CENTRE *for* ECONOMIC PERFORMANCE

ELECTION ANALYSIS

Evaluating Education Policies: The Evidence from Economic Research

- Educational expenditure in the UK has increased enormously – but it is still only just above the OECD average. In 1997/98, expenditure on education and training as a percentage of GDP was 4.9% (the same level as in 1987/88) whereas in 2006, it was 5.9% of GDP. There is robust evidence that the increase in school expenditure between 2002 and 2007 led to a modest increase in educational attainment.

- Exam performance has improved over time for secondary schools. But the improvement in primary schools since 2000 has been more muted. Exam performance has improved at a faster rate for poorer pupils, although the gap between rich and poor pupils is still substantial.

- A 'pupil premium' that would follow disadvantaged pupils would help to correct inequities in how funding gets allocated to schools. Research evidence suggests that economically disadvantaged pupils benefit disproportionately from rises in general school expenditure.

- Early evidence on the effects of the academies programme suggests that the growth in educational attainment for pupils attending academies is no different than for pupils attending other similar schools. Evidence for Sweden does not suggest that the application of a similar system in the UK would raise overall educational attainment.

- Increasing the entry-level qualifications for teachers is a difficult challenge in view of the high labour market returns available to graduates and the continuing need for more teachers to replace those who leave the profession. Research evidence suggests that 'teacher quality' is important for their pupils' results, but it does not suggest that there is a relationship between 'teacher quality' and teachers' own educational credentials.

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Introduction

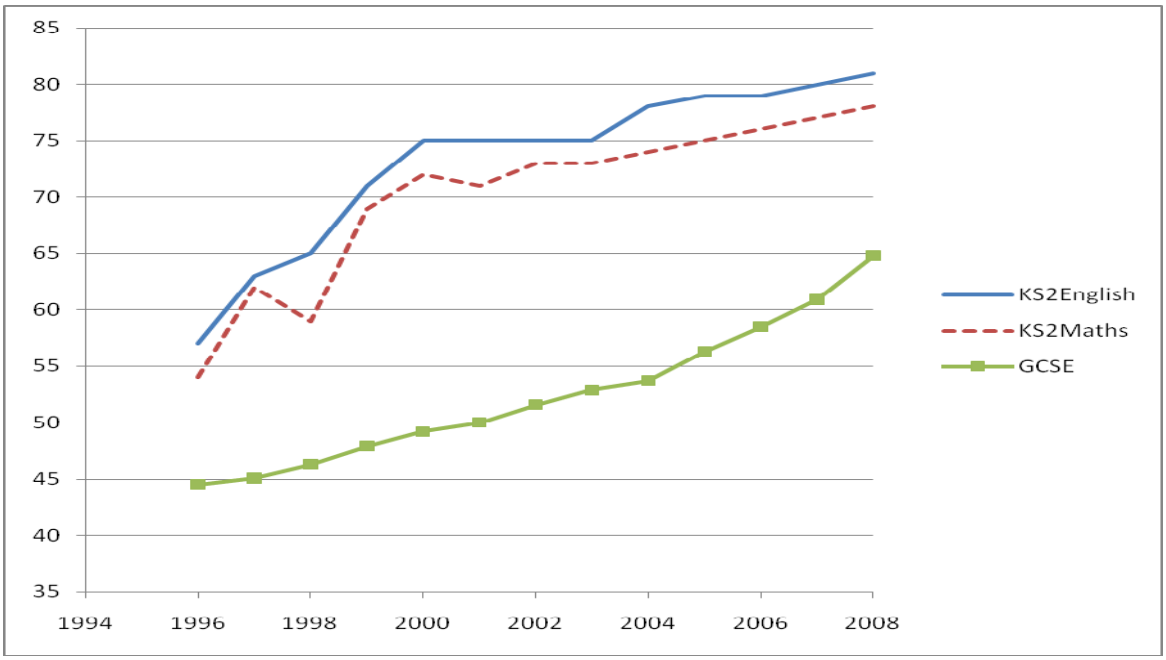
Education is a top issue on the agenda for all political parties. This Election Analysis gives an overview of key issues that are likely to be important in the election campaign.

How is England performing?

Educational performance has improved since 1997 and moved England up the international league tables for secondary school pupils.

Educational performance in England is usually measured by the percentage of pupils attaining five or more GCSEs at grades A*-C at the end of compulsory schooling. With regard to primary education, the indicator is the percentage of pupils achieving the required standard (as defined by the National Curriculum) at the end of key stage 2. Both measures suggest massive improvement over time (see Figure 1).

Figure 1: Improvements in educational achievements



But critics allege that grade inflation, 'teaching to the test' and attempts by schools to manipulate their performance (for example, by encouraging pupils to take easier subjects) can account for a lot of this improvement. A different criticism is that roughly a fifth of primary school children still do not achieve the required standard by the end of primary school despite the improvements. All this prompts people to look at how England performs internationally.

