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Reforming Education in England

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REFORMING EDUCATION IN ENGLAND

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By Henrik Braconier

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ABSTRACT

REFORMING EDUCATION IN ENGLAND

Despite significant increases in spending on child care and education during the last decade, PISA scores suggest that educational performance remains static, uneven and strongly related to parents' income and background. Better educational performance could improve labour market outcomes, raise growth, lower the consequences of a disadvantaged background and increase social mobility. Given the austere fiscal outlook, improvements have to come from higher efficiency rather than further spending. More focused pre-school spending on disadvantaged children could improve skill formation. Better-targeted funding for disadvantaged children combined with strengthened incentives for schools to attract and support these students would help raising educational outcomes. The government is increasing user choice by expanding the academies programme and introducing Free Schools, but needs to closely follow effects on fair access for disadvantaged children. The impact of increasing user choice on educational outcomes is uncertain, but the government should experiment with proscribing the use of residence criteria in admission to local government maintained schools in some local authorities. Reforms to increase supply flexibility should be pursued. All government funded schools should enjoy the same freedom in hiring and wage setting to level the playing field across different school types. To better gauge progress and inform policy makers, schools and parents on educational outcomes, additional performance measures should be developed and steps taken to lessen the reliance on grades in performance management. Insufficient supply of high-quality vocational programmes and tertiary education study places hamper human capital formation and growth. Stabilising and simplifying vocational education by more focus on high quality apprenticeships would support participation. The government needs to find efficient measures to raise participation especially among children from low income families to replace the abolished educational maintenance allowance. Further reforms to funding of higher education could lower taxpayers' costs and help finance a needed expansion in the sector.

This Working Paper relates to the 2011 OECD Economic Survey of the United Kingdom (www.oecd.org/eco/surveys/uk).

JEL classification codes: I21; I23; I24; I28.
Keywords: Tuition fees, disadvantaged students, primary education, preschooling, school choice, school funding, school system, PISA, education systems, education maintenance allowance, deprivation funding, grade inflation, school efficiency, social mobility, wellbeing

RÉSUMÉ

RÉFORMER L'ÉDUCATION EN ANGLETERRE

En dépit d'une forte augmentation des dépenses consacrées à l'accueil des jeunes enfants et à l'éducation au cours des dix dernières années, les résultats des tests PISA conduisent à penser que les performances du système éducatif restent inchangées et inégales et qu'elles sont fortement liées aux revenus et à l'origine sociale des parents. De meilleures performances pourraient améliorer la situation sur le marché du travail, stimuler la croissance, diminuer les conséquences de l'appartenance à un milieu social défavorisé et accroître la mobilité sociale. Compte tenu des perspectives budgétaires peu encourageantes, les améliorations necessaries doivent venir d'une plus grande efficience plutôt que d'un accroissement des dépenses. Cibler davantage les dépenses préscolaires sur les enfants issus de milieux défavorisés pourrait améliorer le développement des compétences. Des aides plus spécifiques en faveur de ces enfants, associées à de nouvelles incitations encourageant les établissements scolaires à les attirer et à leur fournir un soutien contribueraient à améliorer les résultats scolaires. Le gouvernement a élargi les possibilités de choix de l'établissement scolaire pour les familles en développant le programme relatif aux établissements indépendants (academies) et en permettant la création d'écoles libres (Free Schools), mais il doit suivre étroitement les effets du libre accès aux établissements de leur choix pour les enfants issus de milieux défavorisés. Il n'est pas certain que l'élargissement des possibilités de choix proposées aux utilisateurs de l'éducation ait un impact sur les résultats scolaires, mais le gouvernement devrait tenter de mettre un terme à l'application de critères de résidence pour l'admission dans les établissements scolaires gérés par les administrations locales dans certains cas. Les réformes tendant à accroître la flexibilité de l'offre devraient être poursuivies. Tous les établissements financés sur fonds publics devraient jouir de la même liberté que les autres au niveau du recrutement et de la fixation de la rémunération des enseignants, afin d'assurer une concurrence équitable entre les différentes catégories d'établissements. Afin de mieux évaluer les progrès et d'informer les décideurs, les établissements et les parents sur les résultats scolaires, de nouveaux indicateurs de performance devraient être mis au point et des mesures devraient être prises afin que l'on accorde une moindre place aux notes dans la gestion des performances. Une offre insuffisante de places dans des programmes d'enseignement professionnel de qualité et dans l'enseignement supérieur fait obstacle à la formation de capital humain et à la croissance. Stabiliser et simplifier l'enseignement professionnel en plaçant davantage l'accent sur les apprentissages de qualité permettrait d'améliorer les taux de scolarisation. Le gouvernement doit rechercher des moyens efficaces d'accroître la scolarisation, en particulier parmi les enfants issus de milieux modestes, afin de remplacer l'allocation pour la poursuite des études, qui a été supprimée. De nouvelles réformes du financement de l'enseignement supérieur se traduiraient par une baisse des coûts pour le contribuable et contribueraient à financer le développement indispensable de ce secteur.

Ce Document de travail se rapporte à l'Étude économique de l'OCDE du Royaume-Uni 2011 (www.oecd.org/eco/etudes/uk).

Classification JEL: I21; I23; I24; I28.
Mots-clés: Les frais de scolarité, les élèves défavorisés, l'éducation primaire, le préscolaire, le choix de l'école, le financement des écoles, le système scolaire, l'enquête PISA, les systèmes d'éducation, allocation d'entretien d'éducation, le financement de privation, l'inflation des notes, rendement scolaire, la mobilité sociale, le bien-être

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REFORMING EDUCATION IN ENGLAND

By Henrik Braconier[1]

International test scores suggest that educational outcomes have not improved

Educational outcomes and human capital formation are among the most important drivers of economic growth and contribute to human well-being (See Box 1). Furthermore, large differences in educational outcomes increase income inequality. Differences in educational outcomes also lower intergenerational social mobility, as children of high-income parents tend to achieve better in the education system than their peers (Blanden *et al.*, 2007). Incomes and educational outcomes are unevenly distributed in the United Kingdom compared to many other OECD countries, and intergenerational social mobility is low (Figure 1, first panel).

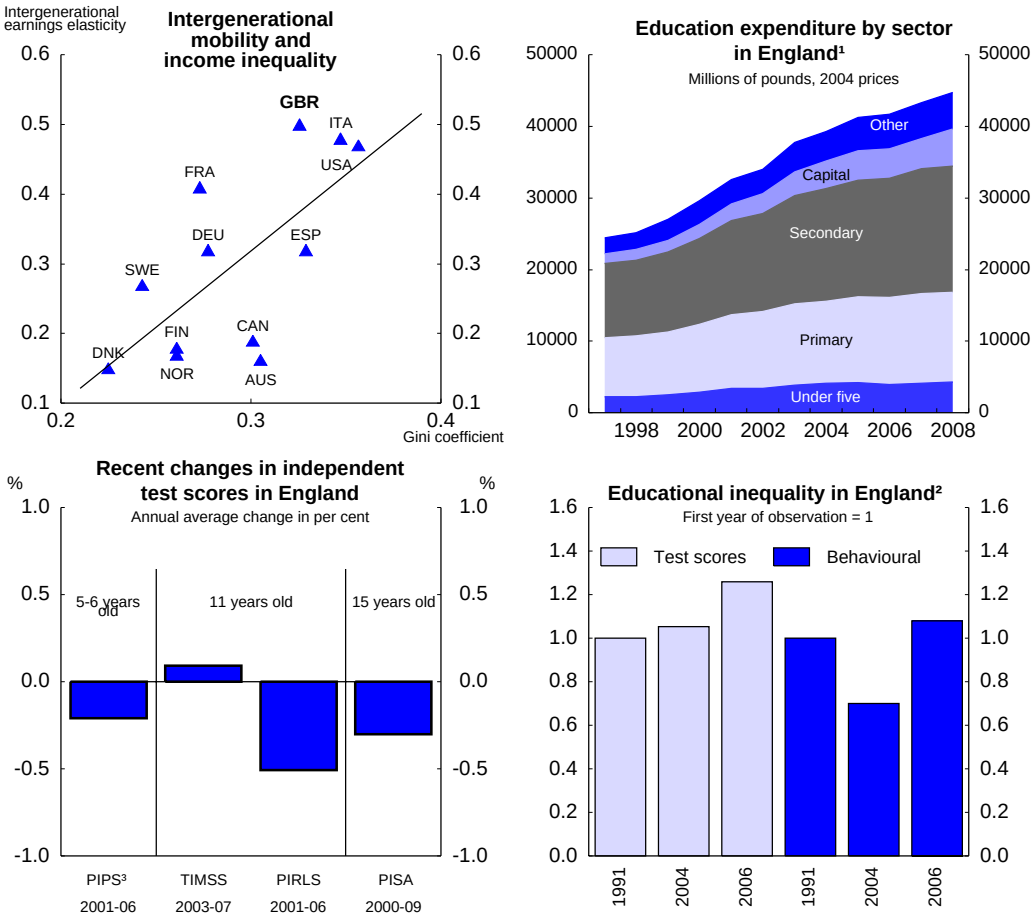
Evaluating educational reforms and identifying efficient policies is often difficult however. Firstly, conclusive evaluations in terms of labour market and social outcomes can often not be performed until groups affected by policies have reached adult age, which may take place 20 years after policies have been introduced. Developing and analysing intermediate indicators of outcomes therefore needs to be an important part of the evaluation of policies. Secondly, policy evaluation is difficult as education systems are complex by their nature and different countries seem to be able to perform well under different institutional settings (Braconier and Brezillon, forthcoming). This means that reforms has to be seen in a country-specific institutional context.

During the last ten years, ambitious reforms aiming at improving educational outcomes, addressing inequality and increasing social mobility have been pursued in England. Spending on pre-school education (henceforth pre-schooling) and schooling has risen substantially (Figure 1, second panel). Major reforms have aimed at supporting disadvantaged children and families by addressing child poverty and work incentives for parents. These policies have been successful in reducing poverty, in particular among children and pensioners the last decade (Joyce *et al.*, 2010). Progress on improving educational outcomes and lowering educational inequality has been limited however (Figure 1, panel 3 and 4).

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1 Henrik Braconier is Senior Economist on the United Kingdom/Finland desk in the Economics Department of the OECD. This paper was originally produced for the 2011 OECD Economic Survey of the United Kingdom published in March 2011 under the authority of the Economic and Development Review Committee (EDRC) of the OECD. The author would like to thanks Christophe André, Andrew Dean, Robert Ford, Deborah Roseveare and Piritta Sorsa and members of the EDRC for valuable comments. He is also grateful to Jérôme Brezillon and Sarah Flèche for statistical analysis and Deirdre Claassen for secretarial assistance.

Figure 1. Educational and social outcomes in the United Kingdom and England



1. Education expenditure by Central and Local Government in England. Excludes DfE administration costs and expenditure on other areas than education, for instance on children and families and on skills.
2. Measured as impact of parent income on children's cognitive skills at 6 years age.
3. PIPs is used by a relatively small number of schools and there have been concerns about the robustness of the test results (Massey, 2005).

Source: Panel 1: Data on intergenerational earnings elasticity are based on the meta-analysis carried out by Corak (2006) for most countries. Those for Spain, Australia and Italy are from D'Addio (2006). Data on income inequality are from the OECD. Panel 2: Department Annual Report 2009. Panel 3: PISA database, Mullis *et al.* (2007 and 2008) and Merrel, Tymms and Jones (2007). Panel 4: Blanden and Machin (2007).

Box 1. Wellbeing in the United Kingdom

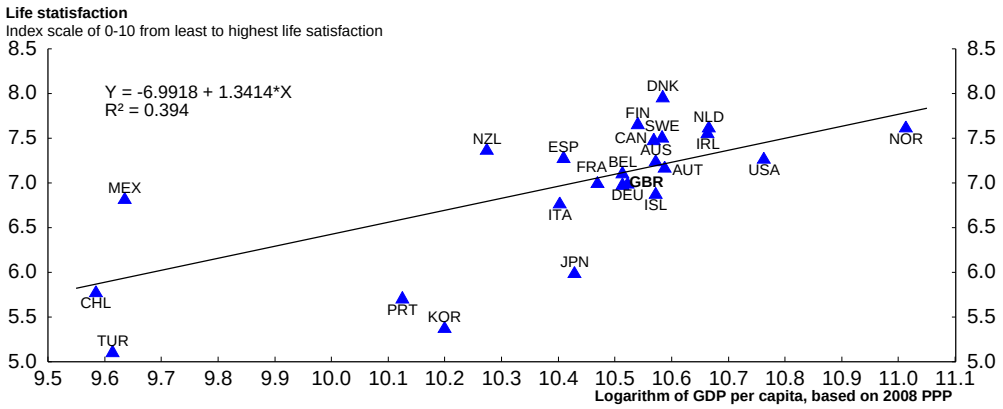
GDP as a measure of wellbeing has well known drawbacks, recently highlighted by Stiglitz *et al.* (2009). GDP mainly reflects market production, excluding *e.g.* household production. Furthermore, Stiglitz *et al.* (2009) emphasise that wellbeing is a multi-dimensional concept, and identify, in addition to material living standards, a variety of other important determinants of wellbeing. Examples are health, education, personal activities, political voice and governance, social connections and relationships, environment and economic and physical insecurity. Other studies also show that wellbeing is not just a function of income at a point in time, but adapts to changes in income. If GDP growth slows, life satisfaction can decrease (Di Tella *et al.,* 2003).

Policymakers are increasingly interested in these additional indicators and their determinants as complements to

GDP. An index of wellbeing has, for example, been developed in Canada, and the Australian government has articulated the goal of improving the wellbeing of current and future generations (Australian Government, 2010). The Australian Bureau of Statistics has published a dashboard of wellbeing indicators since 2002, along the lines spelled out more comprehensively in Stiglitz *et al.* (2009). In the UK the development of a wellbeing index as a reference for policy was proposed recently by Prime Minister Cameron, building on work by the Office for National Statistics (2010). The government's explicit goal is to improve the wellbeing of current and future generations. It has recognized that wellbeing is a multi-dimensional concept beyond GDP per capita and economic performance and policy should take into account the stock of environmental, human and social resources. (Waldron, 2010). Efforts to improve the measurement of wellbeing are being coordinated in an ongoing OECD project on "Measuring Progress in Societies" as a follow-up to Stiglitz *et al* (2009).

Comparing wellbeing across countries and over time remains a challenge and there are many ways to measure it. In recent years, a large body of theoretical and empirical research has examined the inherently complex conceptual and measurement problems related to a broader concept of wellbeing. Research has been facilitated by the development of internationally comparable wellbeing indicators (World Value Survey, Gallup World Poll). However, these polls remain unofficial and are at times criticised as covering limited samples and changing excessively between waves. Furthermore, these surveys have no variables on housing, although it can be an important determinant of wellbeing. The types of wellbeing measures developed include expanded GDP, weighted averages of life satisfaction indexes, and self-reported subjective assessments of wellbeing based on survey data (Boarini *et al.*, 2006). Self-reported subjective wellbeing can be further divided into life satisfaction surveys (ranks of 0 to 10 of a person's satisfaction with life) and emotional wellbeing indicators (a person's emotional feelings at a point in time) (Kahneman and Deaton, 2010; Di Tella R *et al.*, 2001). Index-based measures face problems with subjective weights, while expanded GDP excludes potentially important factors of wellbeing. Studies based on self-reported life satisfaction avoid these problems, but are subject to challenging data interpretation issues. These studies, which are getting increasing attention in the literature (Helliwell *et al.*, 2008 and 2009), tend to show that self-reported subjective wellbeing has a strong correlation with income (Figure 2), but also that other factors, such as health, unemployment and divorce, or quality of life indicators based on objective outcomes, are important.

Figure 2. Life satisfaction and GDP per capita across OECD countries, 2008[1]



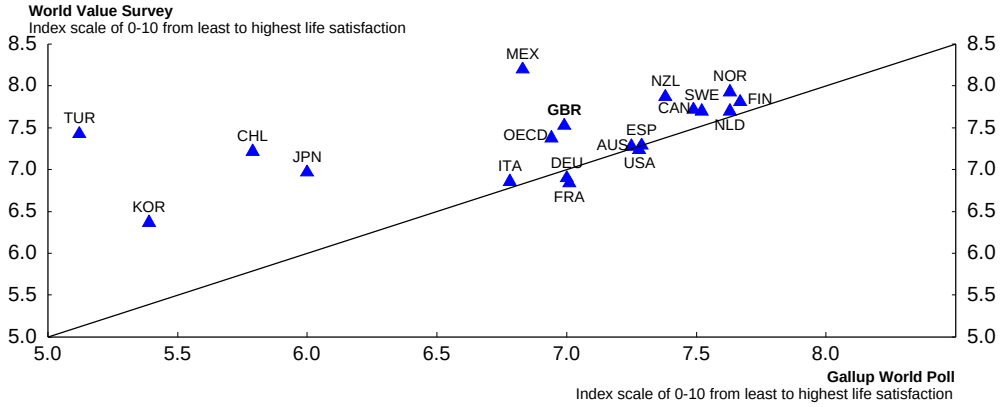
1. Life satisfaction is measures on an index scale from 0 to 10 of a person's satisfaction with life, from least to highest life satisfaction.

