Institute for Fiscal Studies

The Pupil Premium: Assessing the Options

Haroon Chowdry
Ellen Greaves
Luke Sibieta

Esmée Fairbairn FOUNDATION

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Introduction

- Both the Conservatives and the Liberal Democrats have proposed introducing a pupil premium in England, with the aim of narrowing the achievement gap between rich and poor by attaching greater levels of funding to pupils from disadvantaged backgrounds.

- The idea of a pupil premium is to provide a fixed extra amount to state schools for each pupil from a disadvantaged background they admit each year. The current system already weights pupil funding towards deprivation to some extent. The proposals for a pupil premium would simplify this system, could weight funding even more towards disadvantage and make changes in a school's funding levels much more immediate as intakes change over time.

- Such a reform would mark a significant change to school funding and, without additional money from the public purse, risks creating winners and losers. At a time of fiscal restraint, it is essential that any such reform is grounded in both theory and evidence.

School funding in England

- Total school spending in England amounted to £47.5 billion in 2008–09 (in 2010 prices). Day-to-day spending per pupil has grown by an average of 4.8% per year in real terms since Labour came to power in 1997.

- Schools currently receive their funding through two main sources: local authorities' 'fair-funding' formulae and specific grants from central government.

- Per-pupil funding varies widely between schools in England. Much of this variation arises because the current system weights funding towards schools with more deprived intakes. For example, the implied additional income that schools receive for each pupil eligible for free school meals (FSM) comes to approximately £2,460 in the case of primary schools and about £3,370 for secondary schools. A disproportionate share of these implicit 'FSM premiums' results from specific grants made by central government, which serve to make the school funding system more redistributive than it otherwise would be. This is particularly true for secondary schools, thereby making deprived secondary schools highly dependent on specific grants.

- The level of funding targeted at deprivation has increased rapidly in recent years, particularly in terms of funds provided by local authorities. Local authorities still seem to 'flatten' the funding they receive on the basis of deprivation, spreading it across all pupils instead, but the level of such flattening has reduced. However, the system remains relatively unresponsive to changing needs from year to year.

- Both the Conservatives and the Liberal Democrats have proposed the introduction of a pupil premium. This would provide a fixed amount to schools for each pupil enrolled from a disadvantaged background. A pupil premium aims to increase the level of resources targeted at pupils from disadvantaged backgrounds and reduce any disincentives that affluent schools might have to attract hard-to-teach pupils.

Theory and empirical evidence

- The pupil premium could narrow the achievement gap between advantaged and disadvantaged pupils through a number of mechanisms: the direct effect of extra resources; the indirect effect of changes to pupils' peer group; or the indirect effect of the creation of new schools.

- The conventional wisdom surrounding the impact of increasing school resources on pupil attainment is that 'there is not a strong or consistent relationship between student performance and school resources'. Recent academic literature for the UK has provided some evidence of resource effects, however, though they are generally small in magnitude. There is some suggestion that extra resources for disadvantaged pupils would reduce the attainment gap, although this will depend on how those resources are used by schools.

- Schools are unlikely to actively recruit more disadvantaged pupils as a result of the pupil premium: the premium would need to be very high to sufficiently reduce the disincentive for schools to attract such pupils, and schools' ability to select pupils is also limited to some extent by the School Admissions Code. The pupil premium may lead to a small reduction in covert selection by schools but is unlikely to significantly reduce social segregation.

- New schools may be established primarily in disadvantaged areas, although, without a 'for-profit' incentive, it is unlikely that the UK would see the same level of expansion that other countries have seen. We also find that an increase in the number of schools may lead to an increase in the level of segregation between schools, but this may not be detrimental to disadvantaged pupils. Several chains of schools in the US specialise in teaching pupils in disadvantaged areas and have reported significant gains in attainment.

Empirical analysis of policy options

- We simulate a number of options for the pupil premium and then examine their likely impact on school finances. The results show the impact on the amount of 'progressivity' in the school funding system (i.e. the weighting of funding towards school-level measures of deprivation) and they document the range of winners and losers compared with the current system.

- The policy options are grouped together according to whether they (1) supplement the existing system, (2) replace specific grants or (3) replace the entire system.

- The options in the first category approximate current Liberal Democrat policy. Out of the options we consider, these reforms financially benefit schools the most and increase progressivity. However, funding must be found from other sources: the Liberal Democrats have proposed cutting tax credits to above-average-income families, as well as other areas of spending.

- The second group of options replace specific grants from central government with a pupil premium. These options have a lower net cost and can be revenue-neutral, but at the same time they have the potential to create a vast number of significant losers.

- We also consider the implementation of a single national funding formula, a seemingly radical option. However, the number of significant losers from implementing such a system could actually be much lower than through replacing specific grants alone.

- More detailed analysis of a national funding formula illustrates a key problem with such a reform: the concentration of gains and losses across particular local authorities. This pattern does not appear to simply follow an urban/rural split; instead, it is likely to reflect local authority choices over central services, prioritisation of primary or secondary schools and historical factors.

- To ease any transition to this sort of funding system, interim mechanisms that truncate large potential losses (and gains) could be imposed. The cost of such measures would be small relative to the total schools budget. For example, imposing a floor of 5% on schools' annual real-terms losses and a ceiling of 15% on increases would enable one of the options to be phased in over five years, at an additional cost of £75 million per year (2010 prices). However, real-terms cuts of 5% are still likely to be painful for any school facing them; schools have become used to real-terms increases. The only way to reduce such losses is through a permanent increase in school funding.

1. Introduction

All the main political parties have expressed a desire to narrow the achievement gap between rich and poor children and to promote social mobility. The Department for Children, Schools and Families lists 'Clos[ing] the gap in educational achievement for children from disadvantaged backgrounds' as one of its main strategic objectives.[1] Meanwhile, the Conservative Party's draft 2010 general election manifesto for schools states that 'we will improve standards for all pupils and close the attainment gap between the richest and poorest'.[2] In a recent speech, the leader of the Liberal Democrats, Nick Clegg MP, said that 'Countless young boys and girls are falling behind at school not because of a lack of potential, but because of the circumstances of their birth'.[3]

Achievement gaps between rich and poor can be seen from a very early age and continue to widen as children get older. By the time children take their GCSEs at age 16, there is a significant achievement gap between rich and poor. As Figure 1.1 shows, in 2008, less than a quarter of children eligible for free school meals (FSM) achieved five good GCSEs (A*–C) inclusive of English and Maths. This compares with just over half of all children from higher-income families (not eligible for free school meals). However, this gap has narrowed in relative terms in recent years, as shown by the black line in Figure 1.1. In 2008, children eligible for FSM were half as likely to achieve this benchmark as children who were not eligible, yet in 2003 they were only a third as likely to do so. Nevertheless, the current achievement gap is large and makes a significant contribution to later-life income and earnings inequalities, and could potentially be passed on to future generations.

Figure 1.1. Percentage of children achieving 5+ GCSEs at A*–C (including English and Maths) by FSM eligibility
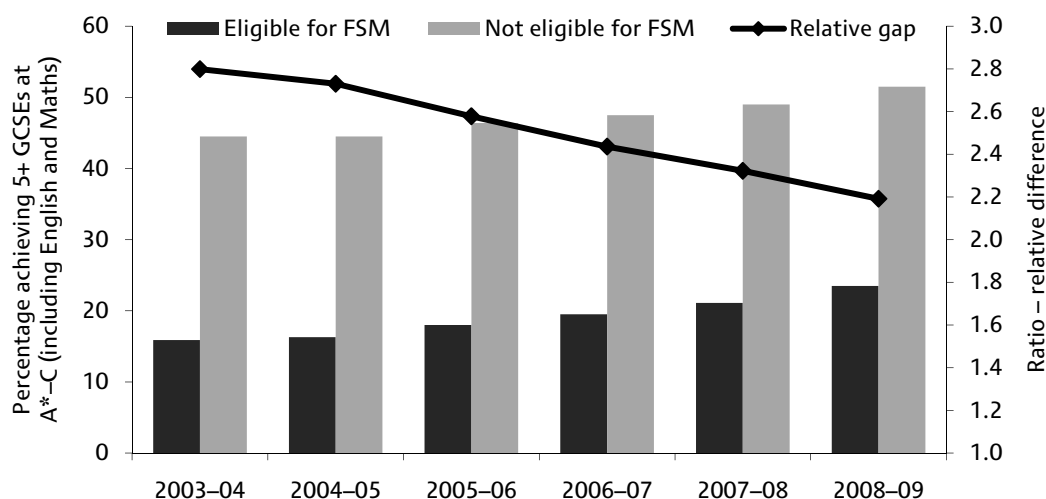
Sources: 2003–04 to 2007–08 – Department for Children, Schools and Families (2009a); 2008–09 – Department for Children, Schools and Families (2009b).

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[1] http://www.dcsf.gov.uk/dsoindicators/downloads/DSO-Indicators-March2009.pdf.

[2] http://www.conservatives.com/News/News_stories/2010/01/~/media/Files/Draft%20Manifesto/DraftSchoolsManifesto.ashx, page 4.

[3] 'Four steps to a fairer Britain says Nick Clegg', 11 January 2010, http://www.libdems.org.uk/speeches_detail.aspx?title=Four_steps_to_a_Fairer_Britain_says_Nick_Clegg&pPK=800fa58c-5bc9-45d3-8b58-32b93d5c2e96.

Various policy proposals have been put forward to reduce this gap, including: greater levels of early years provision; increased numbers of health visitors; greater levels of one-on-one tuition in reading and Maths; opening up the state sector to provision by non-state providers; incentives for good teachers to work in deprived schools; mentoring schemes; and programmes to raise the aspirations of young children from disadvantaged backgrounds.

One proposal put forward by both the Conservatives and the Liberal Democrats is the introduction of a disadvantaged pupil premium into the school funding system in England. These proposals are highly likely to form part of their manifesto commitments for the upcoming 2010 general election.[4]

The idea of a pupil premium is to provide a fixed extra amount to state schools for each pupil they admit from a disadvantaged background. The current system of school funding in England does effectively already provide extra funding for schools with more pupils from disadvantaged backgrounds. However, the system is complex and rather slow to respond to year-on-year changes in a school's intake, with a large amount of funding apparently dependent on historical rather than current deprivation.[5] The proposals for a pupil premium would not only simplify this system, but could also weight funding even more towards disadvantage and make changes in a school's funding levels much more immediate as intakes change over time.

Such a reform, if implemented, would therefore mark a significant change to the way schools are funded in England. It is thus essential that any such reform is grounded in both theory and empirical evidence. This Commentary aims to provide a rigorous and impartial analysis of the theory behind a pupil premium, together with a comprehensive empirical analysis of how a pupil premium would operate in practice and how it would affect school finances.

The rest of this Commentary is structured as follows. Chapter 2 provides some background information on the current system of school funding, its key characteristics and the proposals for a pupil premium currently being put forward. Chapter 3 reviews the theory of the pupil premium and the channels through which the pupil premium may affect the attainment of disadvantaged pupils, drawing on relevant literature and empirical evidence. Chapter 4 then examines the empirical options for a pupil premium, tying these closely to the proposals put forward by the Liberal Democrats as well as recent proposals made by Policy Exchange.[6] We examine the extent to which the pupil premium could increase or decrease the targeting of resources at disadvantaged pupils and how many schools would win or lose from these proposals. We also consider some issues that might be likely to arise with the introduction of a single national funding formula, a long-term aspiration of the Conservative Party. Chapter 5 concludes.

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[4] See the draft schools chapter of the Conservatives' 2010 general election manifesto and the speech by Nick Clegg on 11 January 2010, both cited earlier.

[5] See Chowdry, Muriel and Sibieta (2008).

[6] See Freedman and Horner (2008).

2. School funding in England

Key findings

- Total school spending in England amounted to £47.5 billion in 2008–09 (in 2010 prices). Day-to-day spending per pupil has grown by an average of 4.8% per year in real terms since Labour came to power in 1997.

- Schools currently receive their funding through two main sources: local authorities' 'fair-funding' formulae and specific grants from central government.

- There is a great deal of variation in per-pupil funding between schools in England. Much of this variation arises because the current system weights funding towards schools with more deprived intakes. For example, the implied additional income that schools receive for each pupil eligible for free school meals (FSM) comes to approximately £2,460 in the case of primary schools and about £3,370 for secondary schools. A disproportionate share of these implicit 'FSM premiums' results from specific grants made by central government, which serve to make the school funding system more redistributive than it otherwise would be. This is particularly true for secondary schools, thereby making deprived secondary schools highly dependent on specific grants.

- The level of funding targeted at deprivation has increased rapidly in recent years, particularly in terms of funds provided by local authorities. Local authorities still seem to 'flatten' the funding they receive on the basis of deprivation, spreading it across all pupils instead, but the level of such flattening has reduced. However, the system remains relatively unresponsive to changing needs from year to year.

- Both the Conservatives and the Liberal Democrats have proposed the introduction of a pupil premium. This would provide a fixed amount to schools for each pupil enrolled from a disadvantaged background. A pupil premium aims to increase the level of resources targeted at pupils from disadvantaged backgrounds and reduce any disincentives that affluent schools might have to attract hard-to-teach pupils.

The introduction of a pupil premium would mark a significant reform to the current school funding system in England. However, before we can examine the theory behind a pupil premium or analyse its potential effects on school finances, it is important to understand how the current system works. This will allow us to examine how a pupil premium could work in practice, and how it could change the system of school funding in England. This chapter begins by briefly examining recent trends in schools spending (Section 2.1). It goes on to explain how the current system of school funding in England works (Section 2.2) and then outlines some of its key characteristics and how it has changed in recent years (Section 2.3). The chapter concludes by discussing proposals for a pupil premium and how they could change the system of school funding in England (Section 2.4).