There are three international tests of relevance here: Progress in International Reading Literacy (PIRLS), conducted in 2001 and 2006 for pupils of about 10 years old; the Programme for the International Student Assessment (PISA), conducted in 2000, 2003 and 2006 for 15 year olds; and Trends in International Mathematics and Science Study (TIMSS), conducted in 1999, 2003 and 2007 for pupils of about age 10 and age 14 (that is, years 5 and 9 in England).

Take first the surveys for secondary school pupils. TIMSS is more curriculum-based and closer to what is measured in national key stage tests. PISA measures the application of knowledge in everyday situations.

The latest PISA suggests that scores for England are close to the OECD average. But PISA should *not* be used to measure change over time because of problems with the English entry in both 2000 and 2003.[1]

In TIMSS, England is one of the top performers and there has been a significant increase in test scores over time. Hence, TIMSS suggests that the improvement over time in national tests is not just an artefact of grade inflation. But the fact that England is only an average performer on PISA should guard against any complacency about educational standards.

The latest PIRLS study shows that England is significantly above the international average for the reading abilities of 10 year olds. But this is below some major European countries (including Italy and Germany) and there has been a decline in performance since 2001.

As explained by Twist et al (2006), the change over time is sensitive to the methodology for linking data. Their alternative methodology suggests that the fall over time might be smaller than what appears in the main study. But even in the national data, it is hard to see evidence for much improvement in this particular time period.

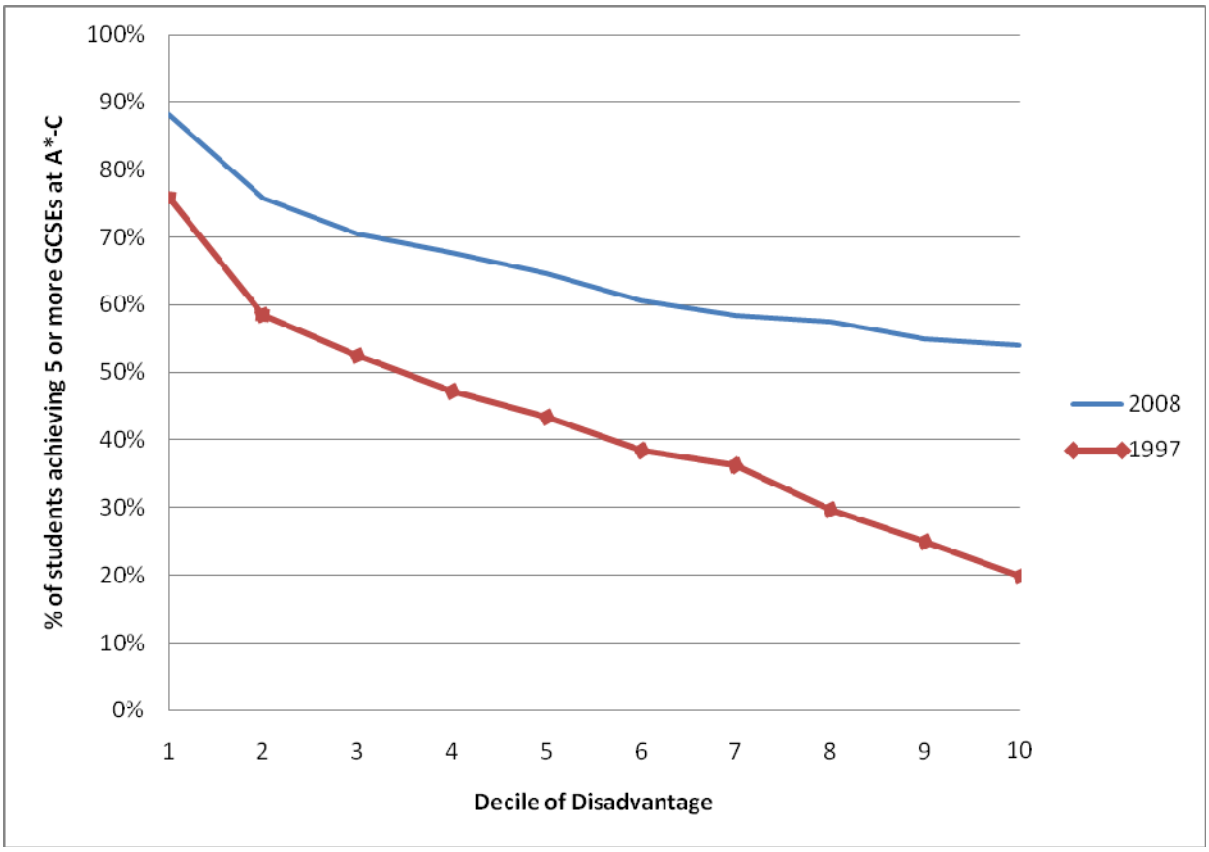
Taken together the evidence suggests that any improvement in primary school achievement since 2000 has been modest, at best.