Source: Gallup World Poll, 2008 and OECD Economic Outlook 88 database.

Wellbeing measured by self-reported life satisfaction in the United Kingdom is around the OECD average. The ranking is slightly higher in the World Value Survey than in the World Gallup Poll in the 2008 (Figure 3). The Scandinavian countries together with Canada, New Zealand and the Netherlands tend to perform strongly, while Korea, Japan and Italy perform less impressively. Life satisfaction in the United Kingdom stagnated between 1981 and 2008, despite strong GDP growth, while it improved in the OECD as a whole. During the same period, UK self-assessed health and perceptions of the environment worsened, while perceptions of educational attainments and being employed improved strongly. Perceptions of freedom of choice and control rose also according to the World Values Survey (Figure 4).

Figure 3. Life satisfaction in OECD countries[1]

Comparison of life satisfaction results of two survey results

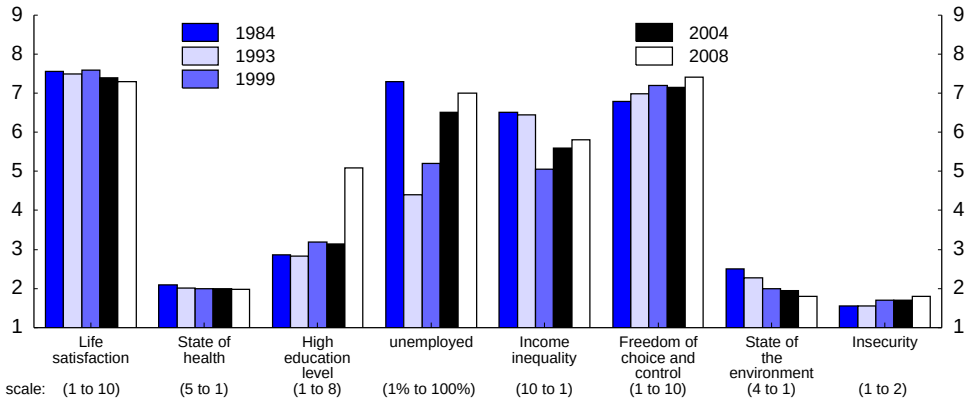


1. Life satisfaction is measures on an index scale of a person's satisfaction with life, from the worst possible to the best possible life. The Gallup World Poll index scale goes from 0 to 10 and the World Value Survey index scale from 1 to 10.

Source: Gallup World Poll, 2008 and World Values Survey, 2005-2008.

Figure 4. Life satisfaction and other indicators in United Kingdom

Index scale from least to best



Source: World Values Survey, 1981-2008.

To better understand what drives self reported wellbeing in the United Kingdom relative to other OECD countries, some tentative and explanatory empirical analysis was carried out (Annex 2). The most important factors for self-reported subjective wellbeing in the United Kingdom, apart from income, are self evaluated health, employment status, perceived freedom of choice and perceptions of the environment (Figure 4). These factors are also important for OECD countries on average.[1] An increase in perceived health by one unit (for instance, moving from good health to very good health), would increase overall life satisfaction by 0.53 on average in the United Kingdom, compared to 0.65 in the average OECD country. Being unemployed strongly decreases life satisfaction which is in line with other similar studies (Winkelmann and Winkelmann, 1998). As in other Anglo-Saxon countries, perceptions of freedom of choice also play a relatively large role for wellbeing in the United Kingdom. Approximately, a one point increase in this variable improves wellbeing by 0.45. The perception of the current and future environment has a high coefficient compared to the OECD average suggesting that perceptions about environmental problems related to climate change and air pollution affect wellbeing more in the United Kingdom than in most other OECD countries. Other significant factors relate to perceptions of (self-evaluated) insecurity, income inequality and social relations. Perceptions of income inequality decrease life satisfaction in line with other studies (Alesina, Di Tella and MacCulloch 2004; Di Tella and

MacCulloch, 2006), but less so in the United Kingdom than in most other OECD countries. Finally, having a higher educational level does not have a major direct impact on life satisfaction, but indirect effects through employment, income and social relations are likely to be substantial. The above results show that apart from increasing incomes and addressing inequalities, wellbeing could be enhanced by improving health and labour market outcomes and achieving stronger freedom in life and addressing environmental concerns.

1. To compare the results for the United Kingdom to those of the OECD on average, a statistical test was run to determine the significance of the difference between the coefficients. While this is not significantly different from zero at 5% level of significance, it, however, suggests that the size of the determinants of wellbeing estimated in the regressions is similar to a OECD average .

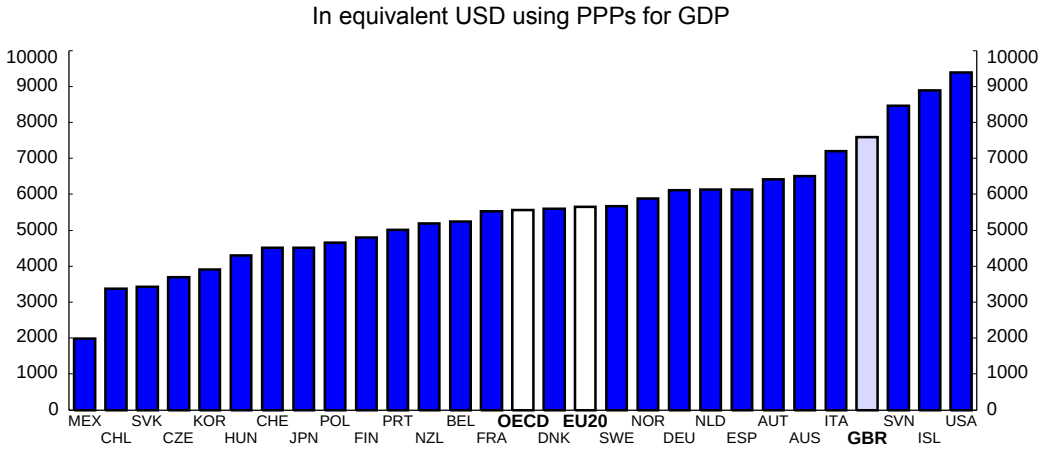
Better targeted pre-schooling can support social mobility and increase educational efficiency

Providing high-quality preschooling to children from disadvantaged backgrounds can yield high social and private economic returns and support social mobility (Goodman and Sianesi, 2005; Heckman and Masterov, 2007). The high returns reflect that disadvantaged families may lack access to credit and may thus invest too little in their children's education. Parents' lack of skills in creating an efficient home learning environment or knowledge of the return that education can yield, also contribute to underinvestment. Programmes to address underinvestment are therefore warranted, especially as the accumulation of both cognitive (intellectual) and non-cognitive (behavioural and social) skills during early childhood have high knock-on effects, and complement later skill-formation (Cunha and Heckman, 2010). Inequalities in skill formation and attainment up until secondary schooling are the most important explanations for lower tertiary participation among groups with lower socio-economic status in England (Chowdry *et al.*, 2010a).

Pre-schooling expanded rapidly in the United Kingdom during the early 2000s, fuelled by new programmes. The enrolment rate reached almost 95% in 2008, which is significantly higher than the OECD average of 72% (OECD, 2010).[2] Pre-schooling costs per full time equivalent are among the highest in the OECD area (Figure 5), although overall spending as a share of GDP is moderate, reflecting low average hours per child. The expansion in England was driven by early Sure Start local programmes (integrated early years provision, health and family support), the subsequent establishment of Sure Start Children's Centres and the Early Years entitlement (free nursery education per week for 3- and 4-year olds). While the initial Sure Start programme focused on disadvantaged geographic areas, it has later expanded into non-disadvantaged areas.

2. Measured as a share of the population aged 3 and 4.

Figure 5. Annual spending per capita on pre-primary education for children aged 3 and older[1] (2007)



1. 2008 for Chile.

Source: OECD (2010b).

Impact evaluations of the Sure Start programme have not provided clear results, in part because of a large degree of local freedom in tailoring programmes and successive waves of roll-outs (NESS, 2008), but also due to the practicalities of establishing relevant control groups.[3] Some evidence suggests that the roll-out of relatively inefficient free Sure Start day care has squeezed out more efficient private nurseries (Sylva *et al.*, 2006). The earliest phase of the National Evaluation of Sure Start (NESS) impact evaluation found little evidence of positive effects. However, more recent phases of the study have found some positive impacts. These included self-assessed quality of the home environment, child behaviour and child health possibly reflecting improvements in quality over time (OECD, 2008; NESS, 2008; NESS, 2010). According to teacher assessments in the Early Years Foundation Stage Profile, school starters' level of development has improved significantly and the gap between the 20% lowest-achieving children and the rest narrowed from 36% in 2008 to 33% in 2010. PIPs, which is an independent assessment tool provided by Durham University aimed at school starters, show little improvement in average cognitive abilities however (Merrell *et al.*, 2007). Furthermore, disadvantaged children seemed to perform worse in 2006 than in 2001, while the impact of parents' income on 6-year olds cognitive and non-cognitive skills has if anything increased recently (Figure 1, panel 4). The apparent slippage in cognitive skill levels among disadvantaged children at pre-school age is especially worrisome, as these skills seem to be less malleable at higher ages than non-cognitive skills (Cuhna and Heckman, 2010; Carneiro *et al.*, 2007). To date, there has been no cost-benefit analysis of Sure Start.

Box 2. Different measures of disadvantage

In this paper, the term disadvantaged children (students) is used to loosely describe children (students) that have lower abilities to achieve in pre-schooling and the school environment and thus may be in need of extra support. There is no uniform measure of disadvantage and variation in abilities is best seen as a continuum, where any specific indicator will yield an (arbitrary) cut-off. A number of observable background statistics do correlate with low abilities and achievements including child characteristics as development disorders and parents' characteristics like income, socio-

3. The National Evaluation of Sure Start (2008) does, for example, evaluate the effect of Sure Start Local Programmes (SSLP) by comparing children within the programmes to a sample from the Millennium Cohort Study (MCS). The data collection was conducted by different organizations and the children in the MCS were studied, on average, two years before the SSLP children (NESS, 2008).

economic status, ethnicity and level of education. The most important indicators used in the United Kingdom are:

- Special educational needs (SEN) refers to children who have been assessed by the local authority (LA) to have learning difficulties or disabilities and therefore needs extra support. LAs provide additional funding to schools for children with stated SEN. In 2010, 2.7% of all pupils in English schools had a SEN statement.
- Special educational needs without statement (or additional educational needs, AEN), refers to children who are deemed by schools to have learning difficulties but who don't have a SEN statement from the LA. Learning difficulties are in practice less pronounced than for stated SENs and schools are typically expected to cover the extra costs within their allocated budget. In 2010, 18.2% of all pupils in English schools belonged to this category.
- Free School Meal (FSM) recipient. Parents can apply for FSM at their local authority (LA) if they depend on income support and similar schemes or if their income is low. FSM is used as a marker of (relatively small) extra needs and enters school funding formula and is the criteria for the new pupil premium. In 2010, 17.4% of all students in maintained primary schools had an FSM statement.

The low impact on disadvantaged children so far is likely to partly reflect that interventions often do not reach the neediest children. While overall per-schooling participation is high, participation of children from ethnic minorities and socially disadvantaged backgrounds remains relatively low (Hopkins *et al*, 2010). To some extent this reflects too little focus on outreach activities in Sure Start, i.e. establishing contacts with the relevant target groups (NAO, 2006; NAO, 2009). In the earliest Sure Start programmes, outreach activities accounted for only 12% of wage costs (excluding overhead) and special needs spending for 2%; while child care, health services and family support accounted for the majority of the rest in 2008/09. As has been pointed out by the National Audit Office (NAO, 2006) outreach activities to the neediest parents should be stepped up to raise awareness among target groups. The government is providing funding for 4,200 extra health visitors to work alongside outreach and family support workers, which will enable stronger links with local health services for families. This is useful and should be accompanied by further focus on outreach activities to engage disadvantaged families in pre-schooling and also gauge the need for regular support to develop the home learning environment for the most disadvantaged children.

Pre-schooling has a disproportionately large effect on cognitive abilities and labour market outcomes of children from disadvantaged families (Hopkins *et al.*, 2010; Goodman and Sianesi, 2005). To improve pre-schooling outcomes among disadvantaged children more resources should therefore be geared towards disadvantaged families while containing costs in other areas of pre-schooling. In this context, the government has said that it wants a stronger focus on supporting the most vulnerable and disadvantaged families and increased use of evidence-based interventions within Sure Start Children's Centres. It has also set aside funding to extend the entitlement to fifteen hours per week of free early education to the 20% most disadvantaged two-year-olds in England by 2013. For the most disadvantaged children, further measures may be warranted. Early interventions with extensive use of home-visits by teachers on a regular basis, to support parents in providing more efficient educational activities at home seem to have been especially effective in supporting disadvantaged children in the United States (Heckman and Masterov, 2007). The applicability of such programmes in England should be evaluated. Home support programmes are resource-intensive however, and therefore need to be targeted at the most disadvantaged families and would require recruiting appropriate staff (See Box 3 for different definitions of disadvantage). One option to implement stepped up home support could be through a voucher system to spend on teachers coming for regular visits. To incentivise parents to participate in these activities, financial incentives could also be considered.

The effect of pre-school participation on skill formation among non-disadvantaged children is weaker in recent evaluation and cohort studies. Studies based on children born before 2000 found significant impact on test scores among school starters in England (Goodman and Sianesi, 2005; Sylva *et al* 2004). The effects waned over time however, and Goodman and Sianesi (2005) found that average returns to pre-schooling were lower than for later education. More recent research focusing on children that attended pre-

schooling during the mid-2000s (born 2000-02) show small and often insignificant effects on test scores at school starting age (Hansen and Jones, 2009; Hopkins *et al.*, 2010). Hopkins *et al.* (2010) also questioned previous evidence that variations in quality of child care have a significant effect on the average child outcomes in England. In a tight fiscal environment, the evidence therefore suggests spending should be focused on disadvantaged children.

The government also needs to contemplate methods to thoroughly evaluate, and potentially reform the Sure Start programme and pre-schooling programmes in general to improve overall efficiency. Hopkins *et al.* (2010) report that almost 40% of Childcare and Early Years providers do not know their outfits' total costs while unit costs differ significantly across authorities and providers (NAO, 2009). It may be useful to impose stronger restrictions across programmes to ensure more comparability. Any reforms should be carried out to facilitate explicit evaluation, by ensuring local variation and availability of control groups.

Primary and secondary education in England, the United Kingdom and the OECD

In England, children enter compulsory primary schooling at the age of five. After six years children undergo the National Curriculum Tests (also termed Key Stage 2) before progressing to secondary schooling. Students typically take General Certificate of Secondary Education (GCSE, also termed Key Stage 4) exams when they are 15, which are a prerequisite for entering the voluntary upper part of secondary schooling, the A-level. For those students that do not want to pursue an academic track, various vocational paths exist. Enrolment at the A-level is for two years and A-level exams form the basis for assessing entry into tertiary education. In the primary and secondary school system in the United Kingdom roughly 93% of students are enrolled in publicly funded schools with the remaining 7% enrolled in independent (*i.e.* private) schools which are independently funded and administered and set their own curricula (Table 1).

The primary and secondary school systems in Northern Ireland, Scotland and Wales share many features with the English system, but differ in some respects. The education systems in Wales and Northern Ireland used to be very similar to the English one, but differences have increased since 1998 as England has diversified from the comprehensive secondary school system that still prevails in Wales and Northern Ireland. The differences should not be overstated, as most English secondary schools remain comprehensive (Reynolds, 2008). The Scottish school system is more dissimilar, with slightly different admission criteria and a broader set of subjects being studied in secondary school.