2.1 Schools spending in England

In 2008–09, it is estimated that school spending reached £47.5 billion (expressed in 2010 prices). As Figure 2.1 shows, about 12% of this total represents capital expenditure (for example, rebuilding or refurbishing school buildings). The remaining 88% represents current or day-to-day expenditure (for example, teachers' pay, textbooks, stationery and other consumables). About 28% is spent on primary schools and another 39% on secondary schools; 10% covers expenditure on the under-5s, with the final 11% covering other expenditure (including expenditure on city academies and teacher training).

Figure 2.2 shows the level of current spending per pupil (i.e. excluding capital spending) between 1997–98 and 2010–11, expressed in 2010 prices. This measure of spending per pupil is expected to reach £5,580 by 2010–11. If delivered, this would represent an annual average growth rate of 4.8% per year in real terms since Labour came to power in 1997. The growth rate would be even higher, at 5.8% per year, if we included capital spending.

Figure 2.1. Composition of schools spending in England, 2008–09
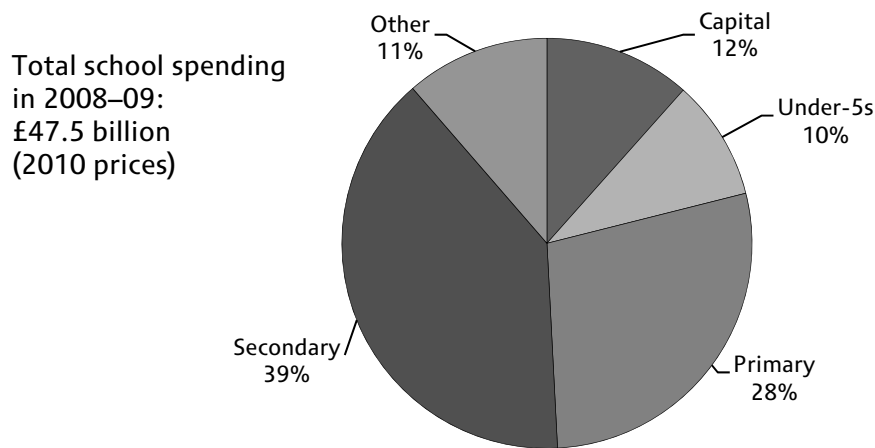
Source: Department for Children, Schools and Families, 2009b.

Figure 2.2. Evolution of current school spending per pupil in England
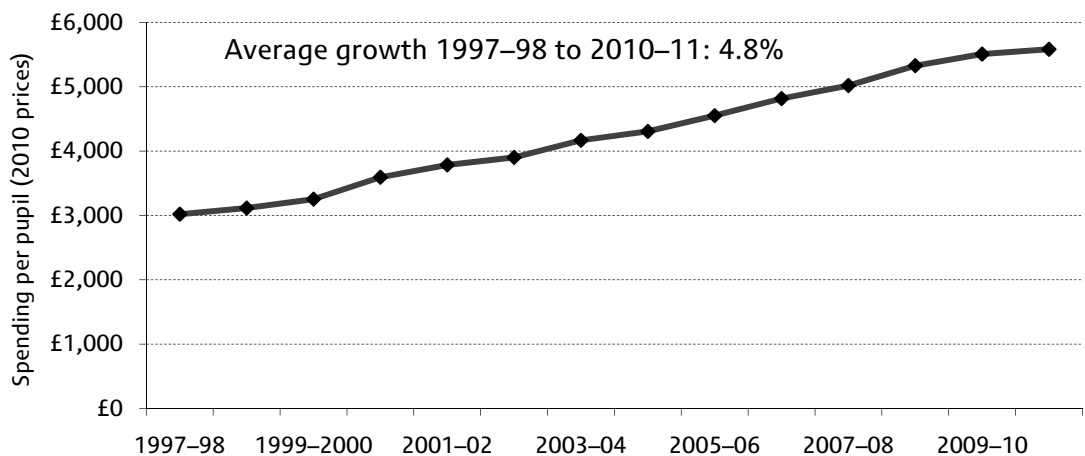
Sources: Department for Children, Schools and Families, 2009b. ONS and HM Treasury for deflators.

2.2 How does the school funding system work?

Per-pupil funding of £5,580 in 2010–11 will not be allocated to all schools in England as a fixed per-pupil amount in 2010–11. The school funding system is significantly more complicated and is described in detail in Chowdry, Muriel and Sibieta (2008). Here, we provide a brief summary, which is illustrated in Figure 2.3.

Figure 2.3. The school funding process: local authorities to schools

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                    ┌─────────────────────────────────────┐
                    │   Local authority Schools Budget     │
                    │                                      │
                    │      Covers all pupil provision.     │
                    │  Funding comes from ring-fenced      │
                    │  grants from central government,     │
                    │  to which local authorities can add. │
                    └─────────────────────────────────────┘
                       │                              │
             ┌─────────────────────┐      ┌────────────────────────┐
             │ Individual Schools  │      │    Central services    │
             │    Budget (ISB)     │      │                        │
             │                     │      │ Money held back by the │
             │ Money to be         │      │ local authority to pay │
             │ allocated to        │      │ for pupil services     │
             │ individual schools  │      │ such as high-cost      │
             │ via local           │      │ special educational    │
             │ 'fair-funding'      │      │ needs and Pupil        │
             │ formula.            │      │ Referral Units.        │
             └─────────────────────┘      └────────────────────────┘
                       │
             ┌─────────────────────┐
             │  Funds allocated to │
             │  an individual      │
             │  school             │
             │                     │
             │  From both          │
             │  'fair-funding'     │
             │  formula and        │
             │  specific grants.   │
             └─────────────────────┘
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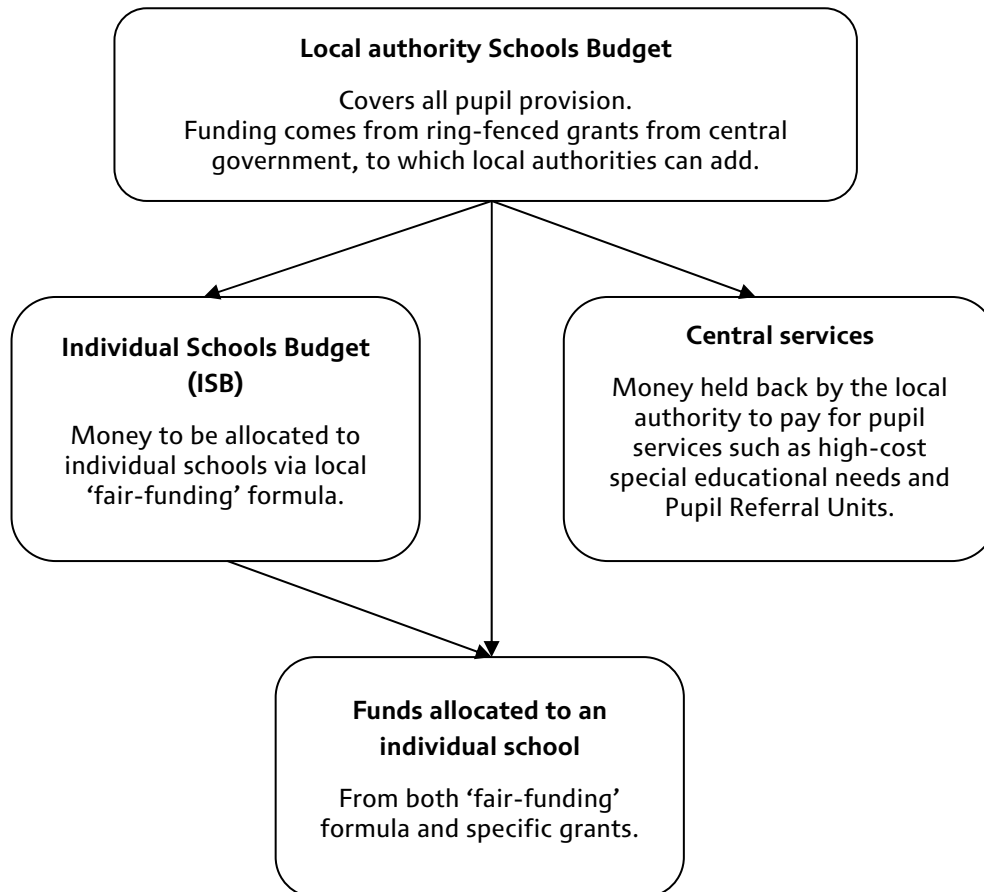
Schools in England receive almost all their funding via local authorities, though local authorities do not control all of this money. Each year, local authorities receive an allocation from central government called the Dedicated Schools Grant (introduced in 2006–07). This is calculated based on pupil numbers, the allocation the local authority received the previous year and other factors to reflect ministerial priorities (such as the number of pupils eligible for free school meals or with low prior attainment). This allocation is 'ring-fenced', meaning that it must be spent on pupil provision in support of local authorities' 'Schools Budget'. However, local authorities are free to add to this money from other sources, such as grants that are not ring-fenced, council tax revenues and local charges for council services.

Some of this Schools Budget is spent on central services provided by the local authority, such as high-cost special educational needs, transport, education psychology services and school admissions. The amount that is held centrally varies by local authority. In 2008–09, local authorities spent, on average, 12% of their Schools Budget on these central

services. However, about one in ten local authorities spent more than 16% of their Schools Budget on central services, and one in ten spent less than 9%.[7]

The rest of the Schools Budget is then allocated to schools using a local authority's 'fair-funding' formula. This is intended to ensure that schools within a local authority that have similar characteristics receive the same level of per-pupil funding. These formulae vary by local authority, but the most common elements determining schools' funding are:

- the number of pupils in each Key Stage;
- indicators of social deprivation (e.g. number of pupils eligible for free school meals);
- number of pupils with a statement of special educational needs (SEN);
- number of pupils with SEN without a statement;
- number of pupils with English as an additional language;
- site and school factors (e.g. business rates bill, or an amount per square metre).

The amount provided through these fair-funding formulae represents the largest single source of each individual school's funding. However, over the past decade, schools have increasingly received funding via another source: specific grants from central government. These are calculated using formulae determined by central government. Local authorities have no say over how they are allocated. Instead, they must be passed on in full directly into schools' bank accounts. Examples of specific grants include the School Standards Grant, School Development Grant and other Standards Fund grants.

Figure 2.4 shows the proportion of (a) primary and (b) secondary schools' funding that came from formula funding (i.e. via local authorities' fair-funding formulae) and the proportion that came from specific grants for years from 2005–06 to 2008–09. In 2008–09, primary schools received about 15% of their funding from specific grants, a figure that has not changed much since 2005–06. Similarly, secondary schools received about 16% of their funding from specific grants in 2008–09, but, in contrast to primary schools, this figure has fallen over time from about 20% in 2005–06.

Figure 2.4a. Composition of primary school funding over time
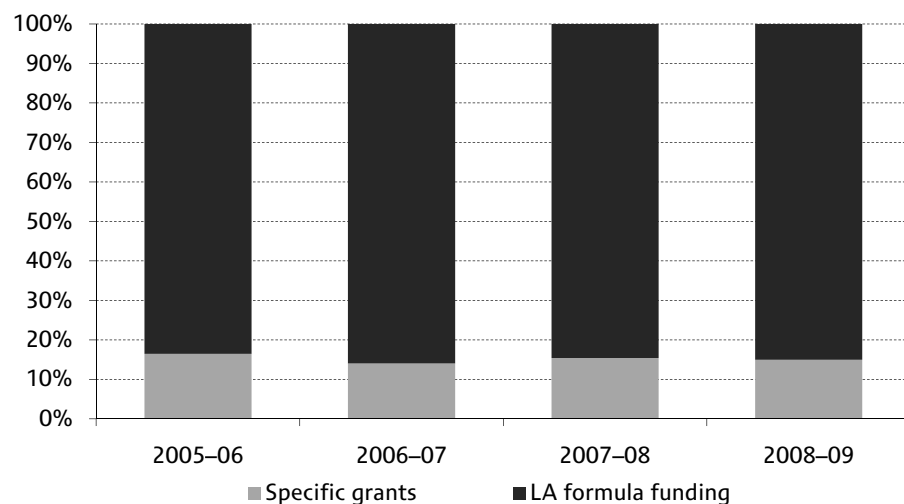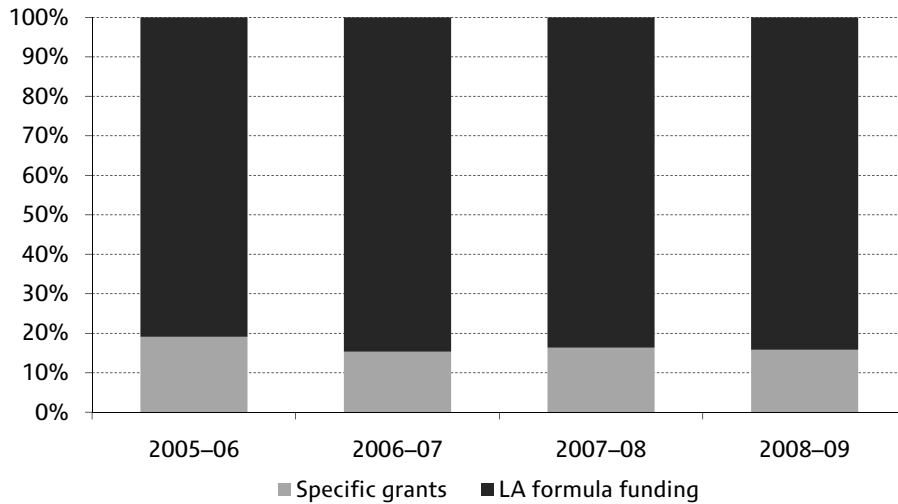

Sources: School financial data – based on Section 52 outturn data. Pupil- and school-level characteristics – taken from the National Pupil Database (NPD), Pupil Level Annual School Census (PLASC) and EduBase. ONS and HM Treasury for deflators.