Of course, one of the biggest issues in UK education policy is its role (or potential role) in influencing social mobility. The lack of social mobility in the UK is well-known and is reflected partly in the strong relationship between poverty and educational attainment.

Figure 2 shows that educational attainment at GCSE (measured at school level) is strongly related to schools' concentration of poor pupils (as measured by eligibility to receive free school meals). But the relationship is weaker than it was back in 1997 because of catching up among schools serving poor pupils. A similar phenomenon is found at pupil level for 2003/04 to 2008/09.[2]

[1] England did not meet the OECD school response rate for PISA 2000. In 2003, participation rates both at school and pupil level did not meet OECD requirements and England was excluded from international comparisons.
[2] Chowdry et al (2010).

Figure 2: Average performance of schools by decile of disadvantage



Note: Average performance is measured by the percentage of pupils achieving five or more GCSEs at A*-C. Schools divided into 10 equal deciles, depending on their disadvantage in each period, as measured by the percentage of pupils eligible to receive free school meals (where decile 1=most advantaged; decile10=most disadvantaged).
Source: derived from the Annual School Census and the School Performance Tables

Has it been worth the money?

Yes, the rise in expenditure has been cost-effective. There is clearly much more that could be done.

It is easy to point to problems in the comparability of tests over time and therefore difficult to measure progress. But there is no such problem in measuring the costs. Since 2000, school expenditure has increased by about 40% in real terms for both primary and secondary schools. In 1997/98, expenditure on education and training as a percentage of GDP was 4.9% (the same level as 1987/88) whereas in 2006, it was 5.9% of GDP. This brings the UK to just above the OECD average.

The increase in expenditure has partly been used to bring pupil-teacher ratios down. It fell from 18.6 in 1997 (for all primary/secondary/nursery schools) to 16.9 in 2008. The UK still has high primary class sizes compared with other OECD countries (see Table 1).

Table 1: International comparisons of education spending and class size

	Expenditure on all levels of education as a percentage of GDP (2006)	Average class size in primary education (2007)
UK	5.9%	24.6
United States	7.4%	23.1
Germany	4.8%	22.1
France	5.9%	22.6
Sweden	6.3%	-
Finland	5.8%	19.8
OECD average	5.7%	21.4

Source: OECD *Education at a Glance*, 2009

Within the UK, there is an enormous difference between the resources provided to the state sector and what is offered in the private sector. Although average class size is 24.6 overall in primary schools, it is only 13.1 in private (primary) schools.

Not surprisingly, there is a high wage premium in the labour market for people who attended private school (even controlling for background characteristics). Machin and Murphy (2010) show that three and a half years after graduation, men and women who went to private school earn more than those who went to state schools by 8% and 6% respectively.

Would even more investment in the state sector help to close this gap? To answer this question, it is useful to ask whether the additional resources given to state schools in recent years have helped to improve educational attainment.

Holmlund et al (2009) analyse the relationship between pupil expenditure and attainment in key stage 2 tests of English, maths and science, after taking account of pupil-level and school-level characteristics (including all effects that could be attributed to schools which do not vary over time). They find that pupil expenditure has a positive and significant effect on all tests. The order of magnitude is fairly modest but is sufficient for likely benefits to outweigh costs. Table 2 summarises evaluation studies conducted at CEP.

Table 2: CEP evaluation of government policies: evidence of effects on pupils' educational attainment

Policy	Sector	Project	Positive	Little or no effect	Additional comments
Choice and competition	Primary	Gibbons, Machin and Silva (2006, 2009)		√	Suggestion that small effect might be possible in schools with greater autonomy
Increasing overall school expenditure	Primary	Holmlund, McNally and Viarengo (2009)	√		Modest effects but large enough to be cost-effective – effects 20-40% higher for disadvantaged pupils
Literacy and Numeracy Strategies	Primary	Machin and McNally (2008, 2010)	√		Moderate effects at very low cost
Academies	Secondary	Machin and Wilson (2009)		√	Early days in the evaluation of this policy
Excellence in Cities	Secondary	Machin, McNally and Meghir (2007)	√		Modest effects but large enough to be cost-effective – effects are highest for the most able pupils in schools with highest rate of deprivation

Pupil premium?

A pupil premium attached to poor pupils would help to address inequalities in the current system.