Since 2000, the number of academies (autonomous public funded schools) has grown fast in England, although they still constitute a small part of the total number of schools (Table 1). Academies enjoy independence from Local Authorities (LA) in terms of daily operations, recruiting staff and admitting students, and are funded by the central government according to a different formula. In the Academies Act of 2010, the coalition government specified that any primary, secondary or special school that has been rated outstanding by the Office for Standards in Education (Ofsted) should be allowed to become an academy. This is in contrast to the previous focus on poorly-performing secondary schools.[4] The number of academies is set to grow rapidly over the next few years. The government is also introducing a free-school reform whereby parents, teachers or non-profit organizations can set up Free Schools that enjoy the same independence as academies.

The Department for Education oversees education in English schools, defines the National Curriculum, and distributes funding to the roughly 150 LAs through a complex set of 'earmarked' and general grants. LAs then in turn distribute funding to local authority-maintained schools according to local

4. See www.education.gov.uk/popularquestions/schools/typesofschools/a005582/what-are-academies.

formula. Schools then decide how to spend, apart from some earmarked funding. The current government has proposed to simplify the funding schedule, reducing the number of funding channels and instituting a pupil premium specifically aimed at deprivation funding. Apart from influencing school funding through the local funding formula, the LAs are also responsible for ensuring availability of suitable school places (Table 1). The quality of education is monitored by Ofsted. Schools deemed by Ofsted to provide an inadequate quality may be put under special administration, possibly replacing senior management and the governing board, while better performing schools are put under a lighter inspection regime.

Table 1. Institutional setup of primary and secondary schools in England

School type	Main source of funding	Selection of governing body	National curriculum applies	Admission and selection	Hiring of teachers	For profit	Share (%) 2006-07
Community	LA	LA	Yes	LA decides. Often priority to residents in catchment area	LA	No	62.1
Voluntary controlled	LA	Foundation and LA	Yes	LA decides. Often faith based priority	LA	No	3.3
Foundation	LA	Foundation and LA	Yes	Governing body decides	Governing body	No	16.6
Voluntary aided	LA and foundation	Foundation and LA	Yes	Governing body decides. Often faith based priority	Governing body	No	16.3
Academy	Central government	Limited company and sponsor.	Partly	Up to 10% academic priority	Governing body	No	1.4
Free school	Central government	Charity or similar.	No	Up to 10% academic priority	Governing body	No	-
Independent school	Tuition fees	Charity or similar.	No	Often academic	Governing body	No	-

Note: Further types of schools are City technology colleges and Special schools not maintained by LAs. Shares refer to share of maintained mainstream schools.

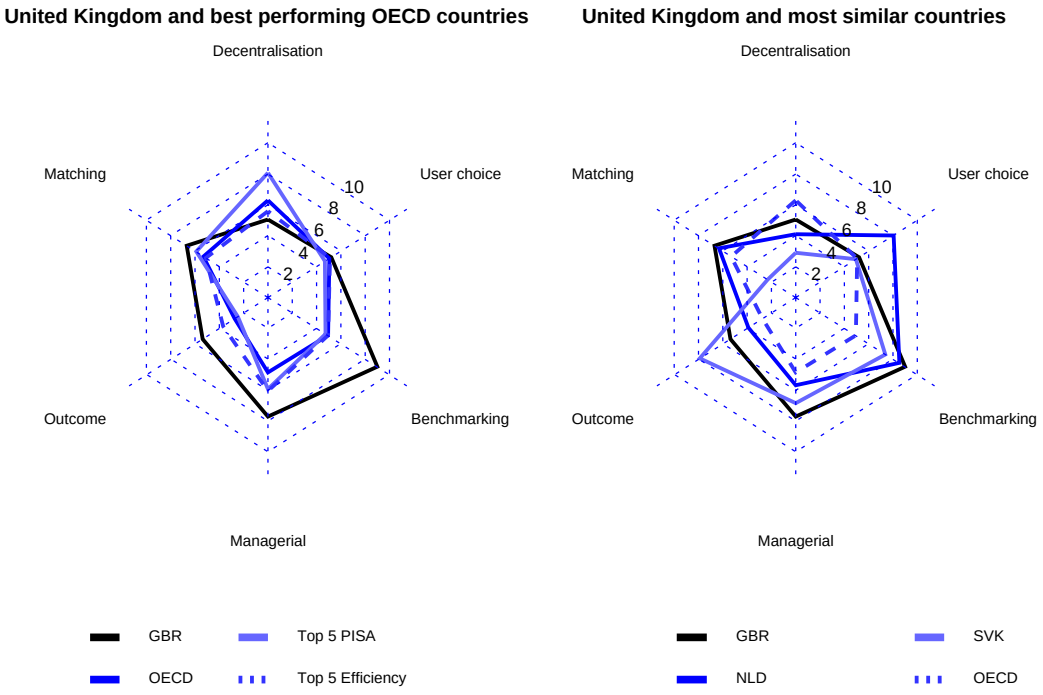
Benchmarking with tests and grades is an important part of the English school system. National Curriculum test scores for primary schools and GCSE scores for (lower) secondary schools are published. Traditional league tables for secondary schools typically focus on the share of GCSE candidates that achieve a certain grade level, such as the *Grades A*-C* which is the basis for selection into the academically focused (A-level) track into upper secondary schooling. Concerns relating to the usefulness of published league tables, which reflect levels of achievement rather than the value added of the particular school, has led to the publication of Contextual Value Added (CVA) scores by the Department for Education since 2006. The CVA indicator tries to reflect students' progress by relating output measures to inputs.[5] Kramarz *et al.* (2009), however shows that even this more advanced approach does not give good estimates of school efficiency as it to a large extent reflects pupil specific factors.

5. See 'A Technical Guide to Contextual Value Added (including English and maths) Key Stage 2 to 4: 2009 Model' (www.dcsf.gov.uk/performancetables/schools_09/s3.shtml) for further details.

Box 3. The English and UK primary and secondary school system in an OECD context[6]

Recent data compiled by the OECD describes the quality of educational institutions across member countries (Gonand, 2007). 21 indicators are aggregated into 6 composite indicators: decentralisation, matching resources to specific needs, outcome-focused policies, managerial autonomy at the school level, benchmarking, and user choice. As shown in Figure 6, the indicators suggest that institutional settings in the United Kingdom are significantly better than the OECD average in four areas, with decentralisation being the only area where institutional performance is below the OECD average. The same conclusions can be drawn when comparing the United Kingdom to the five countries that achieved the highest average scores in the PISA survey (OECD, 2007a) or the five countries that were deemed to have the most efficient primary and secondary school systems by Sutherland *et al.* (2009).[1]

Figure 6. Institutional settings in primary and secondary education



Source: Braconier and Brezillon, forthcoming.

Sutherland *et al.* (2009) report that the above-mentioned institutional factors cannot explain cross-country variations in efficiency in primary and secondary education. They do, however, find some evidence that devolution of decision power to schools on instruction and planning (which are parts of the managerial autonomy at the school level) increases efficiency. The evidence also suggests that the variation in efficiency across schools within countries falls when countries perform strongly in terms of decentralisation and matching resources to specific needs, although the latter may simply reflect that countries with early selection mechanically tend to have larger between-school variation in outcomes.

One likely reason for not finding strong relationships between "good" institutions and educational performance may be that there exist different institutional frameworks that produce strong educational outcomes. Braconier and Brezillon (forthcoming) use principal component analysis (PCA) and cluster analysis to identify groups of OECD countries that share institutional features. Primary and secondary school systems in OECD countries can be divided into 5 groups (clusters), and high-performing countries in terms of high average PISA scores or high efficiency are

6. Largely based on Braconier and Brezillon (forthcoming).

spread across these groups, suggesting that very different institutional setups can yield strong outcomes (Table 2).

Table 2. Grouping of OECD countries according to setup of primary and secondary educational institutions

	Cluster 1: USA, SWE, NZL*#, JPN*#, CZE, FRA, ITA, PRT	Cluster 2: CAN*, HUN, AUS*, NOR, DNK, ISL	Cluster 3: GBR, NLD#, SVK#	Cluster 4: DEU#, AUT, GRC, TUR	Cluster 5 : BEL(FL), BEL(FR), ESP, FIN*, MEX
Mean PISA score (standard deviation)	502 (93.6)	516 (89.0)	507 (90.5)	482 (91.7)	446 (88.5)

Note: * indicates that country is among top five performers in average PISA score across subjects in PISA 2009. # indicates that country is among top five performers in terms of efficiency (Sutherland *et al.*, 2007).

The cluster analysis suggests that the institutional setup in the United Kingdom is most similar to those in the Netherlands and the Slovak Republic (Figure 6, second panel), with strong institutional settings in benchmarking, managerial autonomy at the school level and outcome-focused policies but weak in terms of decentralisation. The top-performer within the group, the Netherlands, also has strong settings in terms of user choice. This indicates that for countries with the United Kingdom's institutional setup, increasing user choice may improve educational outcomes and efficiency. Indeed, it might be argued that significant user choice, in combination with high-quality information (benchmarking), managerial freedom (managerial autonomy at the school level) and supply-side flexibility, is a necessary condition for offering genuine choice and competition in the education system. As discussed in Box 5, the Dutch education system seems to provide the preconditions for an efficient 'quasi'-market in primary and secondary schooling (Patrinos, 2010).

The institutional similarities identified by the clusters analysis and PCA makes it possible to analyse the impact of policy variables on educational outcomes within each cluster with the help of regression analysis (Braconier and Brezillon, forthcoming). Estimates for the UK cluster are then compared to estimates for the whole OECD area and the United Kingdom, which can be used to gain further insights into how policy changes may impact outcomes. For example, if one wants to analyse the effects of increasing user choice by weakening the impact of residency in a catchment area on admittance, using only data for the United Kingdom will be inefficient, as admittance criteria are highly correlated with other institutional settings. By including data for similar countries (the Netherlands and the Slovak Republic), more efficient predictions of the impact of institutions can be made. Estimates for the three countries and the whole group (cluster) are shown in Annex 1.

1. Efficiency estimated based on a range of inputs and outputs. See Sutherland *et al.* (2007) for further details.

Efficiency in primary and secondary education is low and has fallen

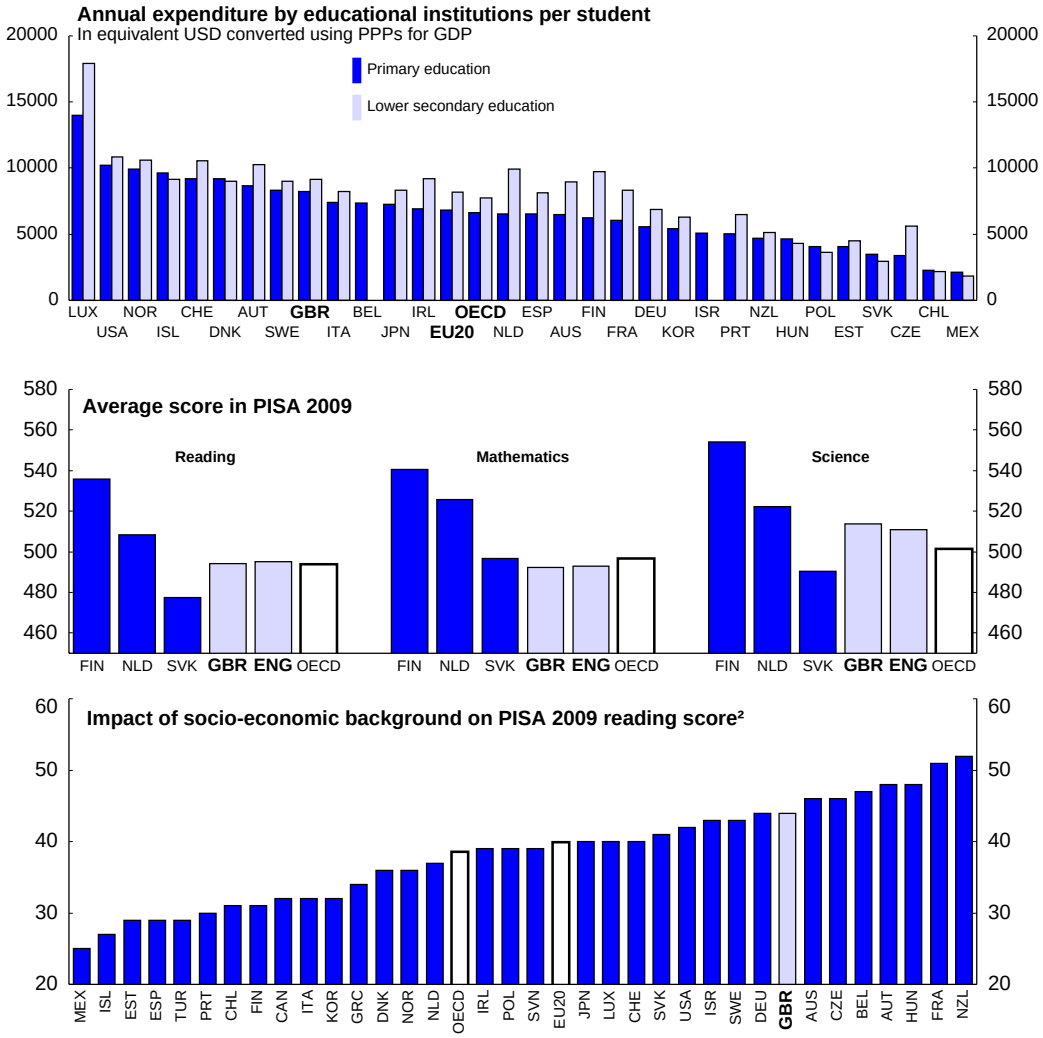
International evidence shows only a weak relationship between educational outcomes and spending on education (Sutherland *et al.*, 2009). Achieving significant improvements in educational outcomes have also proven difficult in many OECD countries despite increases in spending on primary and secondary education (OECD, 2007b). Studies focusing on single countries more often find positive effects of spending. Holmlund *et al.* (2009) finds evidence that higher expenditure per student has a positive and significant impact on test scores in English primary schools. One may speculate that the inability to find similar positive results in time series and cross-country data evidence may be due to that lower quality inputs or less effective institutional arrangements counteract effects from increased spending.

Despite sharply rising school spending per pupil during the last ten years, improvements in schooling outcomes have been limited in the United Kingdom (Figure 1; Box 4). Real spending per pupil in primary and secondary schooling has increased by 4.8% per annum between 1997/98 and 2009/10, leaving spending per pupil significantly above the OECD average (Figure 7, first panel). While national indicators of average educational outcomes show significant improvements, these developments are not supported by international data, which suggest sharply falling productivity in the education sector (Box 4). Although average PISA tests scores, measuring cognitive skills of 15-year olds, for the United Kingdom are close to the OECD average, they trail strong performers such as Finland and the Netherlands in achievements

(Figure 7, second panel). Average performance among 10-year olds, as measured by PIRLS and TIMSS scores (Mullis *et al.*, 2007 and 2008) is however relatively strong in an OECD perspective.

OECD research also suggest that considerable efficiency gains could be achieved in the primary and secondary schools systems, as the median school in the United Kingdom performs at roughly 70-80% of the OECD best-practice (Sutherland *et al.*, 2007). A move to best-practice would therefore mean that current levels of output could be provided using roughly 20% fewer resources. With growth in real central government spending on primary and secondary schooling predicted to fall to 0.1% per annum between 2010/11 and 2014/15 (HM Treasury, 2010), significant efficiency improvements will be needed to achieve better and more equitable educational outcomes.

Figure 7. Educational indicators[1]



1. Aggregates are unweighted average of available countries.
2. Score point difference associated with one unit increase in the PISA index of social and cultural status.

Source: OECD (2010), Education at a glance; OECD (2010), PISA 2009.

The impact of socio-economic background on PISA scores in the United Kingdom are at the higher end in the OECD (Figure 7, third panel and annex 1) and a low share of students from weak socio-economic backgrounds perform well (OECD, 2010a). The average PISA score of the weakest 10% of students is below the average for the same group in the OECD. This means that a sizeable share of the

population leaves compulsory schooling with low levels of skills, which has an adverse impact on rates of dropout in non-compulsory schooling, labour market performance, productivity growth, and income inequality.