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[7]Authors' calculations using Section 52 data – publicly-available financial data on schools' individual levels of funding and expenditure.

Figure 2.4b. Composition of secondary school funding over time

2.3 Key characteristics and changes

As outlined above, schools receive funding from two broad sources: their local authority's fair-funding formula; and specific grants determined by central government. In this section, we examine the key characteristics of the present system, as well as changes in recent years and current government proposals for further changes.

Variation in funding

The operation of fair-funding formulae and differences in pupil characteristics across schools create quite a wide range of funding per pupil across schools in England. Figure 2.5 plots the distribution of per-pupil funding in 2008–09 for primary schools (dashed line) and secondary schools (solid line), expressed in 2010 prices.

Figure 2.5. Distribution of funding per pupil in 2008–09
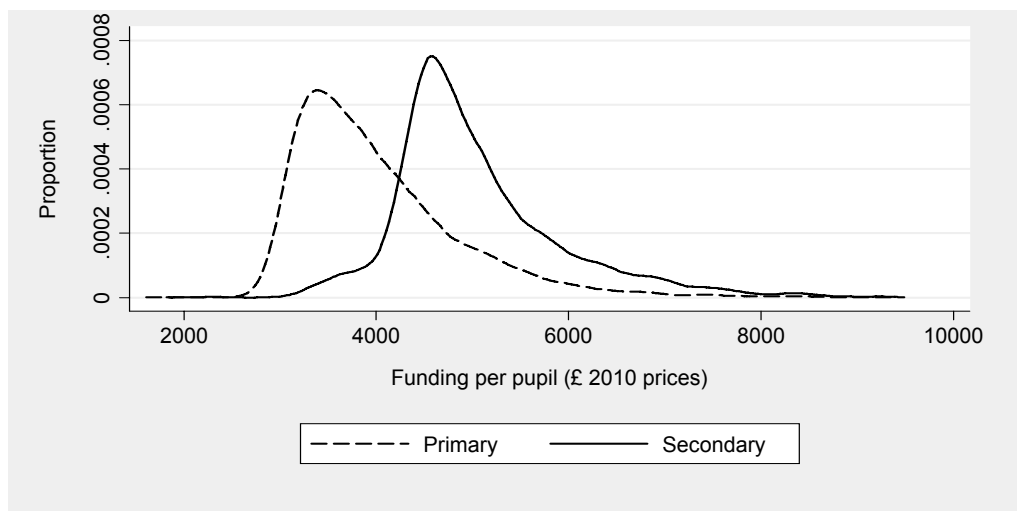
Source: School financial data – based on Section 52 outturn data.

Both distributions exhibit a wide amount of dispersion, with primary funding per pupil varying between around £3,000 and £6,000, while secondary funding per pupil varies between £4,000 and £7,000 or so. A small number of schools exhibit funding levels outside these amounts. The fact that the distribution for secondary schools is further to the right indicates that they generally receive more funding per pupil: £5,050 on average versus £4,050 for primary schools.

Increases in deprivation funding

In our previous report on school funding (Chowdry, Muriel and Sibieta, 2008), we analysed which pupil characteristics (implicitly) explain the largest proportions of schools' funding. We found that funding was highly skewed towards schools with greater numbers of pupils with special educational needs (particularly if those pupils have a statement[8]) and towards schools with a greater number of pupils from deprived backgrounds. Here, we repeat some of this analysis for the most recent financial year, 2008–09.

We use regression techniques to isolate the impact of various school-level characteristics on a school's overall level of funding in any particular year, whilst holding other characteristics constant (see Table A.1 in the Appendix for full results for 2008–09). For instance, we ask how much higher the level of funding is, on average, in schools with an extra child eligible for free school meals, holding other school-level characteristics constant. We refer to this example throughout the Commentary as the *implicit* FSM premium and use it as a measure of the level of targeting towards disadvantage present in the current school funding system. However, it is important to note that this methodology only gives us the *implicit* formula used by local authorities rather than their *explicit* or actual formulae. Explicit formulae are more complex than the implicit formulae we estimate, as they use other measures of disadvantage and factors that we cannot control for (for example, the number of children in care). The standardisation and simplification of the present system is one aim of the pupil premium. Indeed, one option for a pupil premium could simply create an *explicit* FSM premium.

Noting this, Figure 2.6 shows that, in 2008–09, primary schools received, on average, an implicit FSM premium of £2,460 for each pupil eligible for free school meals, whilst secondary schools received an extra £3,370 (in 2010 prices). These amounts are on top of any base amount provided for all other pupils. This implicit FSM premium has grown in recent years for both primary and secondary schools, as is also shown in Figure 2.6. It has grown by a total real-terms amount of 69% for primary schools and by a total of 53% for secondary schools over the period 2005–06 to 2008–09. Both figures take into account the effects of inflation and are well in excess of the 17% real-terms growth in total per-pupil spending that could be observed earlier in Figure 2.2. The growth in this implicit FSM premium in the last few years has thus been very large indeed, and suggests the school funding system has become much more redistributive. It is also worth noting that the growth in primary schools' implicit FSM premium was particularly large in 2007–08: it grew from £1,630 the previous year to £2,260, an increase of 39% in a single year. The growth in secondary schools' implicit FSM premium over the period was more gradual.

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[8]A statement of special educational needs is co-ordinated between the local authority, parents and the school. The statement sets out the level of provision needed for the pupil, and consequently determines how much extra funding they require.

Figure 2.6. Implicit FSM premium over time

Sources: School financial data – based on Section 52 outturn data. Pupil- and school-level characteristics – taken from the National Pupil Database (NPD), Pupil Level Annual School Census (PLASC) and EduBase. ONS and HM Treasury for deflators.
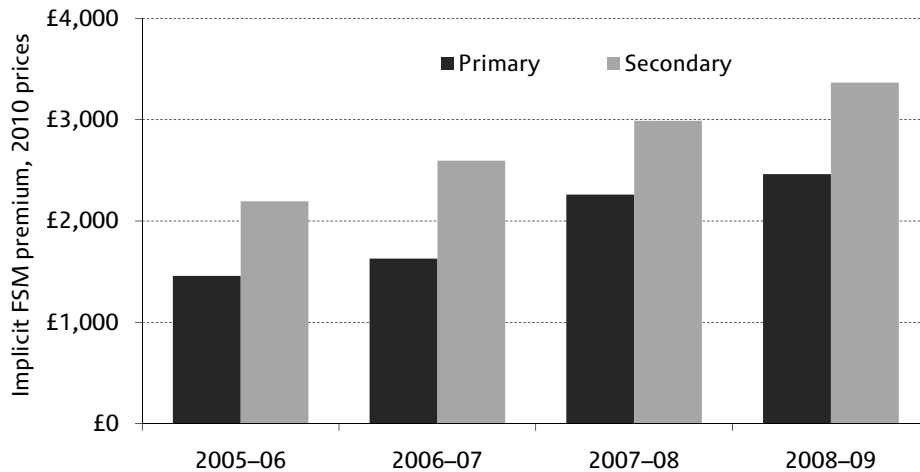
In our previous report, we also showed that a disproportionate share of this implicit FSM premium can be accounted for by specific grants from central government. Despite representing only 15% of overall primary schools' budgets over time, they contributed to 28% of the implicit FSM premium in 2008–09, as is shown in Figure 2.7a. The story is even starker for secondary schools (Figure 2.7b). Specific grants represented 16% of secondary schools' budgets in 2008–09, yet contributed 44% of the implicit FSM premium. Therefore specific grants seem to have made the school funding system more redistributive than it otherwise would have been. However, their contribution to the implicit FSM premium has decreased for both primary and secondary schools since 2005–06.

Figure 2.7a. Composition of implicit primary FSM premium over time

Sources: School financial data – based on Section 52 outturn data. Pupil- and school-level characteristics – taken from the National Pupil Database (NPD), Pupil Level Annual School Census (PLASC) and EduBase. ONS and HM Treasury for deflators.
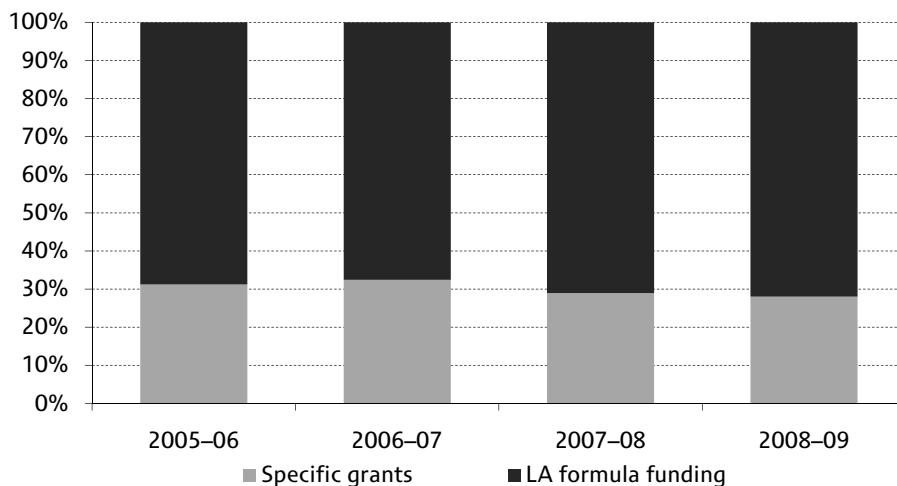
Figure 2.7b. Composition of implicit secondary FSM premium over time

Sources: School financial data – based on Section 52 outturn data. Pupil- and school-level characteristics – taken from the National Pupil Database (NPD), Pupil Level Annual School Census (PLASC) and EduBase. ONS and HM Treasury for deflators.
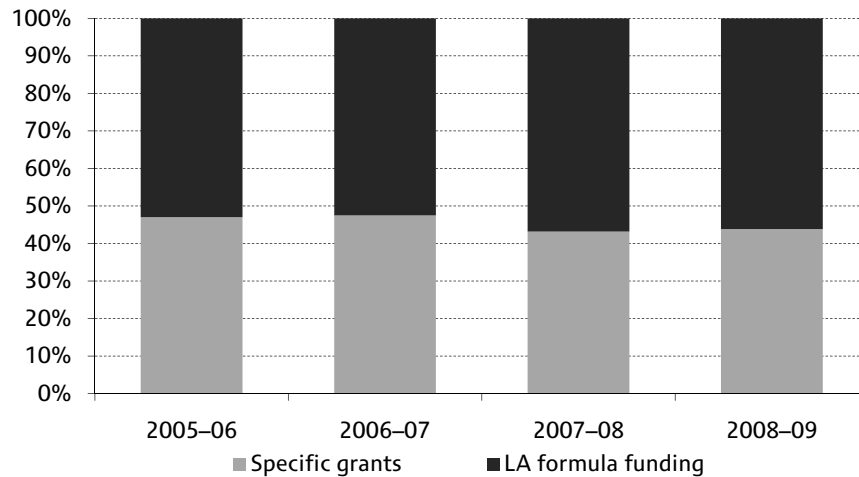
Flattening of deprivation funding

In our previous report, we found that the amounts allocated to schools via local authorities' 'fair-funding' formulae are less redistributive than the system used to allocate grants to local authorities. In other words, local authorities seem to spread or 'flatten' the deprivation-led funding that they receive, giving more to all pupils across their area rather than just focusing it on deprived pupils. West (2009) examines the formulae used by a sample of local authorities and also finds that they allocate less funding on the basis of deprivation than they receive from central government, instead spreading the funding over all pupils in their area.

Figure 2.8. Proportion of funds implicitly allocated to local authorities on the basis of FSM that was passed on to individual schools
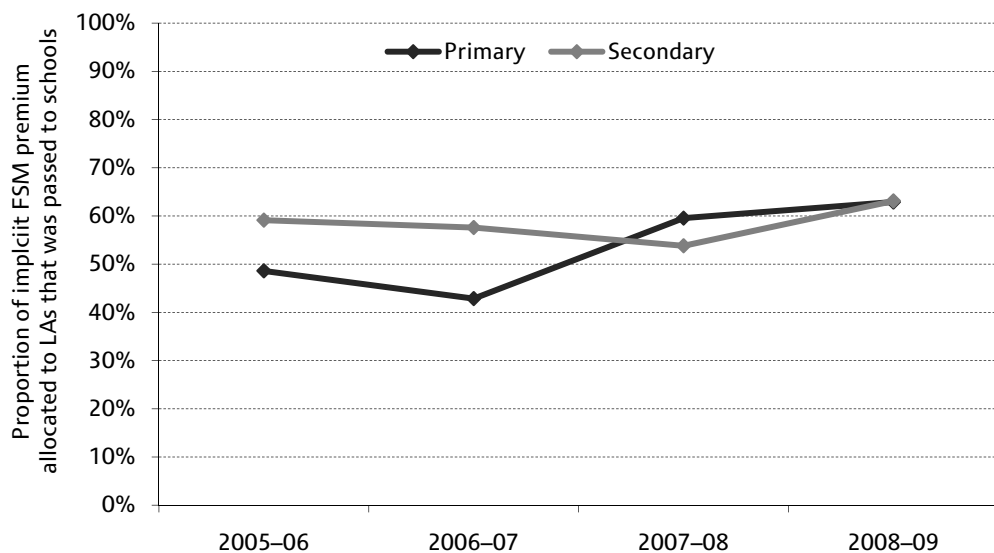

Sources: School financial data – based on Section 52 outturn data. Pupil- and school-level characteristics – taken from the National Pupil Database (NPD), Pupil Level Annual School Census (PLASC) and EduBase. ONS and HM Treasury for deflators.