One of the issues that has been flagged up by both the Conservatives and the Liberal Democrats is the possibility of a pupil premium whereby money would follow economically disadvantaged children to the schools they attend.[3] This would address a problem that has been recognised about the current system: local authorities are less redistributive in how they

[3] The proposals have been evaluated in detail by the Institute for Fiscal Studies in a recent study (Chowdry et al, 2010). Labour have also said they would introduce a 'pupil premium' though it is not clear to what extent their proposal differs from existing policy.

allocate resources to schools than central government is in how it allocates resources to local authorities.[4]

This arises because local authorities decide on their own funding formulae for schools. Although they have to take account of deprivation, they can decide how to do it and to what extent. The result is that schools facing the same level of deprivation receive different amounts of funding, depending on where they are located.

Holmlund et al (2009) show that some of the most advantaged schools in the country have the same level of per pupil expenditure as some of the most disadvantaged schools. It is relevant to note that schools have much freedom in deciding how to use their funding once it gets devolved to them. Therefore, there is no guarantee that individual pupils from disadvantaged socio-economic backgrounds benefit from the extra school funding even if the 'pupil premium' were to be adopted.

However, Holmlund et al (2009) show that increasing overall per pupil expenditure has a larger impact on economically disadvantaged pupils (about 20-40% higher than other pupils). And in an evaluation of Excellence in Cities, Machin et al (2007) show that the largest effects were for pupils of high ability in the most disadvantaged schools.

Furthermore, efforts to make the school funding system more equitable might help to improve the UK's record on social mobility since this is correlated with inequality. There has been much work at CEP showing the UK's poor record on social mobility.[5] Early indicators suggest that this has at least not got worse in the last 10 years, although there are mixed results on whether things have improved or stayed the same.[6]

But efforts to tackle inequality need to do more than address school-related policies. Many studies show that family background is the most important determinant of educational attainment. For example, Kramarz et al (2008) show the high relative importance of family background and early educational experiences for primary school children in England.

Furthermore, the recession may have made matters worse. Tominey (2010) shows that unexpected changes in family income can strongly influence whether children subsequently drop out of education or go on to university (especially if these income effects are long-term and they happen when children are young). Therefore, policies directed at families are very important in attempts to equalise educational opportunities.

Academies and 'free schools'

There is no evidence that an expansion of the academies programme or the introduction of Swedish-style 'free schools' would improve average educational attainment.

Perhaps the most radical school initiative to address disadvantage is the creation of academies. These schools were originally designed to replace failing secondary schools

[4] West (2009).
[5] See Blanden (2009) for a review.
[6] Blanden and Machin (2008); Gregg and Macmillan (2009).

located in socially disadvantaged urban areas. But their coverage is now spreading geographically and also to different sorts of predecessor schools (not just the absolute worst schools in the local authority).

Academies are publicly funded institutions that are largely run by sponsors (individuals, businesses or other groups) outside the public sector. Unlike most other publicly funded schools, academies are completely independent of the local authority. The board of governors has full responsibility for the school. This covers matters such as the hiring of teachers, their conditions of service, and the content of the curriculum outside core subjects.

This Labour policy creation has been embraced by the Conservatives who want to expand it and waive the requirement for private sector sponsors to contribute towards the capital costs (which is 10% of building costs or £2 million). The Swedish reforms of 15 years ago are taken as the model for the 'free schools' that would be created.

What is the evidence for the success of these 'new independent schools' either in the UK or in Sweden? Machin and Wilson (2009) consider some early evidence on academies. They compare the growth in GCSE performance for schools that became academies with a comparison group of similar schools. While there was an improvement in the GCSE performance of schools that became academies, it was no different from the improvement for schools in the comparison group.

But it is still too early for the academies programme to be fully appraised on the basis of GCSE results. Another important issue (currently under investigation) is the effect of academies on the performance of schools in the same local areas. It seems sensible to take account of such analysis (available in the next few months) before expanding the programme.

There have been a number of studies of the effects of the Swedish reform. The study with the most convincing methodology and looking at long-term as well as short-term effects is by Bohlmark and Lindahl (2008). They use the differential increase in the new independent schools across municipalities to see whether the increase is associated with any change in overall performance of the municipality.

They find evidence of only small positive effects in the short-term, which do not persist. They speculate that one reason for this could be the fact that the entry of new private schools has not been followed by the closing down of state schools.

This points to a general weakness in the application of market economics to the public sector. There is no natural mechanism for the closing down of poor schools (they do not literally go bust). The reality that governments will be obliged simultaneously to support new schools and the older 'bad' ones and the fact that the latter will not exit at an efficient rate needs to be factored into the expected cost-effectiveness of a 'school creation' policy.

Furthermore, importing the Swedish model may not make very much difference to the status quo. Fifteen years ago, Sweden started from a position of no school choice: pupils had to attend the state school in their neighbourhood.