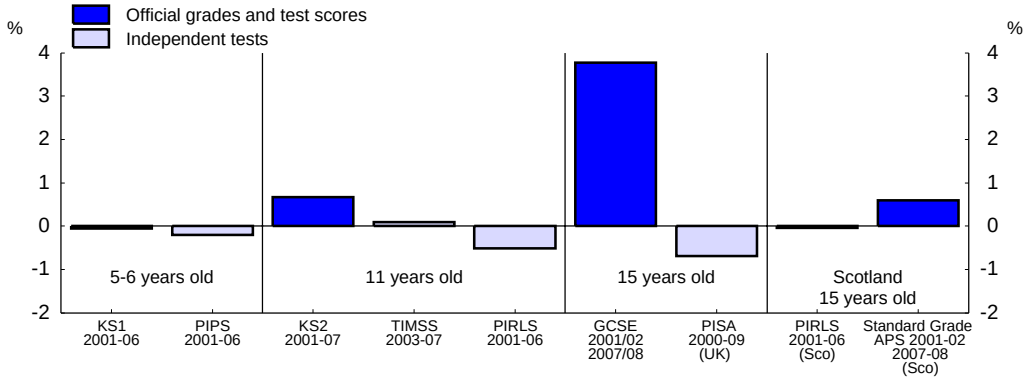
Box 4. Grades, test scores and productivity in the education sector

Measuring output accurately in the education sector is crucial for evaluating the effectiveness of education policy. While quantitative measures (number of students etc) are easy to come by, quality is more difficult. During the last few years, several OECD countries have started to incorporate quality adjustment factors in order to improve estimates of public service output.[1] In the United Kingdom, this has mainly been implemented by augmenting quantity measures of schooling output by the annual change in average scores of GCSEs and equivalent qualifications. To the extent that improvements in GCSEs overstate actual improvements in educational outcomes, value added in the education sector will be overvalued. As discussed in the main text, there is a risk that the use of "high-stake" grades influence estimates of educational quality in England.

Official test scores and grades in England show systematically and significantly better performance than international and independent tests (Figure 8). These differences in performance increase with the age of the students tested and are more pronounced for England than for Scotland. The measures used by the Office for National Statistics (ONS) based on English (GCSE Average Point Score) and Scottish (APS) grades show significant increases in quality over time, while the measures based on cognitive tests not used for grading show declines or minimal improvements. The annual difference between the improvement in the average GCSE score and decline in the PISA score is 4.5%.

Figure 8. Test scores in England and Scotland

Annual average change in per cent



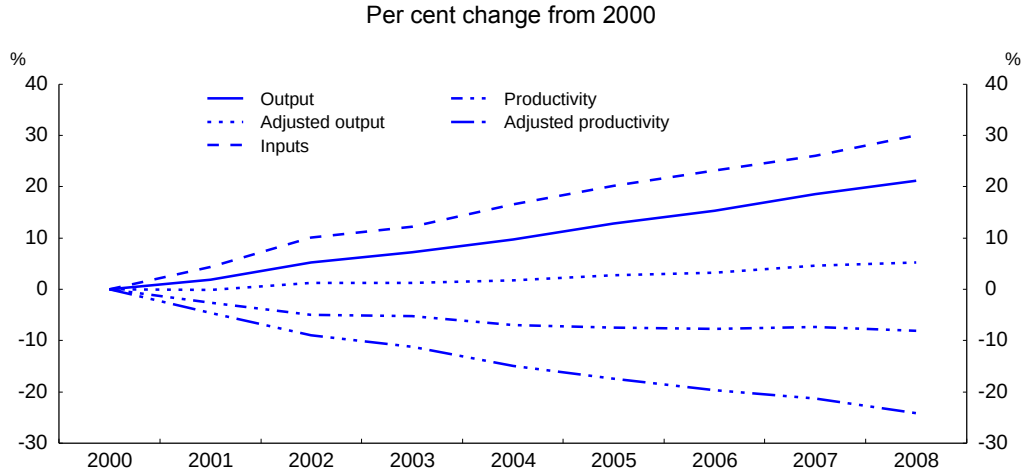
1. PIPs is used by a relatively small number of schools and there have been concerns about the robustness of the test results (Massey, 2005).

2. While data from PISA for the United Kingdom for 2000 should be used with some caution, due to sampling problems, PISA reading scores fell by an average of 0.1% per annum between 2006 and 2009.

Source: PISA database, Mullis *et al*. (2007 and 2008) and Merrel, Tymms and Jones (2007) and ONS (http://www.statistics.gov.uk/articles/nojournal/education-extended-analysis.pdf).

To illustrate the impact of different assumptions on quality adjustments in educational output, the ONS's approach of using GCSEs and APS scores is contrasted to an assumed unchanged quality in output over the period 2000-2008. Educational productivity falls by 1% per year in the first approach but by roughly 3% a year if quality is unchanged (Figure 9). Assuming that value added in public primary and secondary education amounts to roughly 4% of GDP, there is almost a 0.1% annual effect on GDP growth from the ONS assumed quality improvement. Although quality-adjustment of output in the public sector is clearly useful in principle, the quality of the data is of utmost importance. Developing better and more reliable indicators of quality should therefore be a priority.

Figure 9. Educational output, inputs and productivity



Source: http://www.statistics.gov.uk/articles/nojournal/education-productivity.pdf, http://www.statistics.gov.uk/articles/nojournal/education-extended-analysis.pdf and http://www.statistics.gov.uk/pdfdir/pps0609.pdf and OECD calculations.

1. See http://www.statistics.gov.uk/articles/nojournal/education-extended-analysis.pdf for a discussion.
2. While data from PISA for the United Kingdom for 2000 should be used with some caution, due to sampling problems, PISA reading scores fell by an average of 0.1% per annum between 2006 and 2009.

The extensive focus on grades in the school system is a cause of concern

National Curriculum Tests and GCSEs are used in many ways, such as selection for higher education, informing parents and students on school choice, need of Ofsted inspection, measuring variation and improvements in educational outcomes, quality adjustment factor in national accounts data, and for research purposes. They are used to gauge students, schools and national achievements. The use of benchmarking is more widespread than in virtually any other OECD-country (Gonand *et al.*, 2007).

While benchmarking is an important feature of a successful school system, high-stake tests can have negative consequences for educational outcomes (Looney, 2009; Rosenkvist, 2010). The current use of tests and grades in England therefore raises several concerns. Firstly, high-stake tests are conducive to grade inflation, which raises issues of comparability over time. Whilst is it difficult to draw clear conclusions on the extent of grade inflation, the share of A-level entries awarded grade A has risen continuously for 18 years and has roughly trebled since 1980. While comparable data over long time periods is not available, independent surveys of cognitive skills do not support this development (Box 4). This divergence might reflect a range of factors, where e.g. grades reflect changing subject choices, more frequent resitting of exams and also changes to teaching and to the curriculum. This contrasts with international tests like TIMSS, PIRLS and PISA which are designed to facilitate comparability over time. High-stakes benchmarking can influence behaviour in other ways too. For students, grades are obviously crucial, and this pressure is further leveraged by limited access to tertiary education. Schools and teachers stand to benefit from increased autonomy through a lighter inspection regime from the Ofsted and a higher ranking in the league tables if performance is strong. The government could obviously stand to gain from being seen to improve educational performance. And the five examination boards that certify examinations have little incentive to uphold higher standards than their competitors - although an independent regulator,

Ofqual is in place to guard against lowering of standards. Nevertheless, there remain strong incentives for "gaming" and "teaching to tests" (OECD, 2007b). Providers of higher education have also raised concerns about the impact of gaming on university admission and the university admission service (UCAS) launched a review of the admission system in summer 2010.

Secondly, test scores compiled during a short period measure only a small part of the relevant skills of the student. In particular, non-cognitive skills are not measured by tests but have a significant impact on students' future educational career and life outcomes in terms of employment, income and wider social success (Carneiro *et al*., 2007). It is not only that these skills, which seem to be much more malleable during school age than cognitive skills, are neglected in testing but that extensive testing and grading of cognitive skills could actually "crowd out" non-cognitive skill accumulation in classrooms. This deficit may affect disadvantaged students disproportionately as their social networks may be less able to compensate this lack of support in the school environment. There is evidence that spillovers from parental to children's "non-educational" income is especially important in the United Kingdom, which may suggest that the school system is not effective in fostering social skills that are important for labour market outcomes and social mobility.

The reliance on GCSE scores should be lessened and primarily used as selection indicators into higher education and employment. Universities and employers are main stakeholders in the grade system and should have a greater say in the qualification procedures. Universities may anyway see the need to develop more individualised selection instruments, such as interviews, to better gauge overall and especially non-cognitive skills, although a larger reliance on non-cognitive skills could make entry more difficult for students from disadvantaged backgrounds. The government should consider whether the possible negative side-effects of having five competing examination boards, are sufficiently held in check by Ofqual.

More sophisticated indicators of schools value-added should be developed. GCSE grades and National Curriculum scores are important indicators of school quality for parents, students and Ofsted. While the move to publish Contextual Value Added (CVA) scores was a step in the right direction, school efficiency is imperfectly measured by this indicator (Kramarz *et al.*, 2009). The use of more sophisticated measures could dispel some of the overestimation of peer effects among parents that seems to be reflected in an excessive focus on sending children to schools where students have "good" social backgrounds, perhaps neglecting other factors of school quality and children's well-being.[7] Ofsted's inspection regime would also benefit from more accurate indicators. Furthermore, it is important that more focus is being put on proper inspections of "non-failing" schools to further relieve the pressure for schools to produce strong scores in order to avoid inspections.[8] More emphasis on lesson observation and the learning environment would provide evidence which can be used alongside attainment data in assessing schools and could make performance management more dynamic (OECD, 2007b).

To measure changes in overall schooling outcomes (output) over time more accurately, additional information should be collected. Outcomes for statistical comparisons should be separated from school grades to make output measures independent of grade inflation and changes to the curriculum. As measurement and testing is costly, sampling methods should be used to track changes in outcomes over

7. More recent evidence tends to show that peer effects on test scores are significant but relatively small (See *e.g*. Gibbons *et al.,* 2006 and Kramarz *et al.,* 2009). It should be noted however, that peer effects on non-cognitive skills and social networking are much less explored in the literature. Gibbons and Silva (2009) find that parents' perceptions of school quality is indeed dominated by test score performance, which however isn't strongly associated with student enjoyment of school.

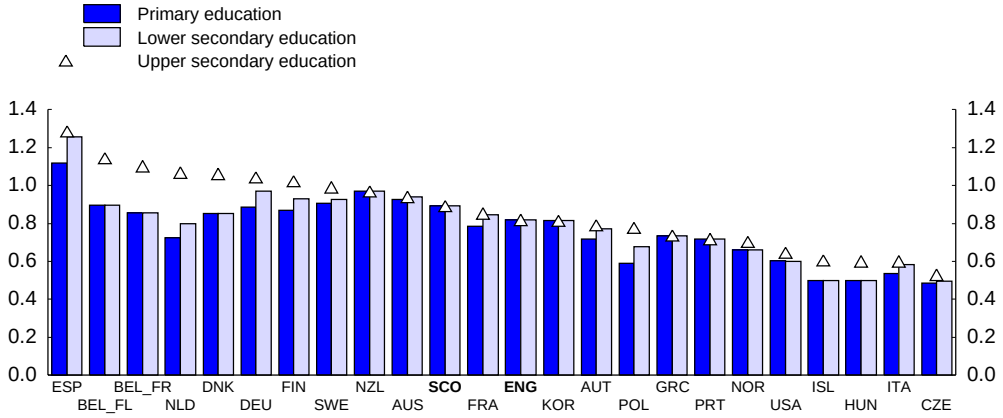
8. Schools deemed to be good or outstanding are inspected with five-year intervals unless annual performance indicators suggest otherwise (Ofsted, 2010).

time and across regions and school organisations. The sampling approach would hinder ranking of schools and would therefore remove teachers' and schools' incentives to "teach to tests". These cognitive tests could also be combined with a (smaller) set of in-depth interviews to analyse development of non-cognitive skills. This set of testing should be designed and administered by an independent body, without connection to Ofsted or qualification boards, with a specific remit to measure quality of schooling over time, region, school form and social background. Possibly, such an outfit could be set up as a part of the Office for National Statistics (ONS).

More attention to composition and quality of inputs could improve outcomes

Raising teacher quality is important for better outcomes. Teachers are the most important resource in schools, with spending on teachers amounting to roughly 60% of total spending in English primary schools (Holmlund *et al.*, 2009). Student teacher ratios seem to have a bigger impact on educational outcomes than general funding (Chowdry *et al.*, 2010b). As the share of educational spending that goes to core activities (excluding transport, meals and housing) is lower in the United Kingdom than in any other OECD country (OECD, 2010b), reallocating resources towards teaching seems warranted. Teacher quality is even more important. Hanushek and Wossman (2007) and Slater *et al.* (2009) find that higher quality of teachers raise student test scores. Recruiting and maintaining the most efficient teachers should therefore be prioritised. Measures to improve the quality of teachers include improving remuneration and work conditions. Continuing professional development is also an important factor in raising quality (Day *et al.*, 2006). Teacher wages in high performing countries in terms of PISA scores and efficiency tend to be relatively competitive compared to other academic professions (Figure 10). While starting salaries in general are high in England, low top wages may discourage the more experienced teachers from remaining in the profession, which may be exacerbated by an increasing number of retirements over the coming years. Working hours in teaching are also fairly long compared to many other OECD countries.

Figure 10. Salary after 15 years of experience (minimum training) in relation to earnings for worker with tertiary education[1]



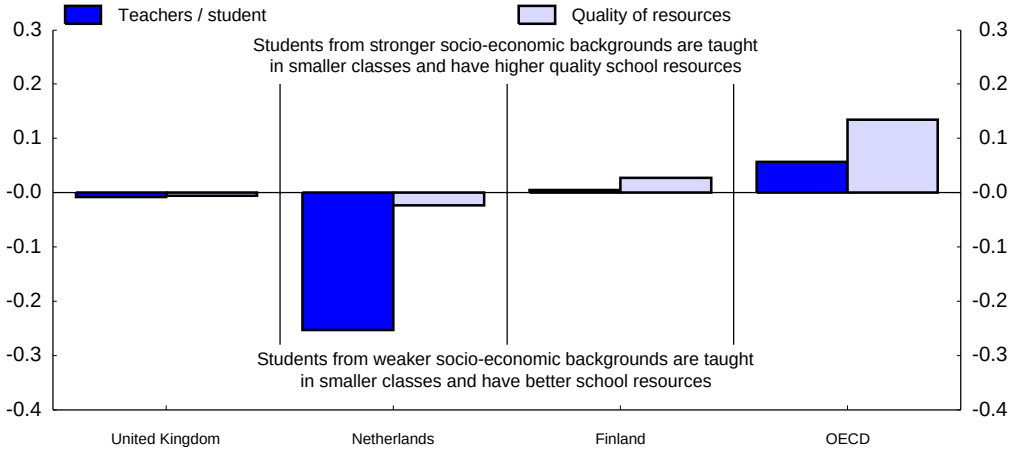
1. Full time worker aged 25 to 64.

Source: OECD (2010b).

To address the significant inequalities in the English education system, there is a need to provide better teaching for the most disadvantaged students. As shown in Box 3, the Netherlands statistically has the most similar institutional setup to the United Kingdom. In comparison to Dutch students, UK students from better socio-economic backgrounds tend to be taught in smaller classes and have access to better

quality teaching resources (Figure 11). The previous government tried to improve teacher quality for students from disadvantaged backgrounds by offering golden handcuffs for young teachers with high grades if they take up positions in disadvantaged areas. This policy has been abolished by the current government. Attracting and maintaining well-performing teachers should be the focus. It should be noted however that although better remuneration and work conditions could improve quality of the pool of teachers, easily observable teacher characteristics seem to have little correlation with effectiveness (Slater *et al.*, 2009). This point to the importance of giving individual schools, which can identify teacher quality, the tools and incentives to hire and reward high performing teachers, but also to remove low performing ones. Localising hiring and making pay conditions more flexible also for LA maintained schools would therefore be warranted and would also level the playing field relative to independent schools, academies, Free Schools and faith schools.[9] There is a risk that current proposals for academies and Free Schools may actually increase the correlation between socio-economic background and the quality of school resources. The government has proposed that LA maintained schools judged to be good by Ofsted should be eligible for academy status, thus providing already well-performing schools with relatively few disadvantaged students with more independence in hiring and wage setting (Machin and Vernoit, 2010). Free Schools which will receive similar freedoms are likely to cater to better off parents' needs, given the expected role to be played by parents in their creation. The impact of these reforms therefore needs to be closely monitored.

Figure 11. Correlation between students' economic and socio-economic background and school inputs



Source: PISA 2009 database and OECD calculations.