Here, we repeat some of the analysis from our previous report, including the most recent financial year. Figure 2.8 shows that, in 2008–09, local authorities passed on about 63% of the funding they received on the basis of deprivation, on average. This amount was similar for both primary and secondary schools, having risen since 2005–06 in both cases. The reduction in 'flattening' was particularly significant for primary schools in 2007–08, coinciding with the large growth in their overall implicit FSM premium that year.

The issue of flattening of deprivation funding has been a major one for the Department for Children, Schools and Families. The department has encouraged local authorities to allocate greater levels of funding on the basis of social deprivation. It provided them with more information on how much of their funding is determined on the basis of deprivation and more advice on what mechanisms they can use to allocate funds to schools.[9] Based on current evidence, it seems as if such pressure and information may well have induced local authorities to allocate a larger proportion of funds on the basis of deprivation.

Stability and lack of responsiveness

Whilst Chowdry, Muriel and Sibieta (2008) found that funding is, on average, strongly skewed towards schools with greater levels of social deprivation, they also found that changes in funding are much less sensitive to changes in social deprivation and educational need from year to year. Although schools with high levels of social deprivation do, on average, have higher levels of funding per pupil, schools that become more deprived in any given year are unlikely to see much change that year in their level of funding per pupil. This may exacerbate any incentive schools have to 'cream-skim' easy-to-teach pupils; harder-to-teach pupils may be more expensive to teach, but they do not seem to bring with them much immediate change in funding.

More generally, historical levels of funding have always been used to determine current levels of funding. However, various mechanisms have been introduced to the school funding system in recent years that further favour stability. This possibly comes at the expense of tackling funding inequalities or responding to changes in need. Most of these stability mechanisms were introduced following on from the school funding 'crisis' of 2003–04, in which a number schools complained that they were due to receive significant cuts in funding.

One important mechanism increasing the inertia (and so reducing responsiveness) of schools' per-pupil funding is the Minimum Funding Guarantee (MFG), which guarantees each school a minimum increase in funding per pupil each year. This guarantee limits the impact of local authorities' fair-funding formulae, as these formula allocations are ignored if they provide schools with less than the level of the MFG.[10] This almost certainly diminishes the responsiveness of school funding to changing needs from year to year. Indeed, the Audit Commission (2004) noted that 'the minimum [funding] guarantee does not resolve issues of funding inequalities that might exist at school level. It has the potential to embed them and postpone them being tackled' (page 11).

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[9] http://www.teachernet.gov.uk/management/schoolfunding/schoolfunding2008to11/deprivationfundingreview200811/.

[10] However, it should be noted that dispensation can be given to derogate from the Minimum Funding Guarantee with the permission of the Schools Forum and/or the Secretary of State.

The MFG was originally set at a relatively high level. In 2004–05, it was set at 4% per pupil in cash terms, two-thirds of the overall cash increase in the main grant provided to local authorities that year (6%). However, it is currently set at 2.1% per pupil for years 2008–09 to 2010–11, around half of the average per-pupil increase in the Dedicated Schools Grant over these years (4.2% per year in cash terms). It has thus become a slightly less binding constraint recently.

Another example of the way the school funding system currently favours stability is the so-called 'spend-plus' methodology currently used to determine most grants to local authorities and schools. Under this method, grants are determined as a flat-rate increase on what schools or local authorities received in the previous year, plus an extra increase determined on the basis of a formula. Like the Minimum Funding Guarantee, this limits the ability of the school funding system to redistribute money between schools or local authorities on the basis of changing need.

Future changes

The government is currently undertaking a review of the formula used for distributing the Dedicated Schools Grant (DSG), and school funding arrangements more generally. This review is intended to guide the development of the school funding settlement for 2011 onwards. The main aim of this review is to:

> consider the development of a single transparent formula for the distribution of DSG, which distributes resources in line with relative need, recognising the different costs of educating particular groups of pupils and providing education in different areas.[11]

The review aims to move beyond the spend-plus methodology used in recent years and develop a single needs-based formula to determine allocations to local authorities. The review is yet to report at the time of writing, but some of the relevant issues it is considering are:

- whether the basic unit of funding should be determined on a top-down basis, as it is now, or through an activity- or needs-based analysis;

- whether there is scope for further streamlining of direct grants and payments – for example, merging the School Standards Grant and School Development Grant into the Dedicated Schools Grant;

- what indicators are best used when distributing money for pupils with additional educational needs; whether it is possible to attach money more directly to deprived pupils, for example, as they move round the system.

To inform the review, the Department for Children, Schools and Families also commissioned a number of pieces of research relevant to school funding in England.[12] Some of the key findings of the review of additional educational needs are discussed in Sections 3.2 and 4.1.

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[11]*Review of DSG Distribution Formula: Terms of Reference*, http://www.teachernet.gov.uk/docbank/index.cfm?id=12419.

[12]http://www.teachernet.gov.uk/management/schoolfunding/DSGformulareview/research/.

Summary of key characteristics and changes in school funding

There is a great deal of variation in per-pupil funding between schools in England. Much of this variation is the result of funding weighted towards schools with more deprived intakes: primary schools receive an implicit FSM premium of about £2,460 on top of all other funding, and secondary schools receive about £3,370. A disproportionate share of these implicit FSM premiums results from specific grants made by central government, which make school funding more redistributive than it otherwise would be. However, the level of funding targeted at deprivation has increased rapidly in recent years, particularly in terms of the funding provided by local authorities. Local authorities still seem to 'flatten' the funding they receive on the basis of deprivation, spreading it across all pupils instead, but the level of such flattening has reduced in recent years. This could well be the result of pressure and information from central government.

The system is, however, still relatively unresponsive to changing needs from year to year. Several mechanisms, such as the Minimum Funding Guarantee, have been introduced that further favour stability in funding, possibly at the expense of tackling funding inequalities. The government is currently reviewing the system of school funding for 2011 onwards, though no specific proposals have been announced at the time of writing.

2.4 Proposals for a pupil premium

Both the Conservatives and the Liberal Democrats have made proposals for the introduction of a pupil premium into the school funding system in England. Both sets of proposals would introduce a fixed amount provided to schools for pupils from a disadvantaged background, aimed at increasing the targeting of resources at schools with a high proportion of disadvantaged pupils, and reducing the disincentive to attract hard-to-teach pupils. Such a reform could, in principle, also simplify the school funding system.

The idea of a pupil premium

The origins of the pupil premium can be traced back to proposals for a voucher system for schools in the 1960s – for example, Milton Friedman's (1962) proposed system in which parents would be given a voucher equal to the average cost of a place in a state school. In his system, the parents could use this voucher to apply to any school, private or public, but the school had discretion over its admissions. If the cost of the school place exceeded the value of the voucher, parents could 'top up' the voucher from their own money in order to meet the total fee. Variants of this voucher system have been implemented across the US and other countries. In the UK, similar schemes have been proposed by various free-market think tanks and commentators – for example, Sexton (2002).

However, concerns have been expressed about such a voucher system. Specifically, some have questioned whether it is fair or equitable to give an effective subsidy to those who would have chosen a fee-paying school in the absence of the voucher. Some have also expressed a concern that low-income families will be unable to afford the top-up fees charged in excess of the voucher value. Furthermore, if all pupils were to attract the same amount of voucher funding, then schools may still have an incentive to 'cream-skim' and not admit pupils deemed hard to teach.

In response to such concerns, Jencks (1970) proposed a different system of vouchers in which 'topping up' was not possible, but in which low-income parents received a larger voucher. This was designed to divert more resources to schools with larger numbers of disadvantaged pupils and reduce any disincentive on the part of schools to admit such pupils. The system was still a voucher policy: it maintained the notion of parental choice over which school to send their child to, and it aimed to increase competition between schools and drive up standards; it just placed more emphasis on redistribution.

In 1989, Le Grand proposed a 'positively discriminating voucher', similar to Jencks's scheme in that more money would be attached to pupils from disadvantaged backgrounds. This would provide more money to schools serving disadvantaged communities in the hope of raising attainment in these schools – an objective of all the main political parties in the UK. Under Le Grand's proposal, schools serving more disadvantaged pupils 'would have better premises and equipment and could attract higher quality staff' (Le Grand, 2007). It was also designed to counteract the incentive for schools to 'cream-skim' easy-to-teach pupils in a competitive market for schools. The pupil premiums proposed by the Liberal Democrats and the Conservative Party are largely inspired by Le Grand's system and have similar aims.

However, the parties have tended to place different emphases on the various mechanisms that could reduce the attainment gap between rich and poor. The Liberal Democrats have put the greatest emphasis on the direct effect of providing extra resources, with less emphasis on the indirect effects. Although the Conservatives also highlight the direct resource effect, they have put relatively more emphasis than the Liberal Democrats on the indirect or incentive effects, especially the effect of new schools. They have proposed reducing the barriers to creating new schools and the introduction of Swedish-style free schools, run by non-state providers. The pupil premium cannot be seen in isolation from this quite radical policy.

Liberal Democrat proposals

The Liberal Democrats (2009) have said that they are committed to:

> Introduc[ing] a Pupil Premium to close the performance gap between children from rich and poor families. £2.5bn extra would be used immediately to bring the funding of the poorest and most educationally disadvantaged 1 million children up to levels in private schools.

They have also said that such a pupil premium would be attached to pupils eligible for free school meals, those with English as an additional language (but only for their first year), those with low- or medium-level special educational needs, and children in care. It would then be extended in future years to 'include other children from low income households where one or more parent is in employment'.

Under the Liberal Democrat proposals, the pupil premium would be in addition to all other sources of funding for schools (i.e. it would create an explicit FSM premium on top of the current implicit FSM premium). For example, a pupil premium could simply give schools an extra £2,500 for each of their pupils eligible for free school meals on top of all other funding.[13] Such a premium would obviously increase the targeting of resources at

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[13]Recent proposals from the Liberal Democrats have stated that the pupil premium would be differentiated across local authorities. We have not attempted to model this, as to do so would require further details, which are not available.

pupils from disadvantaged backgrounds, and it would also increase the sensitivity of the system to changes in pupil needs from year to year.

Funding for such a pupil premium would need to be found via increases in taxation, spending reductions elsewhere or new borrowing. The Liberal Democrats have proposed that a pupil premium of £2.5 billion could be funded via reductions in tax credits to families with above-average incomes and cuts to other areas of spending.

Such a pupil premium would not change the role of local authorities in school funding decisions. It would simply represent another specific grant from central government, which local authorities must pass on to schools. However, when they observe the large increase in deprivation funding from a pupil premium, local authorities could respond by reducing the emphasis on deprivation in their own funding formulae. The fact that local authorities have tended to flatten deprivation funding in the past might suggest that they could well respond in this way. Preventing this unintended consequence of a pupil premium could require further constraints to be placed on the school funding decisions of local authorities.

Lastly, how schools with large numbers of disadvantaged pupils would use the extra money from the pupil premium is an open question. The Liberal Democrats have chosen to put no constraints on how schools could use the extra resources. Schools could thus choose to target funds on individual pupils defined as being disadvantaged on the basis of the pupil premium, although they could also choose to spend them on other pupils they identify as needing extra resources for other reasons. However, the Liberal Democrats have also stated that 'Schools would be held accountable by parents, the Local Authority and OFSTED for using their resources in sensible and innovative ways'.

Conservative proposals

In a draft chapter for their 2010 general election manifesto, the Conservatives state that 'We will introduce a pupil premium – weighting school funding towards children from disadvantaged backgrounds'.[14] In an earlier paper outlining their plan for schools reform (Conservative Party, 2007), they state that:

> We have proposed an explicit Pupil Premium to increase per capita funding for pupils from deprived backgrounds ... We believe that the Pupil Premium should attach to pupils directly. ... [Schools within the maintained system] will thus be incentivised to seek out and accept pupils from more challenging backgrounds. *(page 42)*

Therefore the Conservatives also seem committed to a pupil premium that would increase the targeting of resources towards pupils from disadvantaged backgrounds, and to making the system more responsive to changes in need from year to year.

Furthermore, they have announced an ambition to move to a single national funding formula for all schools in England, with a pupil premium for disadvantaged pupils:

> In order to help schools plan and make them more accountable for what they spend we will ... shift towards a system in which there is a simplified

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[14]http://www.conservatives.com/News/News_stories/2010/01/~/media/Files/Draft%20Manifesto/DraftEducationManifesto.ashx, page 7.

amount paid by the taxpayer per pupil (with the Pupil Premium on top).[15]

This would represent a substantial reform to the school funding system in England. It would essentially abolish the role of local authorities in determining school funding. The system would instead be centralised, with power resting either with the Department for Children, Schools and Families or with an independent body appointed by the department. It could also lead to a substantial redistribution of resources across schools. However, it would greatly simplify the system of school funding.