In the UK, parents have had the right to apply to any school for many years. The problem is with people's empowerment to exercise choice and not with their legal right to use it. Some people have greater empowerment than others, and this works against lower income families

and those with difficulties in accessing and understanding information. There is good evidence that higher income parents move to locations with better schools and that this is reflected in house prices.[7]

The question about 'free schools' or expansion of the academies programme is whether such initiatives are likely to provide disproportionate benefits to parents who currently have least choice. In theory, a pupil premium for disadvantaged pupils should give an incentive for new schools to recruit such pupils. But as discussed by Chowdry et al (2010), the premium would need to be very high to reduce the disincentive for schools to attract such pupils.

Furthermore, the current school admissions code does not allow schools to use socio-economic background as a basis for selection. Any weakening of the admissions code in this respect could work against pupils from poor backgrounds. Moreover, if 'free schools' have greater freedom to exclude pupils than other state schools, then the latter will bear the full cost of educating children with the greatest social problems.

The creation of new schools does not, of course, directly deal with problems in the rest of the state sector. 'New school' advocates argue that the increased competition will generate increased competition between schools and therefore lead to improvements in the system as a whole. But CEP research finds no evidence of a link between choice and achievement and only a small positive (non-causal) association between competition and school performance.[8] International evidence on this issue remains mixed.

Telling schools what to do?

In practice, all parties have some policies that give schools autonomy and others that 'tell schools what to do'. The key question is when autonomy is appropriate.

School autonomy is used in political rhetoric. But the truth is that the political parties advocate a mixed combination of policies – some allowing schools greater autonomy on particular issues and some effectively telling schools what to do. The academies programme is an example of the former, whereas examples of the latter include introducing phonics programmes (advocated in policy documents by both Labour and the Conservatives) and 'setting' in secondary schools (advocated by the Conservatives).

There has been research on the relative merits of allowing schools to be autonomous versus imposing more centralised control.[9] While school autonomy allows better use of decentralised knowledge, it might increase the potential for teachers to pursue agendas that are not in pupils' interests.

In a cross-country analysis, Wößmann (2003) finds that school autonomy in setting educational standards and the size of the school budget is negatively related to pupil performance. The opposite is true of school autonomy in personnel management and process decisions, for example, hiring teachers and setting salaries. Thus, school autonomy is

[7] Gibbons and Machin (2003) and Gibbons et al (2009).
[8] Gibbons et al (2008); Gibbons and Silva (2006).
[9] For example, Wößmann (2003).

efficient in some areas of decision-making but not in others – and the issue is much broader than simply whether or not to allow new types of school.

Which category does pedagogy fall into? On the one hand, teachers can use their own knowledge of their pupils to decide on what teaching method works best. On the other hand, teachers may not be equipped with the knowledge of how different methods work and what works best.

It was the poor teaching of literacy and numeracy in some inner city schools in the early 1990s that prompted the introduction of the literacy and numeracy hours in primary schools in the mid-1990s (originally known as the National Literacy and Numeracy Projects, started by the Conservatives; then as the National Literacy and Numeracy Strategies, started by Labour). In each case, the literacy or numeracy hour was quite prescriptive in terms of the content and structure of the daily hour.

CEP research suggests that these pedagogies were very successful in raising standards of literacy and numeracy.[10] It is particularly striking that England overtook Wales at the point at which these strategies were applied in comparable tests. In Wales, local authorities were allowed to do their own thing and thus there was far more decentralisation than in England.

This example shows that a centralised approach can be more effective than the alternative when there is a sound evidence base and when teachers are not fully informed of the relative merits of different pedagogies.

Would this also apply to 'setting'? This means that pupils are allocated to different classes for particular subjects at school on the basis of ability. Currently schools may use setting (and many do), but no one is sure of how much of this goes on because available data sets do not record the class in which the pupil is taught.

But there have been a number of studies using English data to examine the likely importance of peer group effects. If the ability of peers matter a lot to a pupil's attainment, this would help make the case for 'setting' to be more widely applied in schools.

Although peer group effects have been found to be important in other countries (for example, Goux and Maurin, 2007, for Paris, and Ammermueller and Pischke, 2009, using international data), studies using English data have not found peers to matter very much for average educational attainment.[11]

The one proviso is that Lavy et al (2009) find effects that are highly heterogeneous. In brief, very low ability peers (in the bottom 5% of the distribution) can negatively affect pupils. Very high ability peers (top 5%) have a positive effect on girls but not on boys. Given such heterogeneity in the effects, it could well be that schools (and not central government) are better placed to decide on whether and how to use setting.

[10] Machin and McNally (2008; 2010).
[11] For example, Gibbons and Telhaj (2008); Lavy et al (2009); and Kramarz et al (2008).

Getting the best teachers?

Teacher quality (but not their qualifications) matters for pupil attainment. Attracting 'high quality' graduates is a challenge in the public sector because of higher earnings' possibilities elsewhere.