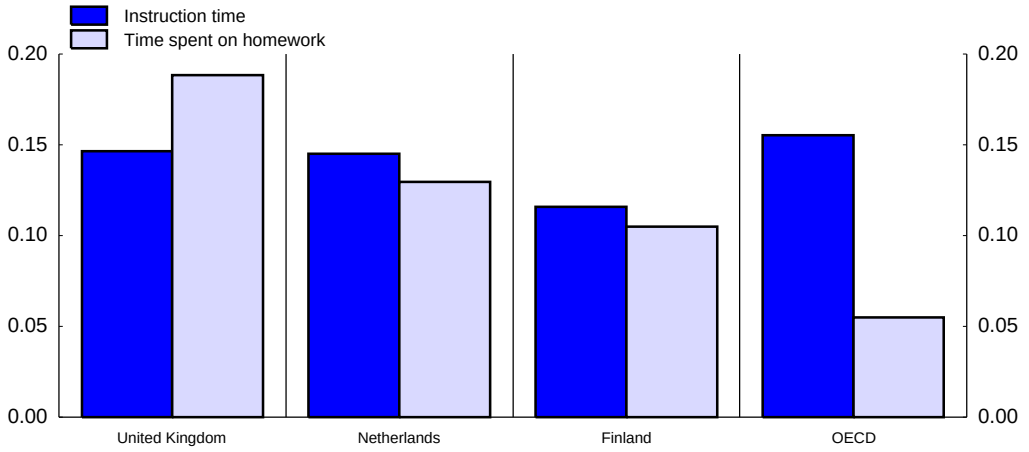
As shown in appendix 3A.1., longer instruction time and time spent on homework tends to be associated with higher PISA scores in the United Kingdom. Studies typically find a positive relationship between instruction time and test scores, although point estimates often are quite small.[10] However, most studies are based on national data, where variation in instruction time is typically fairly low, whereas more recent evidence based on international data find modest to large effects of instruction time on PISA scores (Lavy, 2010). Although increasing instruction time could be a relatively straight forward and cost effective way of improving educational outcomes in England and the United Kingdom, it should be noted that English students already receive more instruction time especially in science, maths and national language

9. It should be noted however, that LA-maintained schools often do not use existing room for wage differentiation.

10. Estimates of the effects of instruction time range from insignificant (*e.g.* Eide and Showalter 1998), significant but small (Wossmann 2003) to significant and important (Lavy, 2010).

than their OECD peers. Research on the effects of homework on outcomes is mixed, but homework and homework support have been shown to improve results for non-native speakers (Cosden *et al.*, 2004). This seems less to be the case for better-off children who already benefit from a more intellectually stimulating home environment and high-quality extracurricular activities. PISA data show that the correlation between socio-economic status and instruction time is positive in the United Kingdom and of a similar magnitude as for other OECD countries (Figure 12). Time spent on homework is much more highly correlated with socio-economic status in the United Kingdom than in other OECD countries (Figure 12). Homework support for disadvantaged students should therefore be contemplated. In designing such programmes special attention should be given to support to parents, as programmes otherwise could have negative long-term consequences by separating parents from their children's homework.

Figure 12. Correlation between students' economic and socio-economic background and learning time



Source: PISA 2006 database.

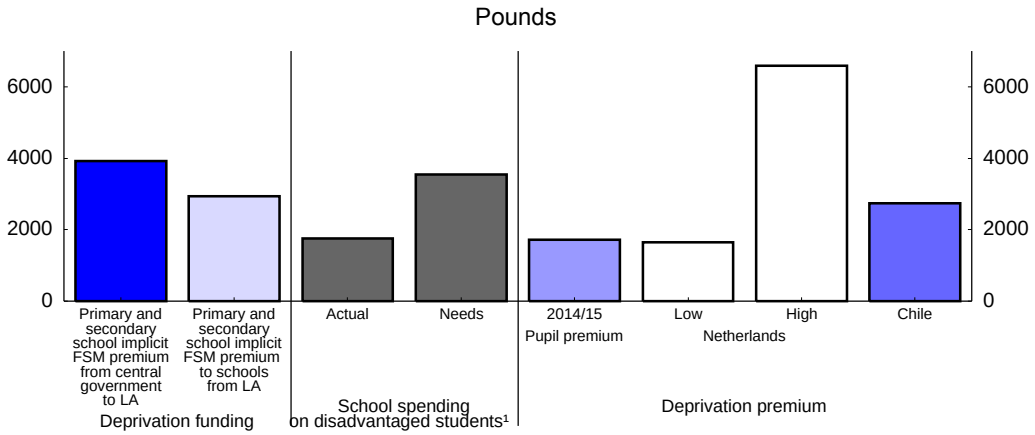
Pursuing a strategy where sufficient resources, high-quality staffing and efficient institutional arrangements are in place, especially for the most disadvantaged students, should be a priority. Achieving such outcomes is not easy however and takes time. Stop-gap measures, such as numeracy and literacy hours, to support less experienced teachers have been efficient in raising educational outcomes at a relatively low cost and should be pursued further (Machin and Vignoles, 2006).

Inefficient deprivation funding leads to underachievement among disadvantaged students

The unequal educational outcomes and the high impact of socio-economic background in the United Kingdom and England partly reflect a poorly functioning deprivation funding system in England. The central government currently provides (implicit) additional funding per deprived student in a LA equivalent to roughly GBP 4 000 per year (Figure 13). On average, LAs (implicitly) pass through roughly GBP 3 000 per deprived student to schools, with the difference spread across all schools within the LA. Several mechanisms can contribute to this low level of pass through. The complex transfer system may contribute by making it difficult for LAs to understand the share of deprivation funding in their total grants. The partial pass through may also reflect that LAs do not agree with the governments priorities. For schools (and parents with children in those schools) that have fewer disadvantaged children, strong deprivation funding to other schools may seem unfair and these schools may try to influence the LAs funding schedule. This may be one reason why LAs sometimes do not express support for extensive deprivation funding (OECD, 2007b).

Schools also face incentives to underspend on disadvantaged students. Firstly, the complex funding system may lead schools to underestimate the implicit deprivation funding that they receive. Secondly, if perceived deprivation funding is lower than schools' perceived costs, they may engage in "cream skimming", trying to dissuade disadvantaged students and recruit more able students. The lag in receiving deprivation funding provides an incentive for some schools not to recruit or retain disadvantaged students (Sibieta *et al.*, 2008). Schools also seem to spend significantly less on disadvantaged students than what they say is appropriate (Figure 13).

Figure 13. Deprivation funding and spending in primary and secondary schools



1. Refers to schools' estimates per pupil with additional educational needs (excl. high-cost needs).

Source: Chowdry *et al*. (2010), PwC (2009), Ministry of Education, Culture and science (2009) and OECD calculations.

The government is introducing a pupil premium (DfE, 2010). In 2011/12 schools will receive a premium amounting to GBP 430 per child entitled to free school meals on top of base funding. The OECD estimates that after full roll-out in 2014/15 schools will receive additional funding equivalent to somewhat less than GBP 1 700 per annum for each disadvantaged student. The premium will go some way towards addressing underspending on deprived students. It clearly establishes the central government's preferences in terms of minimum deprivation spending. It is not clear whether the proposed level of deprivation funding is sufficient, and therefore the impact should be montitored carefully. Deprivation premia in the Netherlands and Chile are also more generous in relation to base funding (Figure 13). The impact of the premium on overall resources available for disadvantaged students is furthermore unclear as some underlying incentive problems leading to underfunding in today's system remains. LAs could circumvent the government's intentions of the premium by spending less on disadvantaged schools from the general grant system, while schools may continue to face similar incentives for "cream skimming". The decision to include in the performance tables an indicator of attainment over time of pupils eligible for the Pupil Premium should go some way towards increasing transparency and may also incentivise schools to use the funding to improve the attainment of the target group. To be fully efficient however, the government needs to ensure that the pupil premium in combination with implicit deprivation funding is transparent, sufficiently large and more directly responsive to the actual number of enrolled disadvantaged students. This would incentivize schools to attract and retain disadvantaged students. Transparancy would also make it more difficult for LAs to divert funding for other purposes. To increase transperency, the government should therefore consider incorporating implicit deprivation funding into the pupil premium, making it the only source of deprivation funding. Providing school funding through a voucher style system with an integrated and large deprivation premium along the lines of the Netherlands and Chile could also be considered.

Strong reliance on admission based on residency hampers user choice

Admission authorities vary across school providers in England (Table 1). Compared to other OECD countries, admission based on residency is very common and academic criteria are seldom used (See Box 5 and Musset, 2010). Most LA maintained schools admit students by residence criteria, hampering competition between schools in different catchment areas and driving up house prices around 'good' schools (Gibbons *et al.*, 2006; Black and Machin, 2010). Faith-based schools often use a combination of denomination and academic criteria, while academies often use some aptitude criteria for particular subjects, such as sports and music. Independent schools admit on a combination of tuition fees and academic criteria. Effective user choices are thus highly influenced by whether families can afford independent schools or have access to faith-based schooling, have children with specific aptitudes, or are able to move close to attractive LA maintained schools.

The introduction of Free Schools could decrease the reliance on admission based on residency and contribute to more user choice and competition between schools. There is however mixed evidence within the OECD area whether school systems with more user choice provide better outcomes. User choice may also increase segregation of high-ability and low-ability students, which is likely to create peer-spillovers. Several high performing school systems in the OECD area offer very limited user choice, such as Finland, Canada and New Zealand. Country-specific evidence is also mixed. Studies show no measurable long term effects of increasing user choice on pupils in Sweden and the United Kingdom (Bohlmark and Lindahl, 2008; Gibbons *et al.*, 2006). However, Gibbons *et al.* (2006) find evidence that competition between faith-based schools (which typically do not use residency admittance criteria) seems to improve efficiency in English schools. Patrinos (2010) also finds that more school choice, proxied by private school attendance, increases PISA scores in the Netherlands.

It is thus uncertain whether the increased user choice that will be provided through school reforms will improve overall educational performance. Compared to many other countries however, preconditions for establishing a well-functioning educational quasi-market are relatively good in England. Outcome indicators for schools are widely available, helping parents to make informed choice, and schools have significant management autonomy, making them able to adjust to local needs. Funding largely follows the student, although responsiveness could be improved, as discussed above. Increasing user choice would hence induce stronger competition between schools which could provide better educational outcomes.

Although the number of academies and Free Schools are set to rise fast, most English schools will continue to manage oversubscription using criteria where proximity to the school plays an important role. Arguably, admission based on residency in maintained schools is a bigger obstacle to user choice than 'market shares' of academies and Free Schools. Disadvantaged families living in areas where maintained schools are low-performing currently have limited user choice, especially as supply is inflexible (see below) and popular schools are oversubscribed, and may not be affected by reforms. More equality in user choice could thus be warranted, which also would provide disadvantaged families with a better bargaining position *vis-à-vis* schools. User choice could be increased by proscribing the use of residential criteria in all LA maintained schools. Admission based on residency is limited in the Netherlands, providing significant user choice for parents and students, and the Dutch education system is performing well in an OECD perspective (Box 5; Patrinos, 2010). Reforms to lessen residency criteria could have significant impact. Based on the analysis in the appendix, the move to a similar level of admission based on residency as in the Netherlands could increase average PISA scores in the United Kingdom by almost 8 points (2%), although uncertainties surround these estimates.[11] Such reforms may have to be radical however, as piecemeal

11. This number is based on the estimated impact of the variable *Residency not considered in admission* for the joint cluster United Kingdom, Netherlands and the Slovak Republic which is 17.96 according to Table 3A.1.3 multiplied by the difference in applying this criteria in the Netherlands and in the United Kingdom (0.62-0.19) which gives 17.96*(0.62-0.19)= 7.72 points.

reforms are likely to lead to a limited resorting of students within catchment areas, as seems to have been the consequence of admission reforms in Brighton and Hove (Allen *et al.*, 2010). As there is significant uncertainty to the effectiveness of admission reforms, the government should initially experiment with proscribing the use of residential criteria in a few LAs.

Supply must be more flexible if substantial user choice is to be exercised

In order to improve competition among schools and increase user choice, the above-mentioned demand-side reforms need to be complemented by more flexible supply, allowing low-performing schools to exit, new schools to enter and popular schools to expand. Without flexible supply, schools would face captive markets and user choice would simply result in reshuffling of students. Empirical evidence suggests that supply flexibility is low in England, with combined exit and entry rates equal to 1.2% of the total primary and secondary school population in 2005/06, less than half the rate in Sweden during the same time. Furthermore, even schools that are among the bottom 10% in terms of performance manage to fill 93% (primary schools) and 89% (secondary schools) of available places, indicating low competitive pressure (Sibieta *et al.*, 2008). To reap the dynamic gains of competition, temporary excess capacity may have to be accepted to ensure that parents and students are able to choose schools rather than the other way around. The recent White Paper *The Importance of Teaching* sets out an intention for movement in this direction.

One factor hampering supply is that decisions to open a new school rest with the LA, except in the case of Free Schools, which may have weak incentives to encourage competition at the cost of already struggling LA maintained schools. Surplus places also lead to higher short term costs and decreased value for money and LAs have therefore been under pressure from the Audit Commission and the Department for Children, Schools and Families (now replaced by DfE) to keep vacancies low (Sibieta *et al.*, 2008). Presumptive school providers should instead be allowed to start new schools if they fulfill quality evaluations that should not be provided by the LA.

Another factor that constrains supply is access to appropriate facilities for would-be entrants. Already under the current system, shrinking funding for investment will cause strains as the number of pupils is growing. Encouraging more flexible supply would probably need a system where providers may receive a reasonable per pupil grant in order to find existing facilities to rent or to cover costs of actually constructing a new school. The latter setup may be facilitated by allowing for-profit providers to enter the market, as these could provide upfront capital for investment in facilities.

Box 5. School choice, competition and educational outcomes in the Netherlands

The Netherlands is a useful point of comparison when evaluating the English and the UK education systems for several reasons. Firstly, institutional similarities are significant, as illustrated by the cluster analysis in Box 3. These similarities entail a strong emphasis on government benchmarking through a national curriculum and exams (that are published), significant managerial freedom for schools and a relatively weak influence of local authorities. Differences between the two systems are significant too with early tracking, a national school funding scheme directly linked to enrolment, direct "deprivation compensation" to schools and extensive user choice and supply flexibility being hallmarks of the Dutch system. Admission is typically based on academic rather than residential criteria (Table 3).

Secondly, similarities in terms of inputs are also significant, both in terms of social background and school resources, with students in both countries having better than average socio-economic backgrounds than the OECD average, while immigrants and non-national language students make up large shares of the student population. In 2007, the Netherlands spent 3.7% of GDP on primary, secondary and post-secondary non-tertiary education compared to 4.2% in the Unites Kingdom (OECD, 2010b).

Table 3. Educational outcomes

	United Kingdom	United Kingdom (maintained schools)	United Kingdom (independent schools)	Netherlands	OECD
Average PISA score	500	497	516	519	492
Socio-economic background	0.20	0.16	0.46	0.27	-0.15
Native	0.93	0.94	0.91	0.95	0.95
Speak national language at home	0.98	0.98	0.97	0.96	0.97
Students per teacher	14.5	14.9	9.5	15.6	16.1
Quality of resources (index)	0.45	0.44	0.61	0.32	0.07
Residency not considered in admittance	0.19	0.17	0.35	0.62	0.35
Academic performance not considered in admittance	0.72	0.84	0.00	0.03	0.41

Source: PISA database.

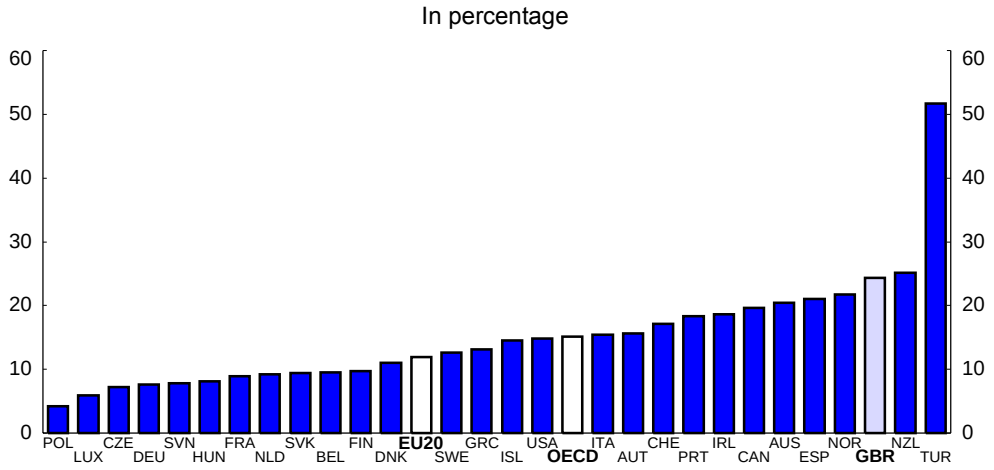
Thirdly, the Netherlands is interesting as the education system scores among the top countries in terms of average PISA results and educational efficiency (Sutherland *et al*., 2007). Furthermore, the school system seems to be efficient in mitigating the impact of differences in socio-economic background, as shown by the low impact this variable has on PISA scores (See Table 4 and the annex). Thus, the Dutch school system is able to produce average outcomes comparable to independent schools in the United Kingdom with resources comparable to the UK public funded school system, while at the same time compensating efficiently for differences in socio-economic background.