In principle, a single national funding formula could allow central government to allocate more resources to schools attended by disadvantaged pupils. It would also prevent any extra resources targeted at disadvantage from being flattened by local authorities. However, it remains an open question whether a single national formula with a pupil premium would increase or decrease the targeting of resources towards disadvantaged pupils. As we have already seen, the present system of school funding already produces reasonably high *implicit* FSM premiums. The pupil premium in a single national funding formula would replace *implicit* FSM premiums with an explicit version targeted at some measure of disadvantage – thereby simplifying the system of deprivation funding. However, if the pupil premium scheme is less redistributive than the present system, then it could in principle *reduce* the targeting of the school funding system at disadvantaged pupils. Indeed, in Department for Children, Schools and Families (2009c), the government stated that:

> Introducing a pupil premium ... could actually mean a smaller proportion of school funding allocated at national level for deprivation, and less money reaching schools with the most deprived pupils. [It] could replace more generous existing school funding streams that are allocated on the basis of deprivation. *(page 72)*

Therefore whether it makes the system more or less redistributive is an empirical question and one that we will return to in Chapter 4, where we seek to model various options for a pupil premium.

Unfortunately, the Conservatives have not said what would go into such a single national school funding formula. In particular, they have not said how they would measure 'disadvantage', how much extra per-capita funding these pupils would receive or what the planned total cost of the scheme is. We can therefore only speculate as to what such a formula would include, and show the implications of various options for a single national funding formula. Finally, like the Liberal Democrats, the Conservatives have not specified how money from the pupil premium would need to be spent by schools.

Proposals from Policy Exchange

In recent years, researchers at Policy Exchange have published a number of reports that have included proposals for a pupil premium, which seem likely to influence Conservative thinking in this area. O'Shaughnessy and Leslie (2005) proposed that pupils attending a failing school should receive a pupil premium in per-capita funding that could be taken to other schools – a proposal inspired by a similar scheme in Florida.

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[15]Speech by Michael Gove, 6 November 2009,
http://www.conservatives.com/News/Speeches/2009/11/Michael_Gove_A_comprehensive_programme_for_state_education.aspx.

More recently, Freedman and Horner (2008) proposed a single national funding formula that would incorporate a pupil premium. Under this system, all school funding would be determined by a basic per-pupil amount (adjusted for area costs) plus a pupil premium system for pupils from disadvantaged backgrounds. They proposed using a geo-demographic measure (MOSAIC), allocating greater levels of funding to pupils from MOSAIC types with lower average GCSE scores. Special educational needs funding would be determined by a separate independent agency.

However, Freedman and Horner were not able to fully model their proposed scheme; instead, they modelled an approximate version. The total cost of this scheme was to be £4.6 billion, which would be met partly through the abolition of a number of direct government grants and payments (the School Development Grant, School Standards Grant, Personalised Learning Grant and other Standards Fund grants) and partly through other cuts to the education budget (abolition of the Education Maintenance Allowance, ContactPoint and the National Challenge programme). In Chapter 4, we will attempt to model the single funding formula originally proposed by Freedman and Horner (2008), along with their approximate version, comparing these with other potential models of a pupil premium.

Summary of proposals for a pupil premium

Both the Conservatives and the Liberal Democrats have made proposals for the introduction of a pupil premium into the school funding system in England. These proposals aim to increase the targeting of resources at schools with a high proportion of disadvantaged pupils, and to reduce the disincentive to attract hard-to-teach pupils. In the next chapter, we review the theory behind a pupil premium. We focus on whether or not extra resources could improve attainment amongst disadvantaged pupils and whether they might change schools' incentives to admit such pupils. In Chapter 4, we will investigate the extent to which the options for a pupil premium make the system of school funding more or less redistributive, the numbers of schools that win or lose under these options and by how much they win or lose. This is particularly relevant for proposals – such as a single national funding formula – that would create a pupil premium through the abolition of some or all grants currently received by schools. Some schools would lose under such a scheme and it is important to know which schools these are, how significant the losses are and whether they can be mitigated.

3. Theory and empirical evidence

Key findings

- The pupil premium could narrow the achievement gap between advantaged and disadvantaged pupils through a number of mechanisms: the direct effect of extra resources; the indirect effect of changes to pupils' peer group; or the indirect effect of the creation of new schools.

- The conventional wisdom surrounding the impact of increasing school resources on pupil attainment is that 'there is not a strong or consistent relationship between student performance and school resources'. Recent academic literature for the UK has provided some evidence of resource effects, however, though they are generally small in magnitude. There is some suggestion that extra resources for disadvantaged pupils would reduce the attainment gap, although this will depend on how those resources are used by schools.

- Schools are unlikely to actively recruit more disadvantaged pupils as a result of the pupil premium: the premium would need to be very high to sufficiently reduce the disincentive for schools to attract such pupils, and schools' ability to select pupils is also limited to some extent by the School Admissions Code. The pupil premium may lead to a small reduction in covert selection by schools but is unlikely to significantly reduce social segregation.

- New schools may be established primarily in disadvantaged areas, although, without a 'for-profit' incentive, it is unlikely that the UK would see the same level of expansion that other countries have seen. We also find that an increase in the number of schools may lead to an increase in the level of segregation between schools, but this may not be detrimental to disadvantaged pupils. Several chains of schools in the US specialise in teaching pupils in disadvantaged areas and have reported significant gains in attainment.

The main aim of the pupil premium proposed by the Conservative and Liberal Democrat parties is to narrow the attainment gap between rich and poor students. Proponents of the pupil premium claim that it will achieve this goal via a number of mechanisms, which are summarised in Figure 3.1.

First, if extra resources improve attainment, then targeting extra funds at disadvantaged pupils will narrow the attainment gap between rich and poor students. We refer to this as the direct mechanism and discuss it in more depth in Section 3.1. The pupil premium could also indirectly narrow the attainment gap through changes to pupils' peer group, the type of school they attend or the creation of new schools. We refer to these effects collectively as the indirect mechanisms.

Some proponents of the pupil premium suggest that it will reduce schools' incentives to 'cream-skim' easy-to-teach or high-achieving pupils, and may even incentivise schools to attract disadvantaged pupils. In Section 3.2, we assess evidence to determine whether the pupil premium is likely to affect the distribution of pupils across schools. We also discuss the assumptions required for a change in the distribution of pupils across schools to reduce the attainment gap between advantaged and disadvantaged pupils.

Figure 3.1. Possible mechanisms through which the pupil premium may raise the attainment of disadvantaged pupils
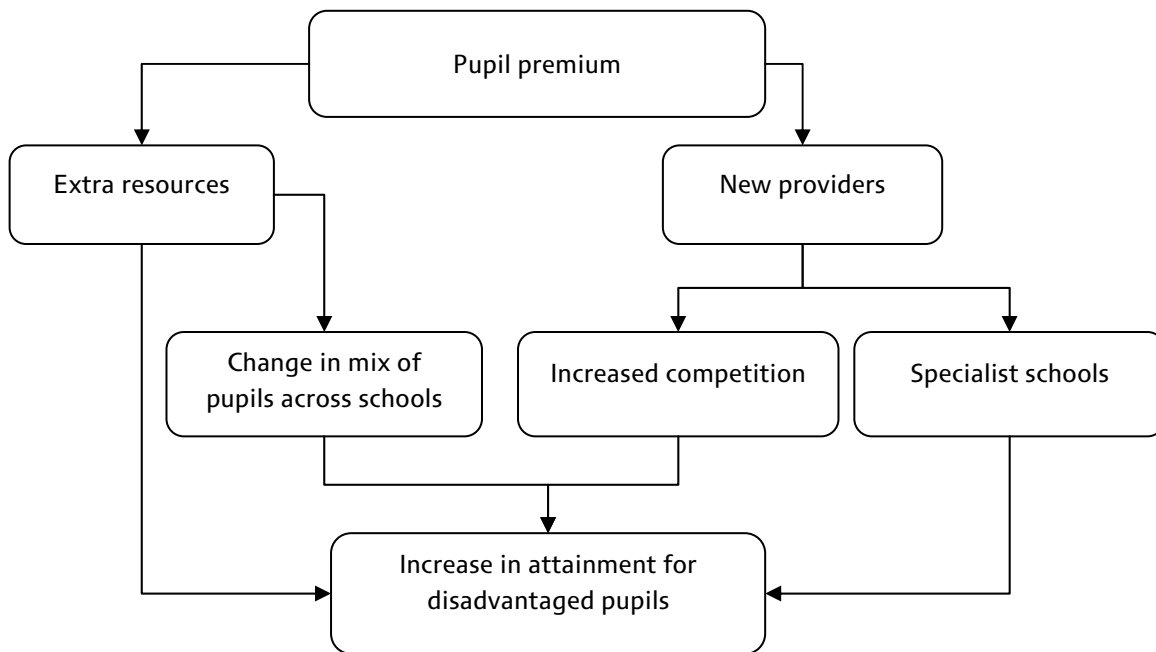
The Conservatives' education policy would allow greater freedom for groups of individuals to create new schools. The pupil premium cannot be seen in isolation from this policy; a funding premium for disadvantaged pupils may increase the incentive for schools to be created, especially in more deprived areas. In Section 3.3, we therefore investigate the potential effects of the pupil premium via the creation of new schools.

3.1 Direct impact of resources on pupil attainment

In a review of the literature to date, Hanushek (1997) concludes that 'there is not a strong or consistent relationship between student performance and school resources' and that 'simple resource policies hold little hope for improving student outcomes'. Hanushek acknowledges that an increase in school resources could be effective in some situations, but believes extra resources will not consistently improve attainment unless accompanied by changes in schools' incentives and organisation:

> The existing work does not suggest that resources never matter, nor does it suggest that resources could not matter. It only indicates that the current organization and incentives of schools do little to ensure that any added resources will be used effectively. *(page 156)*

This view summarises the common academic perception of the effectiveness of increasing school resources, supported by cross-country evidence from the OECD (2008). Some recent evidence has found small but statistically significant resource effects, however. Dewey, Husted and Kenny (2000) claim to review a more recent and comprehensive body of literature than Hanushek, differentiating between studies they believe correctly

identify the effect of resources on attainment and those that do not.[16] The authors conclude that the question of whether school inputs matter for the educational attainment of children is answered by 'a resounding yes', although they agree with Hanushek that not all schools will necessarily use extra resources effectively.

We now present a brief summary of UK studies, which are likely to be more relevant for us in assessing any potential direct benefits of increasing school resources on pupil attainment. Would increasing resources necessarily reduce the attainment gap between advantaged and disadvantaged pupils? We note that once funds are allocated to schools, they are free to distribute resources between their pupils. If schools choose to allocate the extra funds disproportionately to advantaged pupils, then the attainment gap would not be reduced. This is an unlikely strategy for schools, however, and in any case most resources will affect whole classes rather than individual pupils. Even if resources are allocated as intended, it may also be the case that disadvantaged pupils do not gain for some reason. Although the evidence we review does not show conclusively whether advantaged or disadvantaged pupils gain more from extra resources, we conclude that disadvantaged pupils are likely to gain from extra resources just as much as advantaged pupils, and therefore any positive resource effect is likely to reduce the attainment gap.

Evidence from the UK: NCDS

A number of studies have used the National Child Development Study (NCDS) to estimate the relationship between school resources and attainment.[17] The NCDS is a longitudinal survey of all the children born in the UK during the first week of March 1958; it contains a rich amount of data on these children throughout their childhood and on later life outcomes. We review three studies that use the richness of this data set to attempt to isolate the effect of school quality.[18] These papers acknowledge that schools can choose to spend resources in a number of different ways. There could be a general increase in spending in all areas, or resources could be targeted at reducing the number of pupils per class (known as the pupil–teacher ratio). We summarise the findings of these papers below, and again in Table 3.1.

Feinstein and Symons (1999) find no significant effect of the pupil–teacher ratio (PTR) on academic attainment. However, Dustmann, Rajah and van Soest (2003) find that an increase in the school PTR by one standard deviation (i.e. an increase in average class sizes) decreases the probability that pupils stay in education beyond the compulsory school-leaving age by about 4 percentage points. Dearden, Ferri and Meghir (2002) find that the school PTR has no impact on educational qualifications, although there are some positive resource effects on future wages for women.

These studies using the rich NCDS data find some evidence of benefits to pupils in schools with a lower average PTR, although this is by no means universal. The results may not be the most relevant when thinking about the current school funding system, however, as the NCDS cohort went through the British education system in the 1970s.

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[16]They believe that income should not be used as a proxy for the time the parent spends teaching the child, as there are conflicting income/substitution effects of time as income increases. In the US school funding system from which most data are derived, there is also multicollinearity between income and school quality, as nearly half of all public school funding resources are generated from local taxation. The US system generates large funding differences between wealthy and impoverished communities (Biddle and Berliner, 2003).

[17]The NCDS is an individual-level data set with comprehensive information on educational outcomes, prior attainment, family background and school quality.

[18]Through the addition of explanatory variables to control for the effect of prior attainment, family background and local environment on educational attainment.

Table 3.1. Summary of papers estimating the effect of resources on attainment in the UK

Research using the NCDS

Study	Outcome variables	Results
Feinstein and Symons, 1999	Academic attainment	No impact of the school pupil–teacher ratio.
Dustmann, Rajah and van Soest, 2003	Academic attainment Career choice	An increase in the school pupil–teacher ratio by one standard deviation decreases the probability that pupils stay in education past the compulsory school-leaving age by about 4 percentage points.
Dearden, Ferri and Meghir, 2002	Academic attainment Wages at ages 23 and 33	No impact of the school pupil–teacher ratio for men. Significant effect of the school pupil–teacher ratio on women's wages at age 33, particularly for those of low ability.