The Conservatives aim to make teaching an 'unashamedly elitist profession'. By this they mean raising the standard of entry in terms of academic qualifications. Labour are also trying to increase the status of teaching by introducing a new licence to practice – aspiring to put teaching on the same footing as high-status professions like doctors and lawyers.

There are a number of challenges to these aspirations. First, there is currently a shortfall of teachers in England (although this is relatively small – 0.7% of the total); the Secondary Initial Training intake has been below the number of allocated places every year since 1993/94; and a large number of people leave teaching every year (18,000 in 2007/08 – over half due to retirement). Therefore the new schemes proposed by the Conservatives need to attract highly qualified people in quite large numbers.

The much-admired scheme to attract graduates into teaching ('Teach First') may be the largest recruiter of graduates. But the number of graduates placed (500 in 2009) is small in relation to the overall need for teachers.

An interesting article about the pros and cons of 'Teach for America' (TFA) was published in the journal *Education Next* (Mikuta and Wise, 2008).[12] Research evidence on whether TFA teachers are more or less effective than other teachers is quite mixed. The high qualifications of graduates on the TFA programme need to be set against the fact that most do not stay in teaching for very long (in a context where teaching experience is an important determinant of pupil outcomes).[13]

Second, although teachers' salaries have increased in recent years, secondary school teachers earn slightly below the national average for graduates, and primary school teachers earn about 13% less. Doctors and lawyers earn far more than either.[14] Furthermore, the average returns to higher education are extremely high. Wage differentials for graduates have not diminished in the 2000s despite the increase in supply.[15]

A consequence of the increase in graduate opportunities over recent decades (especially for women) is that it is more difficult to attract highly qualified people into teaching. For example, Nickell and Quintini (2002) show that teachers are being drawn from further down the distribution of educational achievement than they were in the past. In this context, attracting more highly qualified people into teaching in sufficient numbers is a difficult challenge.

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[12] http://educationnext.org/teachers-for-america/

[13] But even the more critical author suggests that a positive impact from TFA may come from 'the creation of a new education and societal leaders with abiding interest and direct experience in the problems of educating our nation's disadvantaged'.

[14] The average annual salary of doctors, lawyers, secondary school teachers and primary school teachers is £73,598, £55,723, £33,985, and £30,030 respectively (ASHE, 2009 Table 14.7a). The average graduate salary in the Labour Force Survey (2008) is £34,443.

[15] Machin and Van Reenen (2008).

Does this matter for educational performance? Research shows that teacher quality matters but not necessarily educational qualifications. Unfortunately, data for the UK are not suitable for analysing this question.

The best studies are in the United States where 'total teacher effects' are measured by looking at differences in the growth rates of pupil achievement across teachers. As explained by Hanushek (2008), such studies show that 'teacher quality' is very important for pupil achievement but 'teacher quality' is not associated either with educational credentials or salaries. In contrast, a recent study looks at cross-country data and finds evidence of a positive relationship between teachers' salaries (and relative salaries) and pupil performance.[16]

Improving behaviour

Research evidence suggests that voluntary programmes to encourage parental involvement can improve the behaviour of the entire class.

A reason why teachers quit is sometimes reported as poor pupil behaviour. Tackling this issue might help to retain teachers as well as being important in itself. Policy proposals by both Labour and the Conservatives reflect their belief that involving parents is central to this.

The 'behaviour contracts' proposed by the Conservatives and the 'home school agreements' proposed by Labour aim to make clear what is expected of parents (with sanctions for those who do not meet expectations).

Recent research in Paris shows the potential effects of encouraging parents to become more actively involved in their children's education (by voluntary means rather than compulsion). Avvisati et al (2010) show that parents' involvement can be increased through relatively simple information programmes, even in deprived areas. These programmes consist of an invitation to three meetings for parents of 11 year olds where the topics were about how parents should help their children.

The really important finding of this research is that informing and motivating a relatively small set of parents led to an improvement in the overall behaviour and educational performance in the class (not just for the children of the parents who volunteered).

It might also be that attempts to improve pupil wellbeing directly (advocated by Labour in the Every Child Matters agenda) have a knock-on effect on their behaviour. One in-school approach has been a trial of the Penn Resilience Programme, which involves the development of a special curriculum to build resilience and to promote optimistic thinking, adaptive coping skills and social problem-solving among children. This is an intensive programme, requiring teacher training and 18 hours of workshops.

It is early days in the evaluation so it is not yet known whether pupil behaviour has been affected. But interim findings show significant positive impacts in terms of improving indicators of pupils' mental health.[17]

[16] Dolton and Marcenaro-Gutierrez (2010).
[17] Challen et al (2009).

Higher education

Research evidence suggests that higher fees can be justified, though it is important to have a well-understood support system in place.

So far, all the discussion has been about schools. But an issue that politicians will want to avoid in the election campaign is what to do about university fees and whether to raise the cap. The review of university fees will not happen until after the election. The Liberal Democrats are the only major political party aiming to scrap tuition fees. The other two have not said what they would do about the cap on fees.

