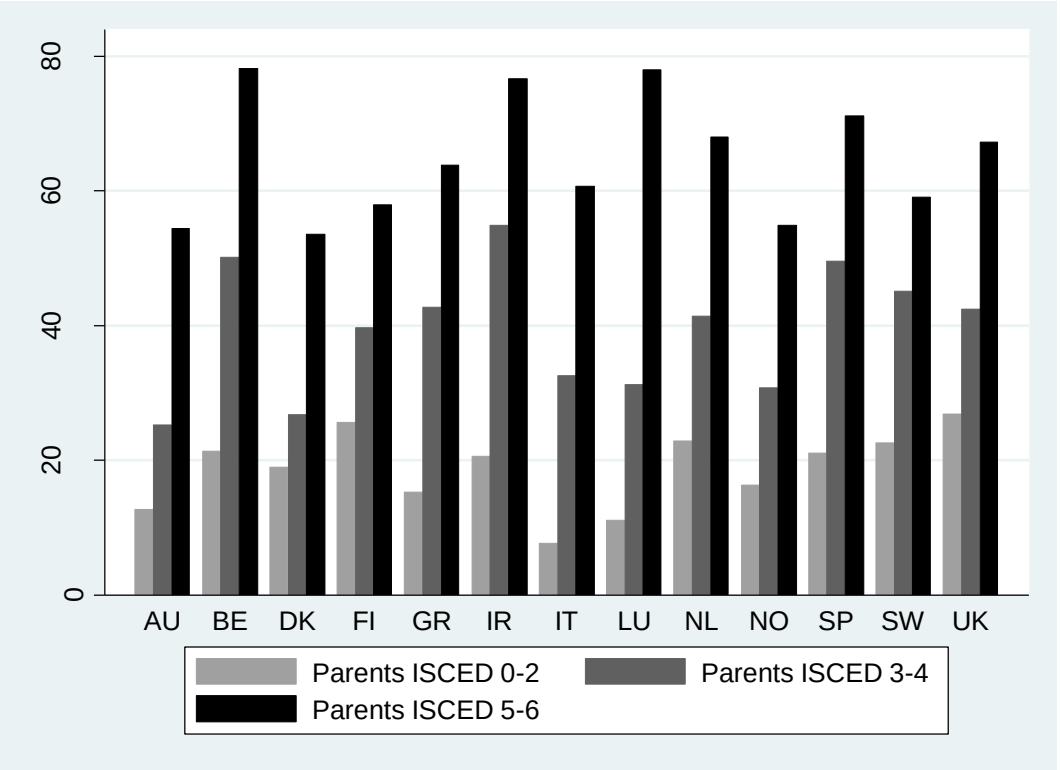
**Figure 1:**
**PISA 2009 Reading Test Scores And Family Background**