Within the Dutch government-financed primary and secondary education sector, roughly 70% of students attend independent (non-government) schools and 30% attend public schools provided by municipalities. These shares have been remarkably stable since financial equality was introduced in 1917 (Karsten, 1999). Independent schools often have a confessional alignment and may therefore impose religious criteria for admission, but selectivity is in most cases limited. Students attending independent schools tend on average to perform better on national exams, even after controlling for the socio-economic background of their students (See Table A1.3 in Annex 1.). Overall, the Dutch primary and secondary school system seems to provide genuine school choice and good outcomes for disadvantaged children (Patrinos, 2010).

Participation in upper secondary education is low

Participation rates in education in the United Kingdom among 15-19-year olds have been increasing but remain low in comparison to other OECD countries (Figure 14). In 2009 85.1% of 17 year olds participated in education or work-based learning compared to 79.7% in 2008.The share of the age group that is neither in education nor in employment (so-called NEETs) is high and increased during the recession (OECD, 2010d), but has started to fall. To address relatively low participation in non-compulsory upper secondary education the compulsory participation age will be increased in England. According to the 2008 Educations and Skills Act, participation in education or training will be compulsory until 17 years age in 2013 and 18 years from 2015, instead of the current 16 years. Full-time education, work-based apprenticeships and part-time education combined with employment all qualify.

Figure 14. Share of the 15-19 population not in education (2008)



Source: OECD (2010b).

Compulsion can raise participation and may improve later educational and labour market outcomes (OECD, 2008b). Evidence however suggests that those that do not stay on beyond compulsory schooling may face low expected returns from further education (Dearden *et al.*, 2004). As discussed in OECD (2007a), policies should focus on ensuring that students are equipped with the right skills to benefit from further education, incentivising them to participate and ensuring that the training provided eventually gives high returns in the labour market.

The main problem in the vocational education system seems to be that many qualifications have low or even negative impact on future wages, although high quality apprenticeships and some higher level vocational qualifications are major exceptions (Machin and Vignoles, 2006). There is a perception that there is too much fragmentation and too many programmes (UKCES, 2010). The sheer amount of programmes and the fact they have changed significantly over time contributes to employers' lack of understanding of the programmes, and their low impact (Machin and Vignoles, 2006). Providing a less complex and higher quality set of further education paths would make participation more attractive and could contribute to overall productivity. Therefore, the supply of education paths should be streamlined, quality increased and the number of apprenticeship positions further increased. Similar recommendations were provided in the Wolf Report (Wolf, 2011).

Economic incentives for risk groups that may stand to gain most in the long run from education but who are severely credit constrained are also warranted. The abolished Education Maintenance Allowance (EMA) raised the participation of recipients by roughly 8%, indicating deadweight costs around 92%, but economic benefits seemed to exceed the costs of the system (Chowdry *et al*, 2007; Dearden *et al.*, 2005). Given that the government has abolished the EMA, it needs to find alternative measures to efficiently raise incentives for participation for children from low income families.

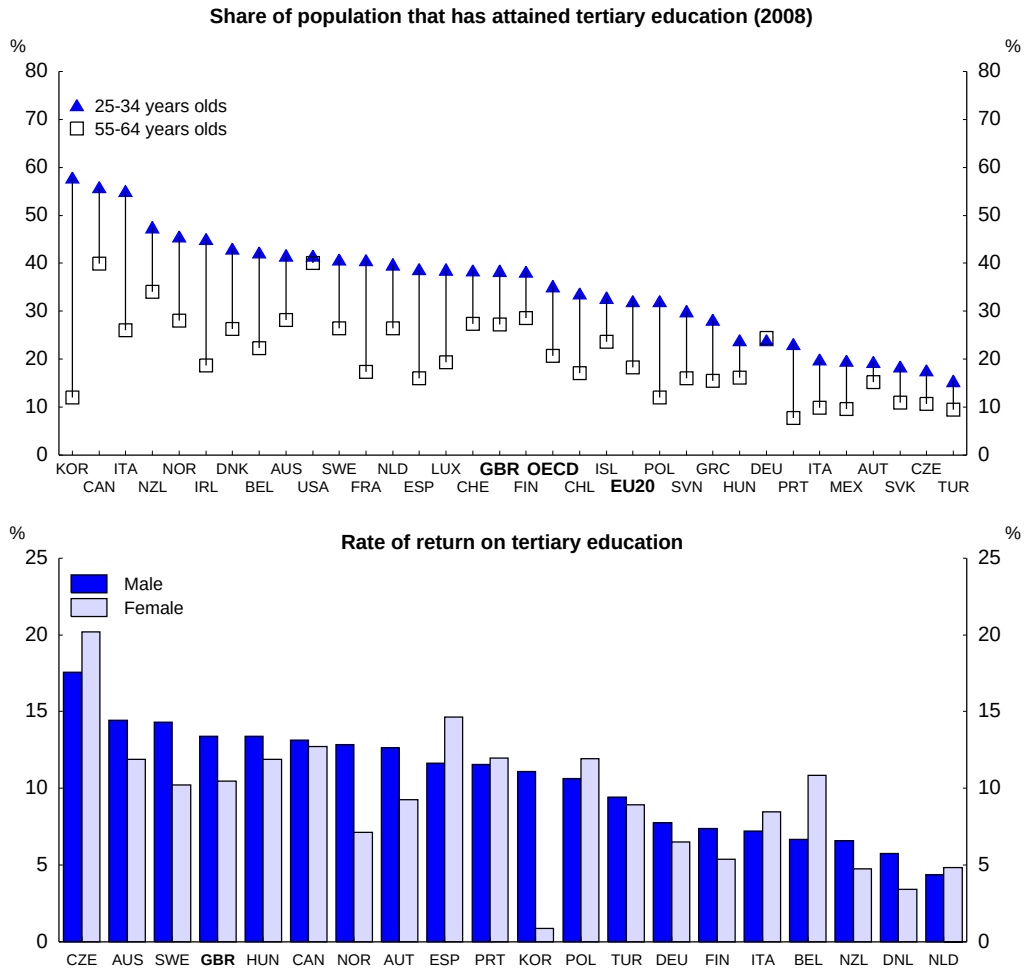
Higher caps on tuition fees should provide room for increasing the number of study places

Attainment levels in tertiary education are just above the OECD average (Figure 15, first panel), and overall quality of universities is impressive.[12] Private returns to tertiary education are high compared to

12. See *e.g.* QS World University ranking (2010), where 4 UK universities are among the top ten (www.topuniversities.com/university-rankings/world-university-rankings/2010/results).

most OECD countries (Figure 15, second panel). Bratti *et al.* (2008) find that a male (female) university graduate will typically gain a 16% (19%) wage premium relative to similar individuals without higher education. The averages reflect significant variations across subjects and institutions, however. Returns on the margin seem lower, but still relatively high (Dearden *et al.*, 2004). Even though university attendance has increased recently, there is little evidence that returns have fallen (Walker and Zhu, 2008), reflecting buoyant demand for highly educated labour relative to supply (*The Browne Review*, 2010). Increasing the supply of study places in higher education without diluting quality would increase human capital, raise economic growth, further equality and mobility by increasing access to higher education and potentially contribute to lowering wage differentials. Finding ways to finance such an expansion of higher education is therefore key.

Figure 15. Tertiary education in the UK



Source: OECD (2010b).

As individuals reap a large share of the gains from higher education, there is a strong case for students meeting a large share of the costs. However, market imperfections mean that students, especially from disadvantaged backgrounds, may find it difficult to invest sufficiently upfront in higher education. Thus

there is a case for a publicly supported financing system that eventually recovers most costs for tuition and maintenance for graduates. The current funding system of higher education in the United Kingdom provides such mechanisms to a greater degree than most OECD countries, with good access to upfront support in terms of maintenance loans and grants to students, significant tuition fees and eventual repayment of significant parts of the costs. Still, public subsidies per student remain very high; the public covers almost 60% of total direct costs of a degree, *i.e.* university spending and student loans and grants (Figure 16).[13] In the current system, repayments do not even cover the costs of support that students' receive when studying. There is thus further room for increasing the graduate's share of the costs of education, in order to lower the reliance on government funds and finance expansion of the number of study places.

Student support arrangements vary across the United Kingdom as higher education policy is a devolved matter. Currently, tuition fees in England are capped at GBP 3 290 per year for EU citizens with most universities charging the top rate.[14] In response to *the Browne Review* the government is changing higher education funding policy in England, increasing the cap to GBP 9 000 per year, accompanied by changes to loans and grants to pay for tuition.[15] Government grants to universities will be cut measurably, but public subsidies will remain significant; even if tuition fees were to increase to the maximum GBP 9 000, tax payers would cover over 40% of total costs of a degree (Figure 16).

The level of tuition that English universities will choose will depend on a complex set of demand and supply factors. The reform will mean that universities will need to increase tuition fees to GBP 7 000 to compensate for lower government grants (Chowdry *et al.*, 2010c). Given the high returns to higher education and buoyant demand, tuition fees are likely to increase more, leaving universities with higher funding per graduate. Some universities have already signalled that they will raise fees to GBP 9 000, subject to the agreement of the director for fair access. Any increase in tuition fees above GBP 7 000 will imply a net gain in funds for universities and an annual tuition of GBP 9 000 would in itself more than cover the current cost for universities for producing a degree (Figure 16), questioning the proposed levels of government grants to universities. If the tuition were to rise above GBP 7 000, steps should therefore be taken to lower taxpayers' subsidies per graduate.

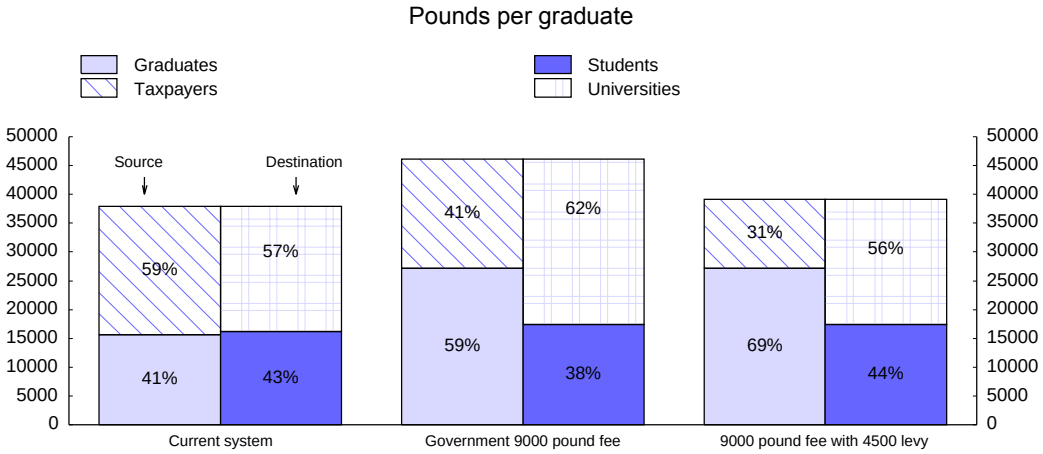
There are several ways to deal with universities' net gain. Taxpayer costs per student can be reduced, for example by lower grants to universities or a levy, as suggested in the Browne review. As an illustration, amending the government's proposed system with an average levy on universities equivalent to GBP 4 500 per graduate would leave per student funding in line with the current system (Figure 16). With tuition fees at GBP 9 000 this would further increase the share of costs that graduates eventually pay to almost 70% and lower public costs further, while maintaining current levels of funding for universities. Local conditions and the composition of subjects need to be considered in designing a levy. Given the high return to higher education, parts of a tax on tuition income could finance an expansion of available study places, as suggested in *the Browne Review*. The expansion in study places should be focused on lines of education with high social and private returns.

13. In relation to other OECD countries, the private share of tertiary education funding is slightly above the median (Santiago *et al.*, 2008).

14. Tuition fees for non-EU citizens are typically higher than for EU citizens.

15. According to the government's proposal, universities that want to charge tuition fees above GBP6000 must take additional action to ensure that disadvantaged students do not have fair access.

Figure 16. UK higher education source and destination of funding



Source: Dearden, L, Chowdry, H and G Wyness, 2010, "Higher Education Reforms: progressive but complicated with an unwelcome incentive", IFS Briefing Note 113. OECD calculations.

High tuition fees may discourage students from disadvantaged families from accessing tertiary education, reflecting both financial constraints and less knowledge about the returns to higher education. Substantial progress has been made on widening participation and young people from the most disadvantaged areas are 50 per cent more likely to enter higher education than their peers in the mid-1990s. Students from disadvantaged backgrounds are still significantly underrepresented in higher education however and especially in the 'elite' institutions in the United Kingdom. The underperformance to a large extent reflects their weaker performance in secondary schooling. However, when controlling for this earlier performance, students from disadvantaged backgrounds do not seem to be underrepresented in higher education (Chowdry *et al.*, 2010b). This puts the onus on improving earlier schooling experience for students from disadvantaged backgrounds. Still, given the size of the proposed changes, the government should keep a close eye on the social composition of entry into higher education, especially as there are concerns that the reformed system provides incentives for high–fee universities to turn away students from poor backgrounds (Chowdry *et al.*, 2010c).

Box 6. Recommendations on education in England

- The Sure Start programme and rising participation in pre-schooling does not seem so far to have delivered significant improvements in educational outcomes. Pre-schooling resources should be more strongly focused on disadvantaged children, and intensified outreach through home support for the most disadvantaged children should be considered.
- The extensive use of grades and scores in primary and secondary schools to measure pupils, schools and the school systems performance should be lessened as it creates strong incentives for gaming and grade inflation and may distort educational content and measured outcomes. Specifically the government should:
  - Further develop value-added indicators of schools' educational output to provide more relevant information to parents, students and regulators on school quality.
  - Increase the emphasis within inspection on teaching and learning, including through more lesson observation and assessment of pupils' work, so that inspectors can consider this evidence alongside attainment data in reaching their judgements on the effectiveness of schools.
  - Measure and monitor the quality of educational standards through data independently collected through sampling techniques rather than using grades and test scores for all pupils.

- Give key stakeholders, including universities and employers, a greater say in school leaving qualifications (A-levels and GCSEs) and review the merits of having competing examination boards.

- Insufficient focus on disadvantaged students in educational spending, teacher support and quality of educational resources contributes to large disparities in educational outcomes in England. The introduction of the pupil premium is a step in the right direction, but further reforms to make funding more responsive to the actual number of enrolled disadvantaged students should be pursued. The government should also further increase transparancy of funding for disadvantaged students, possibly through incorporating implicit funding into the pupil premium.

- The introduction of Free Schools and the rapid increase in the number of academies will decrease the reliance on admission based on residency and contribute to more user choice. The government should review the effects of schooling reforms on equity and fair access for disadvantaged students. User choice is likely to remain limited for students from disadvantaged homes however, as admission based on residency will continue to limit geographic user choice. The government should experiment with proscribing the use of residence criteria in admission to local government maintained schools in some local authorities.

- User choice is also limited by low supply flexibility through entry and exit and high capacity utilisation, leaving locally maintained schools with a captive market. Entry of new schools should be encouraged even if it, temporarily, creates some excess capacity. Decisions on whether a new school should be openend should rely on the quality of the business plan and should not be left to local authorities but to another appropriate body.

- Locally maintained schools should have the same opportunities for hiring staff and negotiating wages as academies and Free schools to level the playing field.

- Post-16 participation remains low, partly reflecting a confusing and rapidly changing array of often low quality vocational programmes. The system of vocational education should be simplified. A further focus on high-quality apprenticeships is warranted. Given that the government has abolished the education maintenance allowance, it needs to find alternative measures to efficiently raise incentives for participation for children from low income families.