The economic case for having university fees is clear-cut. On average, there is a large wage return to having a university degree. For example, detailed research using the cohort studies suggests that the average return from going to university compared with leaving school with one or more A-levels is of the order of 15% – and higher for women.[18]

Given that graduates receive such large private returns, it is difficult to see why people who have not gone to university (the vast majority) should subsidise those who have – especially in view of the fact that people who go to university in the first place are over-represented among the relatively well-off.[19]

On the other hand, there does need to be some means of supporting young people to go to university because no one is able to get a large loan from a bank on the strength of potential future earnings. Furthermore, piling up of debt at an early point of a person's career might put-off those from relatively poor backgrounds from going to university at all.

The government response to this has been to set up a generous system of loans and grants. It is very important that the loan is payable only after university when a person is earning a salary of at least £15,000. The repayment is then 9% of earnings over that amount. Given these very generous terms, media reports of university graduates saddled with thousands of pounds of debt are grossly misleading.

Given likely cuts in university funding, it will probably be necessary to raise the cap on university fees. Currently most universities charge the maximum (£3,225 per year). An important question is whether there is justification for large differential fees for different universities and courses.

There are many studies showing that subject studied and the institution attended matter greatly for how much graduates earn.[20] Recent evidence suggests that institutional quality has a premium in the labour market and this is likely to be particularly high for top institutions.[21]

Such research suggests that there is indeed justification for allowing fees to vary by university institution and course. But in cases where university fees are high, it will be important to offer differential subsidies to avoid putting off the highly able but least well off pupils from applying to top universities and courses.

[18] Blundell et al (2000); Bratti et al (2005).
[19] Chowdry et al (2008).
[20] For example, as reviewed in Machin and McNally (2007).
[21] Hussain et al (2009).

Conclusions

Analysis of recent experience suggests that resources matter for educational attainment and results would suffer if the sector had to face cutbacks. Tackling inequality of opportunity in education requires programmes that are directed at families as well as schools because family background is the most important determinant of educational outcomes.

Claims that the introduction of more new schools (whether 'free' or 'academy') would improve average educational attainment have been greatly exaggerated. The most relevant research evidence does not support this conclusion. A research finding that some independent schools improve performance is not the same thing as a research finding that says that more independent schools would improve the educational system overall.

There are important interactions between different parts of the education system. In particular, the thorny issue of how to close schools (whether 'free' or 'non-free') when they are seen to fail needs to be addressed. But there is an important debate to be had about areas in which school autonomy and parental participation in schooling can be increased. This is a different debate from one that focuses exclusively on whether or not there should be more 'free' or 'academy' schools.

Whatever position is taken on the 'school creation' or school autonomy debate, attracting high-quality teachers to the profession is a top priority. Research suggests that high-quality teaching matters hugely but that this is not measured by teacher qualifications. The challenge of attracting and retaining more highly able teachers in the context of a competitive labour market should not be underestimated. This does not come cheap.

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References

Ammermueller, A. and J. S. Pischke (2009) 'Peer Effects in European Primary Schools: Evidence from the Progress in International Reading Literacy Study', *Journal of Labor Economics* 27(3): 315-348.

Avvisati, F., M. Gurgand, N. Guyon and E. Maurin (2010) 'Does Parental Involvement Make a Difference?', mimeo, Paris School of Economics.

Blanden, J. (2009) 'Big ideas: intergenerational mobility', *CentrePiece* 13 (3), Winter 2008/09.

Blanden, J. and S. Machin (2008) 'Up and Down the Generational Income Ladder in Britain: Past Changes and Future Prospects', *National Institute Economic Review* July: 101-116.

Blundell, R., L. Dearden, A. Goodman and H. Reed (2000) 'The Returns to Higher Education in Britain', *Economic Journal* 110: F82-F89.

Bohlmark, A. and M. Lindahl (2008) 'Does School Privatisation Improve Educational Achievement? Evidence from Sweden's Voucher Reform', IZA Discussion Paper No. 3691, Institute for the Study of Labor, Bonn.

Bratti, M., R. Naylor and J. Smith (2005), 'Variations in the Wage Returns to a First Degree: Evidence from the British Cohort Study 1970', IZA Discussion Paper No. 1631.

Challen, A., P. Noden, S. Machin and A. West (2009) 'UK Resilience Programme Evaluation – Interim Report', DCSF – RB094.

Chowdry, H., C. Crawford, L. Dearden, A. Goodman and A. Vignoles (2008) 'Widening Participation in Higher Education: Analysis using Linked Administrative Data', Institute for Fiscal Studies Report R69.

Chowdry, H., E. Greaves and L. Siebieta (2010) 'The Pupil Premium: Assessing the Options', Institute for Fiscal Studies Commentary C113.