Research using the NPD

Study	Outcome variables	Results
Holmlund, McNally and Viarengo, 2008	KS2 attainment (age 10–11)	£1,000 in average expenditure per pupil increases the proportion of pupils achieving the expected level of attainment at KS2 by 2.2, 2.0 and 0.7 percentage points in English, Maths and Science. Disadvantaged schools gain more from extra resources in English, but less in Science and Maths. Pupils eligible for FSM gain more in English and Maths, but less in Science. High-ability students gain more in all subjects.
Levačić et al., 2005	KS3 attainment (age 13–14)	Spending £100 more per pupil raises pupil attainment at KS3 by 0.04 of a KS level. Reducing the school PTR by 1 pupil raises pupil attainment by 0.1 of a level in Maths and 0.12 of a level in Science, but no significant effects for English. Those in the middle of the ability distribution gain more. Those in the highest ability quintile who are eligible for FSM gain more.
Jenkins, Levačić and Vignoles, 2006	GCSE attainment (age 15–16)	Reducing the school PTR by 1 pupil for all five years of secondary school raises pupil attainment by at most 1.2 GCSE grades and would require spending around £127 extra per annum per pupil. Those in bottom 60% of the ability distribution gain more. No significant differences between those eligible and those not eligible for FSM.
Machin, McNally and Meghir, 2004	Maths and English attainment at KS3 (age 13–14) Absenteeism	Average effect of programme was an increase in Maths attainment of about 0.5–0.8 of a percentile. The number of half-days missed by pupils in unauthorised absences decreased by 30%.

Recent evidence from the UK

In the current school funding system, resources are not allocated randomly; they are determined by pupil characteristics (including attainment levels). This causes a problem in using actual differences in funding across schools to isolate the impact of resources. For instance, since deprived and low-achieving schools tend to receive higher levels of funding, a simple correlation of funding and average attainment would probably lead one to (falsely) conclude that higher funding *reduces* attainment. The correlation is simply the result of the school funding system targeting resources at measures of educational disadvantage. To get around this reverse causality problem (sometimes referred to as the 'endogeneity' of school resources), a more recent group of academic papers in the UK have attempted to isolate the impact of school resources on pupil attainment by using an 'instrument' – an exogenous or random change in the level of school resources. These studies use administrative data on pupils' attainment from the National Pupil Database (NPD), as well as school finance data. Each study is summarised in Table 3.1.

Holmlund, McNally and Viarengo (2008) investigate the impact of extra resources for schools on pupils' attainment in their Key Stage 2 (KS2) exams, taken at the end of primary school in England when pupils are aged 10–11. They present results from a multivariate regression (a statistical model that controls for multiple explanatory factors) that they believe accounts for most of the endogeneity problem. As an alternative strategy, they also use data on a subsample of local authorities, which contain information about how they distribute funding to schools and how their funding formulae change over time. This strategy essentially measures the effect of an increase in school resources by comparing schools in one local authority (LA) with equally-deprived schools in another LA that allocates more or less resources on the basis of deprivation in its local formulae. The main results of the paper suggest that an increase of £1,000 in average expenditure per pupil would increase the number of pupils achieving the expected level of attainment at KS2 by 2.2, 2.0 and 0.7 percentage points in English, Maths and Science respectively. These figures are roughly equal to 3, 2.5 and 1.5 weeks' worth of progress in the three subjects, which may be considered a small impact given the associated costs.

The authors find positive and statistically significant effects for most subgroups, but there is some variation in the estimated impacts of expenditure: disadvantaged schools[19] gain more from extra resources in English, but less in Science and Maths; pupils eligible for free schools meals (FSM) gain more in English and Maths, but less in Science; there is a stronger effect of expenditure on high-ability students in all subjects.

Levačić et al. (2005) ask whether attainment in Key Stage 3 (KS3) exams, taken in state schools in England when pupils are aged 13–14, is affected by the level of school resources. They attempt to overcome the problem of endogeneity of school resources by looking at the political affiliation of the local authority. They argue that political affiliation affects the financing of schools but is not related to the characteristics of pupils and parents. Under these assumptions, political affiliation can therefore be used to isolate the effect of resources on attainment. Using this strategy, the authors find that spending £100 more per pupil raises pupil attainment at KS3 by 0.04 of a Key Stage level, while reducing the school PTR by one pupil raises pupil attainment by 0.1 of a level in Maths and 0.12 of a level in Science, but there are no significant effects for English. They conclude that

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[19]Defined by the proportion of students in the school eligible for free school meals, and included in the regression.

additional spending to reduce the student–teacher ratio is more effective than an increase in general expenditure. Focusing on subgroups of the student population, they find that those in the middle of the ability distribution, and those in the highest ability quintile who are eligible for FSM, gain more from an increase in school resources.

Jenkins, Levačić and Vignoles (2006) ask whether attainment at GCSE is affected by the level of school resources. They use the same strategy as Levačić et al. described above (using the political affiliation of the LA to isolate the effect of school resources). They also find that reducing the school PTR is more effective than increasing the general spending on the school, although the effect of reducing the PTR from current levels by one pupil over the five-year duration of secondary school is very small (at most 1.2 GCSE grades) and would require spending around £127 extra per annum per pupil. They find that students from the bottom 60% of the prior achievement distribution gain more from an increase in the school's resources, but that there was no significant difference in the impact between those who were eligible for FSM and those who were not.

The Excellence in Cities (EiC) programme was an initiative launched under the Labour government in 1999 that aimed to alleviate poor student attainment in disadvantaged urban areas. It is therefore highly relevant to a discussion of the pupil premium. EiC gives extra funding to schools in the programme, but also has additional aims such as encouraging cooperation between schools in the dissemination of knowledge. Machin, McNally and Meghir (2004) evaluate whether student attainment in Maths and English at KS3 improved as a result of EiC, and also look at the impact of EiC on unauthorised absences from school. Their method matches schools that received the extra funding with similar schools that did not. Comparing the attainment in the 'treatment' and 'comparison' groups gives a reliable estimate for the impact of EiC. The authors find that attainment in Maths increased in schools in the EiC programme, but their results were less statistically significant for English. The average effect of EiC was an increase in Maths attainment of about 0.5 to 0.8 of a percentile. There was also a significant reduction in unauthorised absences: the number of half-days missed decreased by 30%.

This evidence gives encouraging signs for the benefits of increasing school resources. The impacts following the EiC programme cannot be interpreted as the direct result of an increase in funds, however. This is because the additional expenditure was tied to many strands of the project, such as investment in Learning Mentors, Learning Support Units and a Gifted and Talented Programme within the schools, as well as capital investment in 'City Learning Centres' to promote school and community learning. A pupil premium, by contrast, would be applicable to all schools (not just urban ones) and funding is unlikely to be tied to any particular interventions.

Factors influencing the effectiveness of extra school resources

The recent evidence we reviewed above finds a positive effect of increasing resources at the school level, although the effects are small in magnitude. This contrasts with many people's belief that extra resources have a large impact on pupil attainment. Could there be any factors that influence or constrain the effectiveness of extra resources, and therefore explain why larger gains are not observed?

First, we note that schools currently have a limited empirical research base on which to make resource allocation decisions; Levačić and Vignoles (2002) argue that until better empirical evidence on the impact of using resources in different ways becomes available,

little guidance can be given to head teachers and teachers as to the 'best' way to allocate a marginal increase in resources.

Some recent studies suggest that high-quality teachers make a big difference to a child's academic attainment. In the UK, Burgess, Davies and Slater (2009) find that being taught by a high-quality teacher as opposed to a low-quality teacher increases attainment at GCSE by one-quarter of a standard deviation.[20] In the US, Aaronson, Barrow and Sander (2007) find that teacher quality has an impact on pupil attainment of a similar magnitude. They also find that African American students and students of low to middle prior ability gain the most from being taught by a good teacher. Therefore, recruiting high-quality teachers to schools with disadvantaged pupils could well reduce the attainment gap between rich and poor pupils.

In theory, high-quality teachers could be attracted to and retained in schools in disadvantaged areas through better working conditions or higher pay. In practice, this is not possible in the current UK system due to central pay bargaining; head teachers have little flexibility in setting pay and conditions when recruiting new teachers (Chowdry, Muriel and Sibieta, 2008). A recent report argues that unless there is reform to the way teachers are paid, the pupil premium will have little impact on pupils' achievement as resources cannot be directed to where they are most needed (Wolf, 2010). More evidence is needed to assess the impact of such a radical shift in policy, however.

Recently-established academy schools in England have slightly more autonomy than other types of school – for example, flexibility in setting teachers' pay and the length of the school day. There has been some anecdotal evidence of the changes occurring in academies – for example, giving better incentive structures to staff (and in some cases students[21]), providing more staff development or making changes to the organisation of the school day. A report by PwC, commissioned by the Department for Children, Schools and Families (DCSF) in 2008, also details some examples of these innovative changes. In some schools, teachers receive a personal fund for professional development (up to £1,500 per staff member per year), a broader range of staff have been recruited into many academy schools, and in some cases the school day has been extended. These findings may not be representative of general practice in academy schools, however, as the report does not give details of the frequency of these practices.

An evaluation of the performance of pupils in academy schools may therefore give some indication of the likely effects of greater autonomy. Machin and Wilson (2008) compare similar schools that differ only in their academy status and conclude that there are no statistically significant differences in pupil performance. This suggests that school autonomy has so far had little impact on pupil attainment, although the authors suggest that further evidence to evaluate the academy programme is needed.

There are clearly many factors that influence the effectiveness of extra school resources. More research is needed on the effectiveness of spending resources in different ways to enable head teachers to allocate resources efficiently. A firmer evidence base is also

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[20]Burgess et al. define a high-quality teacher as a teacher above the 75th percentile (i.e. among the top 25 out of 100 teachers) and a low-quality teacher as a teacher below the 25th percentile (i.e. among the bottom 25 out of 100 teachers). They calculate the measure of teacher quality based on multiple regression analysis of the average class attainment, controlling for all pupil characteristics possible.

[21]Academy schools in England have greater freedom than other types of school. They can, for example, decide to pay students for achieving 'good' GCSE results, as experimented with in Bristol (http://news.bbc.co.uk/1/hi/england/bristol/6960673.stm).

needed to assess the implications of increasing school autonomy (particularly in regard to recruiting higher-quality teachers).

Summary of the effect of increases in school resources

The conventional wisdom about the impact of increasing school resources on pupil attainment is that 'there is not a strong or consistent relationship between student performance and school resources' (Hanushek, 1997). Hanushek and others have suggested that this may be because schools are constrained in the way they can spend additional resources. For example, in the UK, teachers' pay and working conditions are set by the School Teachers' Pay and Conditions Document, so schools in disadvantaged areas may be unable to recruit high-quality teachers. Wolf (2010) argues that unless there is reform to the way teachers are paid, the pupil premium will have little impact on pupils' achievement. There is currently no evidence to give an indication of the impact of increasing schools' autonomy, although more detailed evidence from the academy programme in the UK may be useful in the future.

In spite of these constraints, recent academic literature for the UK has provided some evidence of positive resource effects, though they are generally small in magnitude. Results suggest that focusing resources on reductions in the pupil–teacher ratio of a school is more cost-effective than increasing the general level of spending at a school, but there are likely to be variations in effectiveness between schools. The literature does not provide us with any conclusive idea about the type of students who are most likely to gain from an increase in school resources: one study suggests that high-ability students gain more from an increase in resources, while another finds it is those from the lower end of the ability distribution that gain most.

We conclude that increasing resources is likely to have a direct impact on pupils' attainment. As the extra resources will be targeted at schools with disadvantaged pupils, they seem likely to decrease the attainment gap between rich and poor pupils.

3.2 Indirect impact of peer groups

If a child's peer group in their class has an impact on their attainment, then schools that are segregated by ability will have a negative effect on the attainment of disadvantaged pupils, increasing the attainment gap. If the pupil premium somehow changes the distribution of pupils across schools, then this may indirectly reduce the attainment gap between advantaged and disadvantaged pupils.

Gibbons and Telhaj (2007) conclude that English schools are highly segregated by ability, as there is a large difference in the average ability of pupils going to the 'best' comprehensive schools and those going to the 'worst'.[22] In terms of social segregation, England is a middle-ranking country out of rich industrialised nations (Jenkins, Micklewright and Schneff, 2006), though countries that are more segregated than England generally still use academic selection in state secondary schools. Social or ability segregation in England's schools may come primarily from residential segregation, but that is unlikely to be the sole determinant. Whatever its causes, Gibbons and Telhaj

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[22]The average ability of pupils going into the 'best' comprehensive secondary schools is around 30 percentiles of the pupil ability distribution above the average ability in the 'worst'. 'Ability' is measured by the pupil's level of attainment in KS2 exams at the end of primary school.

(2007) note that segregation of pupils along ability lines may increase the attainment gap between disadvantaged and advantaged pupils. This is because segregation may 'work to exacerbate inequalities in educational outcomes – either through peer-group effects or because disadvantaged pupils place greater pressure on teaching resources'. The 'pure' peer-group effect means that the behaviour, participation in class and social norms of a pupil's classroom peers have an effect on that pupil's academic attainment. A pupil's peer group also affects the resources they receive, as disadvantaged pupils put more pressure on resources in the classroom. If resources matter, as discussed in Section 3.1, then a more disadvantaged peer group will have a negative impact on a pupil's attainment.