- The government's proposal to allow universities to increase tuition fees switches a significant share of the costs of funding higher education from taxpayers to graduates. The government could pursue reforms to further lower the public share of funding, *e.g*. through lower university grants. Some of the proceeds should be used to expand the number of study places to support investment in human capital and growth. While the proposed changes in the grant and loan system should ensure that universities remain open for students from disadvantaged backgrounds, the government should keep a close eye on this issue.

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ANNEX 1: DETERMINANTS OF PISA SCORES

Data

1. The econometric analysis is based on the PISA 2006 and 2009 surveys. Descriptive statistics are presented for the United Kingdom (all schools, publicly funded schools, independently funded schools and United Kingdom excluding Scotland), the Netherlands, the Slovak republic, the joint estimate for these three countries (*Cluster*) and finally the whole OECD area. The Netherlands and the Slovak republic are included as being the countries with most similar institutions to the United Kingdom (See Box 3). Estimates for other country groups, as well as an analysis and description of estimation procedures are presented in Braconier and Brezillon (forthcoming).

- *Educational outcomes* are measured as the average score of the PISA scales for science, maths and reading for each student.

Data on inputs can be broadly divided into student and school level data:

- *Student level data:*
  - *Personal background:* PISA index of economic, social and cultural status; gender; language spoken at home; immigration status.
  - *Input related factors:* learning time in school (in above three subjects); learning time self/homework. Only available for 2006.
- *School level data:*
  - *Input related factors:* location in rural area; size; student/teacher ratios; index of quality of school educational resources.
  - *Institutional factors:* lack of school choice in area; public school; residency not considered in admission; academic record not considered in admittance.

Descriptive statistics

Table A1.1. Descriptive statistics based on PISA 2009 database

Variable	United Kingdom		United Kingdom - Public School		United Kingdom - Independent		United Kingdom (England, Wales & Northern Ireland)	
	mean	sd	mean	sd	mean	sd	mean	sd
Average PISA score over 3 subjects	500.10	90.00	497.39	89.66	516.26	90.39	499.72	89.96
Family socio-economic background	0.20	0.79	0.16	0.77	0.46	0.82	0.21	0.79
Female (D)	0.51	0.50	0.50	0.50	0.55	0.50	0.51	0.50
Native (D)	0.93	0.25	0.94	0.24	0.91	0.29	0.93	0.26
Speak national languages at home (D)	0.98	0.15	0.98	0.15	0.97	0.16	0.98	0.15
School located in rural area (D) (1)	0.27	0.44	0.31	0.46	0.07	0.25	0.26	0.44
School size	1070.56	401.86	1101.11	386.84	641.78	362.04	1085.18	403.43
Student-teacher ratio	14.51	2.76	14.88	2.45	9.50	1.71	14.77	2.65
Index of quality of school educational resources	0.45	0.96	0.44	0.97	0.61	0.77	0.44	0.95
Lack of school choice in area	1.33	0.67	1.35	0.68	1.06	0.32	1.29	0.63
Public school	0.86	0.35	1.00	0.00	0.00	0.00	0.85	0.36
Residency not considered in admission (D)	0.19	0.39	0.17	0.37	0.35	0.48	0.19	0.39
Academic record not considered in admittance (D)	0.72	0.45	0.84	0.37	0.00	0.07	0.70	0.46

Variable	Netherlands		Slovak Republic		Cluster(2)		OECD	
	mean	sd	mean	sd	mean	sd	mean	sd
Average PISA score over 3 subjects	518.82	87.85	488.13	88.73	506.86	90.49	492.11	94.08
Family socio-economic background	0.27	0.86	-0.09	0.84	0.31	0.81	-0.15	1.08
Female (D)	0.50	0.50	0.50	0.50	0.52	0.50	0.49	0.50
Native (D)	0.95	0.21	0.99	0.09	0.92	0.27	0.95	0.22
Speak national languages at home (D)	0.96	0.20	0.98	0.14	0.97	0.16	0.97	0.18
School located in rural area (D) (1)	0.18	0.38	0.29	0.45	0.19	0.39	0.24	0.42
School size	999.15	580.96	512.48	260.01	962.73	435.97	972.26	777.07
Student-teacher ratio	15.63	4.90	14.12	3.15	13.27	3.37	16.12	11.34
Index of quality of school educational resources	0.32	0.85	-0.46	0.75	0.48	0.92	0.07	1.12
Lack of school choice in area	1.27	0.50	1.28	0.57	1.27	0.61	1.50	0.80
Public school	0.33	0.47	0.91	0.29	0.50	0.50	0.79	0.41
Residency not considered in admission (D)	0.62	0.48	0.73	0.44	0.26	0.44	0.35	0.48
Academic record not considered in admittance (D)	0.03	0.18	0.27	0.44	0.42	0.49	0.41	0.49

Notes: (D) dummy variables.

1. Omitted category: school located in a town (between 15 000 and 100 000 inhabitants).
2. Cluster is defined as an aggregate of unweigthed students of United Kingdom, Netherlands and Slovak Republic

Table A1.2. Regressions based on PISA 2009 database

Variable		United Kingdom				United Kingdom (England, Wales & Northern Ireland)				Netherlands			
		Test 1	Test 2	Test 3	Test 4	Test 1	Test 2	Test 3	Test 4	Test 1	Test 2	Test 3	Test 4
Family socio-economic background	Coefficient	45.09	44.46	42.07	44.91	45.07	44.38	41.87	44.91	38.84	27.23	27.30	27.29
	S.E	*1.66*	*1.56*	*1.81*	*1.73*	*1.86*	*1.75*	*2.15*	*1.94*	*1.91*	*2.91*	*2.94*	*2.98*
Female [(D)]	Coefficient	-2.38	-2.12	-4.07	-2.11	-2.80	-2.57	-4.83	-2.57	3.83	0.80	0.89	0.87
	S.E	*3.25*	*3.58*	*3.69*	*3.61*	*3.56*	*3.94*	*4.05*	*3.96*	*2.40*	*2.48*	*2.51*	*2.54*
Native [(D)]	Coefficient	11.65	11.37	11.63	9.43	12.11	12.02	11.84	10.01	23.01	20.67	20.75	20.74
	S.E	*5.83*	*6.53*	*6.65*	*6.55*	*6.16*	*7.00*	*7.21*	*7.03*	*6.35*	*5.51*	*5.43*	*5.43*
Speak national languages at home [(D)]	Coefficient	58.84	61.83	60.00	61.69	59.22	63.35	61.72	63.09	51.92	42.24	42.04	42.09
	S.E	*8.59*	*9.34*	*9.41*	*9.46*	*10.10*	*11.23*	*11.31*	*11.33*	*6.98*	*7.80*	*7.71*	*7.75*
School located in rural area [(D)] [(1)]	Coefficient	..	7.15	8.23	5.09	..	6.84	7.50	4.77	..	-10.97	-10.28	-10.38
	S.E	..	*4.22*	*4.16*	*5.02*	..	*4.66*	*4.59*	*5.43*	..	*9.84*	*10.27*	*9.82*
School size	Coefficient	..	0.01	0.01	0.01	..	0.01	0.01	0.01	..	0.05	0.05	0.05
	S.E	..	*0.01*	*0.01*	*0.01*	..	*0.01*	*0.01*	*0.01*	..	*0.01*	*0.01*	*0.01*
Student-teacher ratio	Coefficient	..	-0.70	0.66	-0.80	..	-0.50	1.23	-0.69	..	3.72	3.68	3.65
	S.E	..	*0.86*	*1.22*	*0.82*	..	*1.06*	*1.73*	*0.94*	..	*1.99*	*1.99*	*2.01*
Index of quality of school educational resources	Coefficient	..	0.44	0.72	1.00	..	0.51	0.83	1.12	..	-8.07	-8.06	-8.01
	S.E	..	*2.40*	*2.42*	*2.35*	..	*2.67*	*2.69*	*2.59*	..	*4.87*	*4.98*	*4.99*
Lack of school choice in area	Coefficient	..	..	..	2.93	..	..	..	3.01	..	..	..	-1.24
	S.E	..	..	..	*3.33*	..	..	..	*4.14*	..	..	..	*9.40*
Public school	Coefficient	..	..	-38.88	..	..	..	-42.07	..	..	..	-0.01	..
	S.E	..	..	*9.46*	..	..	..	*13.43*	..	..	..	*9.58*	..
Residency not considered in admission [(D)]	Coefficient	..	10.11	..	..	..	11.29	..	..	..	-3.78	..	..
	S.E	..	*7.01*	..	..	..	*8.08*	..	..	..	*9.99*	..	..

		Slovak Republic				Cluster[4]				OECD			
Variable		Test 1	Test 2	Test 3	Test 4	Test 1	Test 2	Test 3	Test 4	Test 1	Test 2	Test 3	Test 4
Family socio-economic background	Coefficient	43.86	41.77	41.79	41.82	46.75	43.51	39.63	44.98	39.32	35.61	34.78	35.06
	S.E	*2.36*	*2.26*	*2.30*	*2.29*	*5.58*	*3.67*	*2.74*	*5.57*	*0.54*	*0.69*	*0.64*	*0.70*
Female (D)	Coefficient	15.61	13.74	14.21	14.25	2.90	3.22	-0.32	2.87	4.83	5.33	5.16	5.05
	S.E	*3.40*	*3.36*	*3.32*	*3.39*	*6.12*	*5.89*	*2.71*	*5.35*	*0.86*	*0.92*	*0.92*	*0.94*
Native (D)	Coefficient	-3.97	-5.15	-5.11	-5.04	3.13	8.40	8.43	4.91	16.19	19.16	19.68	20.31
	S.E	*15.97*	*14.56*	*14.92*	*15.21*	*21.94*	*10.96*	*9.35*	*15.26*	*2.16*	*2.38*	*2.36*	*2.38*
Speak national languages at home (D)	Coefficient	57.70	56.11	56.52	56.53	55.66	62.33	59.47	62.41	50.75	49.16	48.87	49.15
	S.E	*8.12*	*7.93*	*8.17*	*8.17*	*8.76*	*18.89*	*10.52*	*20.65*	*1.86*	*2.07*	*2.09*	*2.07*
School located in rural area (D) (1)	Coefficient	..	-14.03	-16.00	-16.42	..	6.96	9.59	5.40	..	-9.88	-9.62	-9.03
	S.E	..	*8.71*	*8.88*	*9.62*	..	*9.01*	*14.84*	*11.47*	..	*2.47*	*2.46*	*2.80*
School size	Coefficient	..	0.04	0.04	0.04	..	0.01	0.01	0.01	..	0.01	0.01	0.00
	S.E	..	*0.02*	*0.02*	*0.02*	..	*0.02*	*0.02*	*0.02*	..	*0.00*	*0.00*	*0.00*
Student-teacher ratio	Coefficient	..	-1.64	-1.76	-1.78	..	-1.56	0.61	-2.45	..	-0.47	-0.45	-0.47
	S.E	..	*1.30*	*1.30*	*1.29*	..	*5.10*	*1.33*	*7.09*	..	*0.09*	*0.08*	*0.09*
Index of quality of school educational resources	Coefficient	..	1.47	1.00	1.02	..	2.98	3.84	3.95	..	5.72	5.10	5.39
	S.E	..	*4.14*	*4.25*	*4.08*	..	*8.03*	*10.53*	*9.72*	..	*1.06*	*1.09*	*1.10*
Lack of school choice in area	Coefficient	..	..	..	0.61	..	..	..	0.99	..	..	..	-4.57
	S.E	..	..	..	*6.87*	..	..	..	*3.13*	..	..	..	*1.40*
Public school	Coefficient	..	..	-1.23	..	..	..	-39.20	..	..	..	-12.25	..
	S.E	..	..	*13.25*	..	..	..	*38.83*	..	..	..	*2.86*	..
Residency not considered in admission (D)	Coefficient	..	11.24	..	..	..	17.96	..	..	..	9.56	..	..
	S.E	..	*6.18*	..	..	..	*9.86*	..	..	..	*1.76*	..	..

Notes: (D) dummy variables.Dependent variables average PISA score across 3 subjects.

1. Omitted category: school located in a town (between 15 000 and 100 000 inhabitants).
2. Schools where students' past academic records and recommendation of feeder schools are not taken into account for admission.
3. Schools where students' past academic records and recommendation of feeder schools are a prerequisite for administration.
4. Cluster is defined as an aggregate of unweigthed students of United Kingdom, Netherlands and Slovak Republic

Table A1.3. Descriptive statistics based on PISA 2006 database

Variable	United Kingdom		United Kingdom - Public School		United Kingdom - Independent		United Kingdom (England, Wales & Northern Ireland)	
	mean	sd	mean	sd	mean	sd	mean	sd
Average PISA score over 3 subjects	501.77	94.50	497.80	93.06	524.58	99.35	501.37	94.97
Family socio-economic background	0.19	0.81	0.15	0.81	0.41	0.83	0.19	0.82
Female (D)	0.50	0.50	0.51	0.50	0.50	0.50	0.51	0.50
Native (D)	0.94	0.23	0.95	0.22	0.91	0.28	0.94	0.23
Speak national languages at home (D)	0.93	0.25	0.94	0.24	0.92	0.28	0.93	0.25
School located in rural area (D) (1)	0.26	0.44	0.28	0.45	0.15	0.36	0.25	0.43
School size	1070.54	394.12	1099.19	379.27	703.05	396.69	1078.44	398.56
Student-teacher ratio	15.27	2.69	15.70	2.19	9.52	2.09	15.51	2.61
Index of quality of school educational resources	0.27	1.06	0.24	1.01	0.67	1.43	0.25	1.06
Learning time in school	3.48	0.66	3.47	0.66	3.55	0.65	3.48	0.66
Learning time self / homework	2.19	0.59	2.17	0.59	2.30	0.60	2.20	0.58
Lack of school choice in area	1.24	0.58	1.25	0.59	1.10	0.35	1.18	0.51
Public school	0.85	0.36	1.00	0.00	0.00	0.00	0.85	0.35
Residency not considered in admission (D)	0.15	0.36	0.12	0.32	0.37	0.48	0.15	0.36
Academic record not considered in admittance (D)	0.75	0.43	0.87	0.34	0.07	0.25	0.75	0.43

Variable	Netherlands		Slovak Republic		Cluster(4)		OECD	
	mean	sd	mean	sd	mean	sd	mean	sd
Average PISA score over 3 subjects	520.75	89.70	482.30	91.93	503.89	93.90	485.80	98.30
Family socio-economic background	0.25	0.89	-0.15	0.91	0.18	0.84	-0.11	1.04
Female (D)	0.49	0.50	0.49	0.50	0.50	0.50	0.49	0.50
Native (D)	0.94	0.23	0.99	0.10	0.95	0.22	0.95	0.22
Speak national languages at home (D)	0.92	0.26	0.98	0.13	0.94	0.25	0.91	0.28
School located in rural area (D) (1)	0.19	0.39	0.35	0.48	0.25	0.43	0.26	0.44
School size	1023.32	542.36	532.18	252.37	1016.47	444.07	965.59	762.02
Student-teacher ratio	15.96	4.36	15.04	3.74	15.39	3.20	15.67	6.96
Index of quality of school educational resources	0.26	0.91	-0.54	0.75	0.20	1.03	0.01	1.07
Learning time in school	2.77	0.63	2.96	0.68	3.31	0.72	3.29	0.85
Learning time self / homework	2.06	0.58	2.19	0.72	2.17	0.60	2.30	0.75
Lack of school choice in area	1.36	0.66	1.24	0.59	1.26	0.60	1.55	0.82
Public school	0.32	0.47	0.92	0.27	0.76	0.43	0.77	0.42
Residency not considered in admission (D)	0.73	0.45	0.73	0.44	0.31	0.46	0.32	0.47
Academic record not considered in admittance (D)	0.09	0.29	0.25	0.43	0.59	0.49	0.47	0.50

Notes: (D) dummy variables.

(1) Omitted category: school located in a town (between 15 000 and 100 000 inhabitants).

(2) Schools where students' past academic records and recommendation of feeder schools are not taken into account for admission.

(3) Schools where students' past academic records and recommendation of feeder schools are a prerequisite for administration.