Dolton, P. and O. Marcenaro-Gutierrez (2010) 'Cross Country Analysis of Teacher Pay and Pupil Performance', CEP mimeo.

Gibbons, S. and S. Machin (2003) 'Valuing English Primary Schools', *Journal of Urban Economics* 53: 197-219.

Gibbons, S., S. Machin and O. Silva (2009) 'Valuing School Quality Using Boundary Discontinuity Regressions', Spatial Economics Research Centre Discussion Paper No. 0018.

Gibbons, S., S. Machin and O. Silva, (2008) 'Competition, Choice and Pupil Achievement', *Journal of the European Economic Association* 6: 912-947.

Gibbons, S. and O. Silva (2006) 'Competition and Accessibility in School Markets: Empirical Analysis Using Boundary Discontinuities', in T. J. Gronberg and D. W. Jansen

(eds), 'Improving School Accountability: Check-Ups or Choice?', *Advances in Applied Microeconomics* Vol. 14, Elsevier.

Gibbons, S. and S. Telhaj (2006) 'Peer Effects and Pupil Attainment: Evidence from Secondary School Transition', Centre for the Economics of Education Discussion Paper No. 63.

Goux, D. and E. Maurin (2007) 'Close Neighbours Matter: Neighbourhood Effects on Early Performance at School', *Economic Journal* 117: 1-24.

Gregg, P and L Macmillan (2009) 'Family Income and Education in the Next Generation: Exploring Income Gradients in Education for Current Cohorts of Youth', Centre for Market and Public Organisation Discussion Paper No. 09/224

Hanushek, E. A. (2008) 'Education Production Functions', in SN Durlauf and LE Blume (eds), *The New Palgrave Dictionary of Economics*, Palgrave Macmillan.

Holmlund, H., S. McNally and M. Viarengo (2009) 'Does Money Matter for Schools?', Centre for the Economics of Education Discussion Paper. No. 105.

Hussain, I., S. McNally and S. Telhaj (2009) 'University Quality and Graduate Wages in the UK', Centre for the Economics of Education Discussion Paper No. 99.

Kramarz, F, S Machin and A Ouazad (2009) 'What Makes a Test Score? The Respective Contributions of Pupils, Schools and Peers in Achievement in English Primary Education', Centre for the Economics of Education Discussion Paper No. 102.

Lavy, V., O. Silva and F. Weinhardt (2009) 'The Good, the Bad and the Average: Evidence on the Scale and Nature of Ability Peer Effects in Schools', NBER Working Paper 15600.

Machin, S. and S. McNally (2007) 'Tertiary Education Systems and Labour Markets', a report prepared for the OECD (http://www.oecd.org/dataoecd/55/31/38006954.pdf).

Machin, S. and S. McNally (2008) 'The Literacy Hour', *Journal of Public Economics* 92: 1141-1462.

Machin, S. and S. McNally (2010) 'The Three Rs: The Scope for Literacy and Numeracy Policies to Raise Achievement', CEP mimeo.

Machin, S, S McNally and C Meghir (2007) 'Resources and Standards in Urban Schools', Centre for the Economics of Education Discussion Paper No. 76

Machin, S. and R. Murphy (2009) 'Differences in Labour Market Gains from Higher Education Participation', Report to the National Equality Panel (http://www.equalities.gov.uk/pdf/Variation%20in%20gains%20from%20university%20education.pdf).

Machin, S. and J. Van Reenen (2008) 'Changes in Wage Inequality', in S. N. Durlauf and L. E. Blume (eds), *The New Palgrave Dictionary of Economics*, Palgrave Macmillan.

Machin, S. and J. Wilson (2009) 'Academy Schools and Pupil Performance', *CentrePiece*, Spring.

Mikuta, J. and A. E. Wise (2008) 'Teachers for America: Catalysts for Change or Untrained Temporaries?' *Education Next*, Spring 2008.

Nickell, S. and G. Quintini (2002) 'The Consequences of the Decline in Public Sector Pay in Britain: A Little Bit of Evidence', *Economic Journal* 112, F107-F118.

Tominey, E. (2010) 'The Timing of Parental Income and Child Outcomes: The Role of Permanent and Transitory Shocks', mimeo, CEP and UCL.

Twist, L., I. Schagen and C. Hodgson (2006) 'PIRLS Readers and Reading, National Report for England', National Foundation for Educational Research.

West, A (2009) 'Redistribution and Financing Schools in England under Labour: Are Resources Going to Where Needs are Greatest?', *Education Management Administration and Leadership* 37(2): 158-79

Wößmann, L. (2003) 'Schooling Resources, Educational Institutions and Student Performance: the International Evidence', *Oxford Bulletin of Economics and Statistics* 65(2): 117-170.