We now evaluate the evidence that peer groups matter for educational attainment, followed by a summary of how the pupil premium could work to change the existing distribution of disadvantaged pupils across schools.

Do peer effects matter?

Gibbons and Telhaj (2006) conclude that a child's peer group has an impact on their attainment, although it is small in magnitude. Their paper compares outcomes of children who attended the same primary school up to age 11, but then moved on to different secondary schools alongside new schoolmates of various abilities. The authors assume that the ability level of the new peer group is random,[23] although this may only be true in circumstances where the allocation of pupils to secondary schools is random by design (for example, in a lottery admissions system).

Standardised attainment tests in secondary schools in England have a number of tiered papers, tailored to different levels of ability. Students are assigned to a tiered paper and will generally be grouped according to this tier. Within each tier group, however, assignment into classrooms can be based on ability or be essentially random. Atkinson et al. (2008) use this variation across schools to measure peer effects. They find significant evidence that pupils who are randomly grouped with higher-ability peers have higher attainment than those who are randomly grouped with lower-ability peers. The authors point out, however, that their results may partly be due to the structure of the tiered examination that pupils sit.

The papers discussed above suggest that it is the ability of the peer group and not the social composition that matters (although in practice the two are highly correlated). If it is the ability of a pupil's peer group that matters, the evidence suggests that the pupil premium could reduce the attainment gap between rich and poor students in two ways. First, if the distribution of pupils across schools remained the same but the academic attainment of disadvantaged pupils rose, then this would have a positive impact on their peers and multiply the effect of the pupil premium. Second, if the distribution of pupils across schools became more even, disadvantaged pupils would have higher-ability peers, which may increase their attainment. This second mechanism does not require a direct impact of extra resources on attainment. We now discuss this second mechanism in more detail.

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[23]For the strategy to work, the ability of the new school peers must be uncorrelated with unobserved characteristics of the pupil. This assumption is unlikely to hold in some cases, however – for example, if 'pushy' parents get their children into the school with the 'best' peers and also push their child to work harder in school.

Could the pupil premium reduce segregation in schools?

A recent DCSF report states that 'a powerful driver of the social segregation of schools is residential segregation in combination with admission arrangements prioritising proximity' (Coldron et al., 2008). Although much of the segregation in England's schools comes from residential segregation, it has been hypothesised that covert selection from schools also plays a role (West, Ingram and Hind, 2006). Parental preferences (in addition to their choice of residence) may also contribute to segregation in schools, since segregation is greater in locations where there are many alternative schools (Burgess et al., 2004). The introduction of a pupil premium could change the distribution of pupils across schools through either a change in schools' behaviour (the supply side) or a change in parents' behaviour (the demand side). We now discuss these two options.

The supply side: will there be a reduction in 'cream-skimming' by schools?

Schools in England may currently have an incentive to 'cream-skim' prospective pupils who seem easiest to teach, or high-ability pupils who will improve the school's position in exam league tables.[24] Le Grand (1989) proposed the idea of a 'positively discriminating voucher' in response to this adverse side-effect of school choice in a market system. He noted that the premium paid for every child from a disadvantaged background would provide schools with a 'positive incentive' to take them in, and this feature of the pupil premium has been recognised and championed by the Conservative and Liberal Democrat parties.[25]

While schools' main objectives are not simply to maximise their income, they are not purely altruistic either. In particular, schools will want to be compensated for the expected higher cost of teaching pupils from disadvantaged backgrounds. If the money attached to such pupils is less than this perceived cost, then schools have a disincentive to attract such pupils. If the pupil premium were to increase the money attached to disadvantaged pupils, then this disincentive could be reduced.

Perceptions of the cost of teaching pupils from disadvantaged backgrounds are likely to vary across schools. A survey of schools undertaken for DCSF by PwC (2009) suggests that schools currently spend about £1,750 for each pupil with additional educational needs (excluding those with high-cost SEN), but that they perceive there to be an 'unmet need' averaging about £1,800 for each such pupil that cannot be met through existing funding. The fact that schools perceive there to be an unmet need suggests there is currently a disincentive to attract pupils from disadvantaged backgrounds.

Further evidence also suggests that the pupil premium would need to be large to reduce this disincentive. Under the current school funding system, pupils with special educational needs (SEN) have a large funding premium,[26] but they are still under-represented in more autonomous schools (West, Ingram and Hind, 2006). This suggests that the (already large) premium for taking them is not large enough, although the under-

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[24]Since 2006, published league tables have also provided a measure of how much progress pupils make in the school – the contextual value added. It is likely that most parents are more aware of the absolute attainment of the school, however – for example, the percentage of students reaching the expected level of attainment.

[25]The Conservative Party (2007) has stated that the current system of school funding 'fails to encourage good schools to admit the hardest to help children' and that, under the pupil premium reform, schools would be 'incentivised to seek out and accept pupils from more challenging backgrounds'. The Liberal Democrats note the 'greater incentives for schools to take "hard to help" pupils' as they can be certain that they will receive the extra cash they need' (http://www.neec2009.co.uk/LibDem.asp).

[26]The level of additional funds allocated for pupils with SEN depends on the level of their need, and is assessed and allocated by the local authority in the most severe cases.

representation could be driven by parents' preferences and not covert selection by autonomous schools.

We have noted above that the premium attached to disadvantaged pupils may not be large enough for schools to actively recruit them. Even if schools did wish to actively recruit certain types of students, however, they may be constrained, as the School Admissions Code (Department for Children, Schools and Families, 2010) states that schools should not select pupils on the basis of their characteristics. In practice, however, schools may find ways to circumvent the restrictions. West, Ingram and Hind (2006) find that autonomous schools in England reported using potentially selective admissions criteria, while Allen and West (2009) investigate the selective practices of 'elite' faith schools in England. They find that:

> within the religious sector there are both Catholic and Anglican socially selective 'elite' secondary schools that appear to 'select out' low-income religious families, thereby displacing them to religious schools with a less affluent composition. *(page 489)*

The School Admissions Code was designed (and strengthened) to limit schools' ability to 'cream-skim' desirable pupils, but it may also work to restrain schools' ability to attract disadvantaged pupils with a desirable enough 'premium'. However, schools that wanted a representative student intake (that is, with an increased share of disadvantaged pupils) could choose to implement a 'fair-banding' admissions policy or a lottery system.[27] Selective advertising of the school could also influence the type of pupils who choose to apply (although, again, this may be against the spirit of the current School Admissions Code).

Lastly, there may be a further potential benefit from the pupil premium policy, in reducing the complexity and increasing the transparency of the current system. At present, schools might not be responding to financial incentives to attract disadvantaged pupils because of the complexity of the current funding streams for deprivation. A pupil premium could, in principle, reduce such complexity, and increase the likelihood that schools perceive and respond to financial incentives to attract disadvantaged pupils.

The demand side: will there be a change in the type of school that parents choose?

Since the 1988 Education Reform Act, parents in England have had the right to express a preference for the school their child attends, although in practice the allocation of places at a popular school is often determined by proximity. Evidence shows that parents value schools that perform well academically: some parents are prepared to pay large house-price premiums to live in the catchment area of a 'good' school (Gibbons and Machin, 2003 and 2006; Black, 1999). If parents only care about academic standards, and the pupil premium succeeds in reducing the attainment gap between advantaged and disadvantaged pupils, then the pupil premium could create a more balanced distribution of advantaged and disadvantaged pupils across schools.

Academic standards are not likely to be the only important consideration for parents, however; Coldron, Cripps and Shipton (2010) argue that a school's social composition has

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[27]Academies can choose whether to operate fair banding in their admissions. As academies are usually located in deprived areas, however, the 'fair' banding based on the normal distribution will not reflect the representative population of the local area. See http://www.furnessacademy.com/2009/09/fair-banding.html. A lottery system for oversubscribed schools has been introduced in Brighton and Hove (http://news.bbc.co.uk/1/hi/education/6403017.stm).

a large impact on the 'choice' of more educated parents. Burgess, Greaves et al. (2009) show that proximity and the composition of the school (in terms of the percentage of students with FSM) are also factors that are important when parents choose which school they want their child to attend. By comparing the school chosen by parents with all other feasible schools in the local area, Burgess et al. find that parents require an increase in academic standards of 1.77 percentage points to compensate them for a 1 percentage point increase in the proportion of pupils with FSM. The importance of peer groups is also corroborated by Rothstein (2006), with US data, and Schneider and Buckley (2002), who use evidence from parents' internet search patterns on a US schools database to infer the characteristics that are important in their school choice.

On the demand side, therefore, parental preferences for a 'good' peer group may make their school choice insensitive to changes in funding for disadvantaged pupils. In some cases, however, the pupil premium may indeed change the demand for certain schools, and thereby reduce social segregation in England's schools. So it is important to think about why parents care about the peer group in the school:

- Parents may only care about the academic ability of a child's peer group. In this case, segregation in England's schools will decrease if the pupil premium sufficiently reduces the attainment gap between advantaged and disadvantaged students. A large response to a possibly small change in the attainment gap would be necessary, however.

- Parents may care about their child's peer group because of the implied allocation of resources per pupil. In the current system, parents may worry that each additional disadvantaged pupil reduces the resources available for their child. The pupil premium should partially redress this, as schools should receive some of the additional resources they require. Parents will not have perfect information on the allocation of funds within the school, however, and so a large change through this mechanism may be unlikely.

In contrast to the two scenarios above, advantaged parents may only care about the 'type' of child their child is educated with. Parents may want their child to be educated with 'people like them', regardless of the peer group's ability (Ball, 2003). If advantaged parents' decisions are unaffected by an increase in resources and/or attainment of disadvantaged pupils, this will reduce the impact of the pupil premium through peer effects; the distribution of pupils across schools will be unchanged. Even in this case, however, if it is the *ability* of a peer group that matters and the extra resources succeed in raising the attainment of disadvantaged pupils, then the positive effects of the pupil premium could be multiplied.

Summary of the indirect impact of peer groups

Some evidence shows that the academic ability of a pupil's peer group matters for their own attainment. If the pupil premium increases attainment through the direct mechanism discussed in Section 3.1, then the positive resource effect would be amplified: poorer students would now have higher-attaining peers, which would help increase their attainment. In the research reviewed, however, academic attainment and social composition are likely to be correlated. It could be that the current level of social segregation between advantaged and disadvantaged pupils (and not segregation by ability) is contributing to educational inequalities. If the pupil premium reduces such

social segregation, then it could have an indirect impact on attainment and help to alleviate the 'attainment gap' between advantaged and disadvantaged students.

The change in the distribution of pupils across schools in response to a pupil premium could arise from the supply side (if schools want to change their intake) or the demand side (if parents want to change the type of school they apply to). Evidence we review shows that schools are unlikely to actively recruit more disadvantaged pupils: the premium would need to be very high to sufficiently reduce the disincentive for schools to attract such pupils, and schools are limited to some extent by the School Admissions Code. However, the pupil premium would at least make the funding system more transparent and make any financial incentives easier to observe. Although there are some possible scenarios in which parents might change the type of school they apply to, it is likely that the introduction of the pupil premium will have little effect on the demand side. Therefore, the pupil premium may lead to a small reduction in covert selection by schools but is unlikely to significantly reduce social segregation in schools.

In the next section, we detail how opposition policy proposals for new schools could interact with the pupil premium to increase the supply of schools, and especially schools in disadvantaged areas. If these schools were more effective in teaching disadvantaged pupils, then having disadvantaged peers would not necessarily have a negative effect on a pupil's attainment.

3.3 Indirect impact of new schools

The Conservatives' education policy would allow greater freedom for groups of individuals to create new schools (Conservative Party, 2007). The pupil premium would be bound to interact with this policy: a funding premium for disadvantaged pupils may increase the incentive for new schools to be created, especially in more deprived areas. As resources would necessarily follow pupils, groups working to set up a school would have a clear idea of the level of funding they could expect, based on the number of pupils they successfully attracted.

Increasing the supply of new schools may have a beneficial impact on the attainment of disadvantaged pupils if new schools are created that specialise in teaching such pupils. These schools may have innovative teaching techniques, for example, or specialise in raising aspiration. Aside from the impact on its own pupils, a new school may raise attainment in all schools nearby by increasing competition, leading to an increase in productivity.

This section will assess whether a pupil premium, coupled with changes to allow new schools to be created, would have an indirect effect on the attainment of disadvantaged pupils. We first examine whether or not many new schools are likely to be established, drawing on evidence from Chile, Sweden and the US. We also discuss the types of schools that are likely to be set up and the likely impact they will have on pupils' attainment. Finally, we examine whether the presence of new schools may induce improvements in productivity in all schools, and how these mechanisms will affect the attainment gap between advantaged and disadvantaged pupils.

Would new schools be created?

The Conservatives' education policies combine the introduction of the pupil premium policy with more freedom for groups to set up new schools. We therefore cannot discuss

the pupil premium policy independently; we must assess how the interaction between the two policies could reduce the attainment gap between rich and poor pupils.

'School choice' has a different interpretation in different countries, but a common theme is that parents are able to make some kind of choice about the school they want their child to attend. This may be through expressing a preference for a school (as in the UK) or by using a voucher to pay for a place at a school (as in Chile, Sweden and some parts of the US[28]). In most cases, a school's budget is tied to the number of pupils it enrols, so schools have an incentive to compete for pupils (and funds) by raising standards. In theory, the introduction of new schools should create more pressure for a school to raise standards, improving the attainment of its pupils. This has the potential to reduce the attainment gap between advantaged and disadvantaged pupils if there are more productivity gains for disadvantaged pupils. We now look at evidence from other countries to assess whether new schools are likely to be created in the UK.