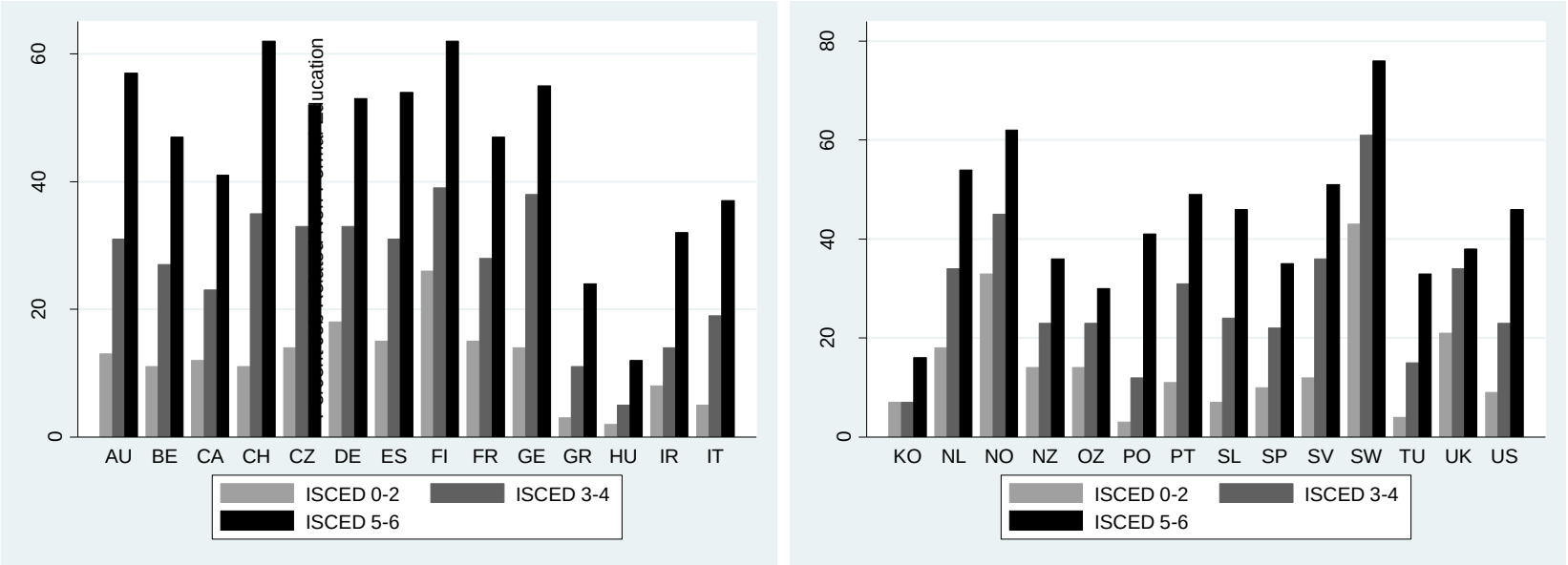

Notes: Source is OECD (2011), Education at a Glance, Paris. The Figure shows the score point difference in reading performance associated with one unit increase in the PISA index of economic, social and cultural status. Mean reading scores are shown by country names (the standardised mean across all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

**Figure 2:**
**Percent of Individuals Having Completed Tertiary Education by Educational Attainment of Their Parents, 2005**




Notes: From Eurostat (2009) based upon EU Statistics on Income and Living Conditions (EU-SILC) data. The Figure excludes former Eastern European countries and countries for which data was described as provisional or unreliable. ISCED 0-2 is completion of pre-primary, primary or upper secondary education, ISCED 3-4 is completion of upper secondary or post-secondary non-tertiary education and ISCED 5-6 is completion of tertiary education.

**Figure 3:**
**Participation Rate in Non-Formal Job-Related Education by Level of Educational Attainment, 2007**




Notes: Source is OECD (2011). Data is for 2007 for most countries. Exceptions are: 2005 (US); 2006 (FI, FR, IT, NZ, PO, UK); 2008 (BE, CA, CZ, DK, IR, NL); 2009 (CH). ISCED 0-2 is completion of pre-primary, primary or upper secondary education, ISCED 3-4 is completion of upper secondary or post-secondary non-tertiary education and ISCED 5-6 is completion of tertiary education.

**Table 1:**
**Age 5 Differences in Vocabulary Tests by Gender and Ethnicity, Millennium Cohort Study**

| Ethnic Group | Boys | Girls |
|---|---|---|
| White British | 55.9 | 56.5 |
| Black, Caribbean | 48.4* | 51.0* |
| Black, Other | 44.2* | 47.2* |
| Bangladeshi | 40.4* | 41.7* |
| Pakistani | 40.6* | 40.7* |
| Indian | 49.8* | 50.3* |
| Chinese | 41.2* | 55.2 |
| Number of Children | 4,587 | 4,452 |

Notes: Based on Table 3 of Dustmann, Machin and Schonberg (2010). The vocabulary test is standardised to have mean 50 and a standard deviation of 10. A * denotes statistically significant differences relative to White British boys or girls respectively.