(4) Cluster is defined as an aggregate of unweigthed students of United Kingdom, Netherlands and Slovak Republic

Table A1.4. Regressions based on PISA 2006 database

Variable		United Kingdom					United Kingdom (England, Wales & Northern Ireland)					Netherlands				
		Test 1	Test 2	Test 3	Test 4	Test 5	Test 1	Test 2	Test 3	Test 4	Test 5	Test 1	Test 2	Test 3	Test 4	Test 5
Family socio-economic background	Coefficient	43.48	42.01	39.21	43.18	37.41	43.40	41.83	39.00	42.99	37.63	38.12	28.14	28.50	28.15	25.25
	S.E	*1.74*	*1.76*	*1.93*	*1.78*	*1.81*	*1.83*	*1.87*	*2.08*	*1.90*	*1.90*	*1.89*	*2.45*	*2.41*	*2.53*	*2.20*
Female [(D)]	Coefficient	0.60	0.44	0.34	0.39	-3.59	0.56	0.56	0.39	0.63	-3.48	3.61	-0.01	-0.02	-0.05	0.92
	S.E	*2.26*	*2.44*	*2.43*	*2.46*	*2.35*	*2.46*	*2.69*	*2.66*	*2.69*	*2.61*	*2.95*	*3.03*	*3.06*	*3.09*	*3.13*
Native [(D)]	Coefficient	6.21	7.54	8.29	5.88	10.16	7.33	9.26	9.38	7.74	11.76	16.57	13.78	13.70	13.11	14.42
	S.E	*6.03*	*6.93*	*6.56*	*6.67*	*6.43*	*6.32*	*7.27*	*6.78*	*7.06*	*6.84*	*7.00*	*5.89*	*6.00*	*5.87*	*5.97*
Speak national languages at home [(D)]	Coefficient	30.03	31.03	27.83	31.70	30.58	29.76	31.22	26.99	32.16	30.83	35.23	29.57	29.70	31.30	29.58
	S.E	*7.81*	*8.39*	*7.78*	*8.37*	*6.18*	*8.04*	*8.65*	*7.88*	*8.69*	*6.39*	*7.13*	*5.43*	*5.52*	*5.55*	*6.20*
School located in rural area [(D) (1)]	Coefficient	..	9.12	9.15	7.33	7.63	..	9.13	8.18	7.47	7.59	..	-3.37	-2.83	-2.41	-8.90
	S.E	..	*4.91*	*5.03*	*5.43*	*4.79*	..	*5.42*	*5.46*	*5.70*	*5.22*	..	*13.03*	*12.95*	*13.16*	*11.77*
School size	Coefficient	..	0.01	0.01	0.01	0.01	..	0.02	0.01	0.01	0.01	..	0.03	0.03	0.03	0.02
	S.E	..	*0.01*	*0.01*	*0.01*	*0.00*	..	*0.01*	*0.01*	*0.01*	*0.00*	..	*0.01*	*0.01*	*0.01*	*0.01*
Student-teacher ratio	Coefficient	..	-0.93	1.53	-1.85	-1.54	..	-1.21	1.94	-2.48	-1.84	..	5.75	5.83	5.60	4.33
	S.E	..	*0.80*	*0.84*	*0.70*	*0.59*	..	*0.96*	*1.23*	*0.80*	*0.69*	..	*1.81*	*1.83*	*1.78*	*1.53*
Index of quality of school educational resources	Coefficient	..	6.00	4.67	5.58	5.58	..	6.01	4.63	5.48	5.61	..	7.98	7.90	8.07	5.21
	S.E	..	*2.08*	*2.13*	*2.18*	*1.84*	..	*2.24*	*2.29*	*2.30*	*1.97*	..	*3.96*	*4.10*	*4.08*	*3.95*
Learning time in school	Coefficient	..	..	..	..	30.10	..	..	..	..	29.87	..	..	..	..	34.25
	S.E	..	..	..	..	*2.34*	..	..	..	..	*2.47*	..	..	..	..	*2.64*
Learning time self / homework	Coefficient	..	..	..	..	17.50	..	..	..	..	18.12	..	..	..	..	-3.90
	S.E	..	..	..	..	*2.35*	..	..	..	..	*2.61*	..	..	..	..	*2.94*
Lack of school choice in area	Coefficient	..	..	..	4.45	..	..	..	..	8.00	..	..	..	..	-5.02	..
	S.E	..	..	..	*3.59*	..	..	..	..	*4.12*	..	..	..	..	*7.62*	..
Public school	Coefficient	..	..	-64.97	..	..	..	..	-69.55	..	..	..	..	-1.60	..	..
	S.E	..	..	*7.43*	..	..	..	..	*10.50*	..	..	..	..	*8.46*	..	..
Residency not considered in admission [(D)]	Coefficient	..	26.12	..	..	..	..	27.53	..	..	..	..	9.10	..	..	..
	S.E	..	*9.48*	..	..	..	..	*10.41*	..	..	..	..	*7.52*	..	..	..
		Slovak Republic					Cluster[(4)]					OECD				

Variable		Test 1	Test 2	Test 3	Test 4	Test 5	Test 1	Test 2	Test 3	Test 4	Test 5	Test 1	Test 2	Test 3	Test 4	Test 5
Family socio-economic background	Coefficient	44.54	41.39	41.97	41.24	34.14	46.88	43.37	38.07	45.08	38.22	42.95	37.21	37.06	36.96	33.54
	S.E	*2.62*	*2.31*	*2.53*	*2.36*	*2.35*	*7.49*	*4.64*	*5.12*	*5.17*	*1.31*	*0.48*	*0.55*	*0.58*	*0.54*	*0.51*
Female (D)	Coefficient	9.27	7.10	7.54	8.29	0.42	1.18	-1.01	-0.77	-1.37	-6.24	6.76	6.76	6.70	6.51	2.83
	S.E	*3.86*	*3.68*	*3.63*	*3.52*	*3.31*	*2.36*	*5.50*	*4.84*	*5.96*	*8.51*	*0.96*	*1.07*	*1.09*	*1.08*	*1.06*
Native (D)	Coefficient	-10.60	-11.05	-10.51	-10.44	-9.35	2.70	5.31	8.04	4.91	7.42	18.74	19.28	19.24	18.61	14.82
	S.E	*12.33*	*12.85*	*12.33*	*12.39*	*11.43*	*10.71*	*6.36*	*5.47*	*5.92*	*6.80*	*2.03*	*2.03*	*2.01*	*2.06*	*1.88*
Speak national languages at home (D)	Coefficient	43.12	39.75	42.15	41.59	39.39	26.30	24.72	19.43	26.48	26.67	32.17	37.34	36.85	37.13	29.46
	S.E	*8.75*	*8.78*	*8.65*	*8.66*	*8.89*	*8.23*	*9.67*	*19.51*	*7.69*	*4.90*	*2.09*	*2.14*	*2.17*	*2.16*	*1.91*
School located in rural area (D) (1)	Coefficient	..	-3.13	-2.97	1.11	-6.30	..	1.37	5.87	1.44	2.05	..	-6.65	-5.82	-5.02	-5.52
	S.E	..	*7.66*	*7.78*	*7.94*	*7.16*	..	*8.75*	*4.04*	*5.88*	*5.86*	..	*2.19*	*2.19*	*2.30*	*1.92*
School size	Coefficient	..	0.04	0.04	0.04	0.04	..	0.02	0.02	0.01	0.01	..	0.02	0.02	0.02	0.01
	S.E	..	*0.02*	*0.02*	*0.02*	*0.02*	..	*0.02*	*0.01*	*0.01*	*0.01*	..	*0.00*	*0.00*	*0.00*	*0.00*
Student-teacher ratio	Coefficient	..	-3.16	-3.57	-3.54	-4.89	..	-2.66	1.56	-4.16	-3.58	..	-1.17	-1.17	-1.16	-1.28
	S.E	..	*1.14*	*1.04*	*1.04*	*0.94*	..	*7.49*	*0.48*	*10.12*	*8.20*	..	*0.14*	*0.14*	*0.14*	*0.13*
Index of quality of school educational resources	Coefficient	..	-4.99	-4.73	-4.03	-3.20	..	8.53	5.13	8.66	7.35	..	8.55	8.33	8.65	7.95
	S.E	..	*4.23*	*4.30*	*3.98*	*4.10*	..	*4.34*	*1.79*	*5.21*	*4.50*	..	*0.83*	*0.83*	*0.82*	*0.74*
Learning time in school	Coefficient	..	..	..	..	34.90	..	..	..	..	27.81	..	..	..	..	29.99
	S.E	..	..	..	..	*3.21*	..	..	..	..	*12.99*	..	..	..	..	*0.66*
Learning time self / homework	Coefficient	..	..	..	..	2.47	..	..	..	..	18.78	..	..	..	..	-3.07
	S.E	..	..	..	..	*2.54*	..	..	..	..	*11.81*	..	..	..	..	*0.70*
Lack of school choice in area	Coefficient	..	..	..	-10.40	..	..	..	..	0.36	..	..	..	..	-3.42	..
	S.E	..	..	..	*8.18*	..	..	..	..	*4.21*	..	..	..	..	*1.33*	..
Public school	Coefficient	..	..	-3.39	..	..	..	..	-66.33	..	..	..	..	-5.11	..	..
	S.E	..	..	*13.11*	..	..	..	..	*71.05*	..	..	..	..	*2.13*	..	..
Residency not considered in admission (D)	Coefficient	..	17.80	..	..	..	..	26.03	..	..	..	..	-2.15	..	..	..
	S.E	..	*8.92*	..	..	..	..	*4.95*	..	..	..	..	*2.28*	..	..	..

Notes: (D) dummy variables. Dependent variables average PISA score across 3 subjects.

(1) Omitted category: school located in a town (between 15 000 and 100 000 inhabitants).

(2) Schools where students' past academic records and recommendation of feeder schools are not taken into account for admission.

(3) Schools where students' past academic records and recommendation of feeder schools are a prerequisite for administration.

(4) Cluster is defined as an aggregate of unweigthed students of United Kingdom, Netherlands and Slovak Republic

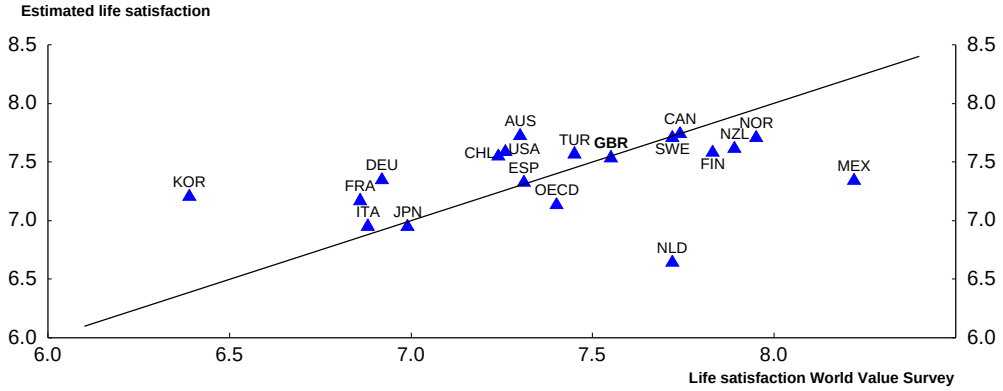
ANNEX 2: ESTIMATION OF WELLBEING DETERMINANTS

2. The effects of various explanatory variables on overall wellbeing were estimated using data from the World Values Survey (1981-2008) with ordered probit and Weighted Least Squares (WLS) (see Annex Table A2.1). The explanatory power of each covariate/determinant of life satisfaction can be compared with (the log of) income through "compensating differentials", to shed light on the relative importance of various wellbeing dimensions to life satisfaction. However, this method cannot explain wellbeing developments over time nor demonstrate causality. This approach, which is in line with recent practice in the literature (Stevenson and Wolfers, 2008), avoids the problems associated with arbitrary weights with index-based comparisons. The ordered probit is justified by the qualitative categories scores defining the variable "life satisfaction" from 0 to 10, and is the common theoretical approach in the literature. However, as both Ferrer-i-Carbonell and Frijters (2004) and Stevenson and Wolfers (2008) point out, in practice the choice of ordered probit or WLS makes little difference for life satisfaction data. The WLS coefficients are used as the basis for our analysis since they are relatively easy to interpret intuitively. The individual fixed effects (age, squared age, sex, marital status, number of children) included in the calculation reduce the chance that unobserved heterogeneity, like ability, exaggeration or family background, is driving the observed correlation, making happiness data more comparable across individuals. Robust standard errors should avoid problems with heteroskedasticity.

3. To compare estimated life satisfaction determinants to their actual values and assess composition effects, the "marginal effects (coefficient) x average available stocks (value of the indicator in the survey)" were calculated for each country using the United Kingdom's regression coefficients. This allows us to estimate overall life satisfaction for an individual by applying the estimated UK coefficients to actual values of life satisfaction in the Survey for each country. If the United Kingdom's relative position improved compared to using country specific weights, this would mean that country-specific differences in coefficients explain some of the UKs relatively weak performance with life satisfaction. If, on the other hand, the UK's position remains unchanged, most of the underperformance can be attributed to weaker outcomes in terms of actual values of life satisfaction determinants. The two methods show that the United Kingdom's ranking does not change, hence the results seem fairly stable for differences in estimated coefficients (see Figure A2.1). The use of the UK coefficients also maintains the relative position of some Asian countries (low), which can imply that the relative low ranks of these countries in the Survey is not due to cultural differences in answering the questions, as has been suggested.

Figure A2.1. Life satisfaction between 2005-2008 in OECD countries based on United Kingdom coefficients[1]

Index scale of 1-10 from least to highest life satisfaction



1. We have computed an alternative indicator (computed as the marginal effects * average available stocks for each country) using the United Kingdom's coefficients. It allows us to estimate overall life satisfaction for an individual with coefficients similar to the United Kingdom based on subjective subindexes for other OECD countries. If the United Kingdom's relative position improved compared to using country specific weights, this would mean that country-specific differences in coefficients explain some of the UKs relatively weak performance. If, on the other hand, the UKs position remains unchanged, most of the underperformance can be attributed to weaker outcomes in terms of subindicators.

Sources: World Values Survey, 2005-2008 and OECD calculations.

Table A2.1. Determinants of life satisfaction in the UK and OECD

	Ordered probit regressions, , United Kingdom, 1981-2008	WLS regressions, United Kingdom, 1981-2008	Ordered probit regressions, OECD, 1981-2008	WLS regressions, OECD, 1981-2008	Compensating differentials wrt log income, United Kingdom
Micro data					
Log income	0.0570 (0.061)	0.1606 * (0.107)	0.0873 ** (0.012)	0.1921 ** (0.022)	--
Wealth accumulation	0.0277** (0.013)	0.0435* (0.002)	0.0385** (0.002)	0.0654** (0.004)	0,25*
State of health (subjective)	0.3113** (0.038)	0.5386** (0.066)	0.3527 ** (0.008)	0.6519** (0.015)	3,31**
To be unemployed	-0.3657** (0.020)	-0.4570** (0.358)	-0.2988** (0.040)	-0.5860** (0.078)	2,81**
High Educational level	0.0538** (0.025)	0.0919** (0.045)	0.0193** (0.004)	0.0338** (0.007)	0,57**
Belong to a cultural, sportive, political group	0.0840* (0.067)	0.1818* (0.119)	0.0665** (0.013)	0.1475** (0.025)	1,12*
National data					
Income inequality (subjective)	-0.1213** (0.059)	-0.1113* (0.094)	-0.1285** (0.011)	-0.2390** (0.021)	0,68*
Freedom of choice and control (subjective)	0.1665* (0.148)	0.4512* (0.228)	0.2152** (0.145)	0.3572** (0.026)	2,81*
State of the environment (subjective)	0.3017** (0.146)	0.2768* (0.223)	0.1414** (0.028)	0.2360** (0.051)	1,68*
Insecurity (perceived)	-0.1741* (0.250)	-0.2248 (0.399)	-0.3813** (0.069)	-0.4624** (0.125)	1,37

	Ordered probit regressions, , United Kingdom, 1981-2008	WLS regressions, United Kingdom, 1981-2008	Ordered probit regressions, OECD, 1981-2008	WLS regressions, OECD, 1981-2008	Compensating differentials wrt log income, United Kingdom
Individual fixed effects					
Age	-0.0026** (0.012)	-0.049** (0.021)	-0.0179** (0.002)	-0.0325** (0.004)	--
Squared age	0.0339** (0.012)	0.0604** (0.021)	0.0249** (0.002)	0.0440** (0.005)	--
Female	-0.0638 (0.068)	-0.1135 (0.121)	0.0270** (0.013)	0.0368* (0.023)	--
Divorce	-0.0537** (0.018)	-0.0930** (0.033)	-0.0374** (0.003)	-0.0685** (0.007)	--
Number of children	-0.0013 (0.026)	-0.0026 (0.046)	0.0024 (0.005)	-0.0035 (0.009)	--

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