Hsieh and Urquiola (2002) document changes in school provision in Chile following the introduction of a nationwide voucher system in 1981:

> More than a thousand (often for-profit) private schools entered the market, and the private enrollment rate increased from 20 to 40 percent by 1988, surpassing the 50 percent mark in many urban areas. *(page 1)*

In the US, autonomous charter schools are allowed in states that have passed charter legislation. Each piece of state legislation passed may be unique to that state, and creates differences in the types and number of charter schools opened in each state, the level of freedom afforded charter schools and the amount of accountability required of the schools.[29] Since the 1990s when state legislators began passing charter legislation, the number of charter schools in the US has increased steadily; there were over 5,000 new charter schools across all states in 2009.[30]

In the early 1990s, Sweden began to operate a universal voucher scheme and also made it possible for groups other than municipalities to run schools. This change in policy has increased the number of independent school providers, from 42 in 1993 to 246 in 2003 (Böhlmark and Lindahl, 2008). There were 565 independent or 'free' schools in Sweden in 2005, accounting for 11% of the country's 4,963 schools.[31] The Conservative Party (2007) believes that the Swedish system provides the 'closest model' for its plans for education reform; in particular, the Conservatives would allow the creation of 'free schools' that also receive funding through the pupil premium.

The system proposed for the UK has an important difference, however: tentative Conservative proposals suggest that none of the new schools would be 'for profit'. Would this difference affect the number of new schools likely to be set up in the UK? Lacireno-Paquet et al. (2002) document the type of charter schools that have entered the market in

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[28]Vouchers are universal only in Chile and Sweden. In these countries, all pupils are eligible for the voucher, which can be used for any type of school. In the US, there are various schemes of specifically-targeted vouchers, most famously those in Milwaukee and Cleveland. Milwaukee's publicly-funded voucher scheme was introduced in 1990, specifically targeting low-income families to allow them to attend registered private schools (Tooley, Dixon and Stanfield, 2003). In some US states, school competition refers to the impact of charter schools, which are non-fee-paying autonomous schools set up independently from the public sector.

[29]US Department of Education, 2000, http://www2.ed.gov/pubs/charter4thyear/a1.html.

[30]Centre for Education Reform, 2009, http://www.edreform.com/_upload/CER_charter_numbers.pdf.

[31]Swedish National Agency for Education; see Department for Education and Skills / Prime Minister's Strategy Unit (2006).

the US, distinguishing between market-oriented and non-market-oriented charter schools. They define market-oriented charter schools as those 'with links to for-profit corporations, with a strong business presence on their founding boards, and those with entrepreneurial plans for expansion' and non-market-oriented charter schools as 'spawned by existing non profit organizations with long traditions in the local community'. They find that 17 of the 30 charter schools in Washington DC were non-market-oriented, suggesting that a significant number of new schools could have been motivated by altruistic factors.

In the UK, over 300 parents, teachers and community groups have expressed an interest in opening new community-run primary and secondary schools in response to tentative Conservative proposals.[32] A new supply of schools looks likely, therefore, but what sort of providers would there be? Would large chains of schools emerge, as in Sweden and the US? In what areas would they establish themselves? Would there be specialist chains of schools serving disadvantaged areas?

Sweden's largest chain of schools, called Kunskapsskolan, now has 32 schools, with an annual profit of 2% of its turnover. When asked whether the for-profit motive was important for their schools, Kunskapsskolan replied that it was imperative:

> The company would not have existed were it not for its investors. It can only provide the high quality inputs that it does – such as employing the school managers many months before the school starts, and supplying additional equipment – with that investment. The profit motive allows it to bring additional investment into schools, something that parents welcome. *(Tooley, Dixon and Stanfield, 2003, p. 15)*

The profit motive has the potential to create important incentives for new school providers; the premium paid for disadvantaged pupils could encourage schools to establish in deprived areas. Chains of specialist schools for teaching these pupils may emerge, similar to the chains found in Sweden. However, there are examples of non-profit chains of schools: Green Dot schools in the US have now set up 18 charter high schools in the highest-need areas of Los Angeles, while 82 Knowledge is Power Program (KIPP) schools educate children mainly from low-income families in the District of Columbia.

Although the evidence is not clear, even without the for-profit motive it is likely that new schools will be created in the UK under the opposition proposals. It is likely that allowing for-profit schools would increase the number of new schools created. We conclude that schools in disadvantaged areas are more likely to be established with the pupil premium policy, as the extra resources should reduce the disincentive to specialise in teaching this population. Again, a for-profit motive could increase the number of schools further. If new schools are established in disadvantaged areas, this has the potential to increase attainment for disadvantaged students and therefore reduce the attainment gap. More research into the motivation of potential providers and the market demand for such schools is almost certainly needed, however. The evidence on the impact of new schools is discussed in the next subsection.

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[32]See 'Parents enticed by Tory plan for "free schools"', *The Guardian* at
http://www.guardian.co.uk/politics/2009/dec/13/parents-tory-plan-free-schools.

Potential effects of increased school choice

The economist Caroline Hoxby (2003) asserts that school choice is a 'tide that lifts all boats': pupils in all types of school gain when a new school enters the market, as all schools have an incentive to improve their productivity to attract pupils. Hoxby writes that the 'gains and losses from reallocation might be nothing more than crests and valleys on the surface of the much higher water level' (page 288).

Hoxby presents an empirical evaluation of three school-choice programmes in the US and finds positive effects in each case. In 1990, students in Milwaukee with low-income families were given vouchers to attend private schools if they wished. The schools these students currently attended therefore faced significant pressure to improve their standards in order to retain their pupils. Hoxby tests this hypothesis, using variation in the proportion of pupils with a voucher in the school to identify schools most affected by an increase in competition. Her results suggest that standards improved more in schools that faced more competition. To identify the effects of competition from charter schools in Michigan and Arizona, which passed charter school legislation in 1994, Hoxby uses a similar strategy. Results suggest that schools that face competition from a newly-opened charter school have a higher rate of productivity growth. These findings have been disputed by others, however.

Bifulco and Ladd (2006) note that Hoxby's analysis does not address the possibility that changes in the student composition of schools might confound the estimated effects of charter school competition. In another study of charter schools in Michigan, Bettinger (2005) finds no evidence that competition from charter schools improves the performance of students in traditional public schools. In their own analysis of the impact of charter schools in North Carolina, Bifulco and Ladd conclude that the new schools appear to have no statistically significant effects on the achievement of the traditional public school students. They emphasise, however, that the intensity of competition in this situation was not large, so their results should not be considered definitive.

In the UK, Gibbons, Machin and Silva (2006) create indices of choice and competition and relate them to pupil achievement. Once they control for confounding factors (such as pupil sorting across schools), they find no evidence that attainment is higher for pupils enrolled in schools facing more competition.

Hsieh and Urquiola (2002) find that the increase in competition in Chile led to no improvement in the performance of students on average. Their study compared districts that saw a large increase in the number of private schools with districts with only a small increase. The authors conclude that areas with more 'choice' saw no significant impact on the average test score of pupils. They also argue that the main impact of the school choice reforms was to increase segregation between schools, by virtue of a 'massive exodus' of parents of high socio-economic background who left the public school system.

Böhlmark and Lindahl (2008) study the impact of Swedish reforms to the education system on pupils' attainment in the short, medium and long terms. They find that an increase in the private school share of the municipality moderately improves short-term educational outcomes for pupils but has no significant impact on medium- or long-term educational outcomes. This evidence suggests there may be some benefits of competition but they are not sustained.

Despite the numerous studies available, there is no definitive evidence for the effects of school competition.[33]

The provision of new schools has the potential to increase segregation in schools. Hsieh and Urquiola (2002) find that pupils attending voucher schools in Chile do not represent the local population, as the parents of pupils attending voucher schools were likely to have a higher socio-economic status than those in traditional schools. Björklund et al. (2005) find that parental education and immigrant status are correlated with private school attendance in Sweden, though only in the schools with a distinctive pedagogical profile (for example, Montessori schools). The Swedish National Agency for Education (2006) concludes that 'choice in the school system has led to a tendency to segregate in terms of pupils' sociocultural background, performance and ethnic background' (p. 51).

Gibbons and Telhaj (2007) show that although there are high levels of segregation by ability in the UK, the level of segregation since the expansion of school choice in the education system in England has not increased over time. Similarly, Gorard, Taylor and Fitz (2002) find that the expansion of school choice in the UK has not led less popular schools into a 'spiral of decline' characterised by declining pupil numbers and increasing proportions of disadvantaged pupils. Allen and Vignoles (2007) conclude that there was no 'pervasive increase in segregation' from 1989 to 2004, but that some local authorities (particularly in London) did experience an increase in segregation.

Segregation is often discussed in terms of its impact on peer effects. Following our discussion of peer effects in Section 3.2, however, it is clear that *why* peer effects matter for attainment has not been resolved. It is plausible that additional resources for disadvantaged pupils may be enough to compensate for, or even create positive, peer effects in schools that would previously have had negative peer effects from low-attaining pupils. We must also account for the possible advantages of schools specialising in teaching disadvantaged pupils: Green Dot schools specialise in teaching disadvantaged pupils in Los Angeles and report great success;[34] Knowledge is Power Program (KIPP) schools mainly educate children from low-income families in the District of Columbia, with impressive results.[35]

Summary of evidence on the impact of new schools

It is likely that the creation of new schools will be encouraged under the Conservatives' proposals to allow Swedish-style 'free schools' in the UK. Indeed, interest from groups of parents, teachers and charities has already been expressed. If schools must be non-profit, however, it is likely that fewer schools will be created and that the type of school will be different. Not-for-profit schools are more likely to be run by a group of individuals or charities and are less likely to expand. The interaction with the pupil premium policy, which provides higher funding for schools in disadvantaged areas, means that new schools are more likely (than without the pupil premium) to be established in disadvantaged communities. This has the potential to improve attainment in these areas through the benefit of school competition (the 'rising tide' argument), and therefore reduce the attainment gap between advantaged and disadvantaged pupils. The positive

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[33]See the debate between Hoxby and Rothstein at http://www.princeton.edu/~jrothst/hoxby/WSJ.pdf.

[34]See http://www.greendot.org/results.

[35]See http://www.kipp.org/about-kipp/results/annual-report-card.

effects of competition are not certain, however, as empirical disputes on the evidence have not been resolved.

It is also possible that new schools will be created that could specialise in teaching disadvantaged communities. Although this has the potential to increase segregation between social groups, this may not necessarily widen the attainment gap. There are a number of examples from the US in which specialist schools have had great success in raising the attainment of disadvantaged pupils and closing the attainment gap.

3.4 Summary

The main aim of introducing the pupil premium is to narrow the attainment gap between rich and poor students. This chapter has outlined the mechanisms through which this aim may be achieved, and in each case has reviewed the empirical evidence.

In Section 3.1, we assessed whether an increase in resources for schools with disadvantaged pupils would improve attainment in these schools. The conventional wisdom is that increasing educational resources has little or no impact on attainment. In contrast, we concluded that there is likely to be a small but positive effect; evidence from schools affected by the Excellence in Cities policy compared with a group of disadvantaged similar schools is especially encouraging. This effect has the potential to reduce the attainment gap between advantaged and disadvantaged pupils. We also discussed possible limitations to the pupil premium policy and noted that changes to the independence of schools – for example, in the way they are able to recruit and retain teachers – may have an impact on the effectiveness of extra resources.

Evidence shows that the ability of a pupil's peer group matters for their attainment. If the pupil premium improves the attainment of disadvantaged pupils, then all pupils in their peer group will gain, and the positive impact of the policy will be multiplied. There are also potential positive impacts if the pupil premium changes the distribution of pupils across schools. In Section 3.2, we examined whether the pupil premium was likely to reduce the level of social segregation across schools, either through a change in the type of pupils that schools want to attract or through a change in the type of schools to which parents apply. We concluded that the pupil premium may lead to a small reduction in covert selection by schools, but is unlikely to significantly reduce social segregation via this mechanism. Schools are unlikely to target disadvantaged pupils without a very large deprivation premium, and they are in any case limited to some extent by the School Admissions Code. Although parents may respond to large changes in schools' academic performance, the type of school parents choose is likely to remain broadly the same.

It is likely that the establishment of new schools will be encouraged under the Conservatives' proposals to allow Swedish-style 'free schools' in the UK in conjunction with the pupil premium. Indeed, interest from groups of parents, teachers and charities has already been expressed. In Section 3.3, we assessed whether these new schools may improve the attainment of disadvantaged students, either through the pure effect of competition or through specialist schools with experience of teaching disadvantaged pupils. Unfortunately, the evidence on the beneficial impact of school choice is inconclusive, as some studies report positive effects while others refute them. It is possible that some new schools would be established in disadvantaged areas, although, without a 'for-profit' incentive, it is unlikely that the UK would see the same level of expansion as in other countries. We also find that an increase in the number of schools

may lead to an increase in the level of segregation between schools, but this may not be detrimental to disadvantaged pupils. Several chains of schools in the US specialise in teaching pupils in disadvantaged areas and have reported significant gains in attainment.

4. Empirical analysis of policy options

Key findings

- This chapter simulates a number of options for the pupil premium and then examines their likely impact on school finances. The results show the impact on the amount of 'progressivity' in the school funding system (i.e. the weighting of funding towards school-level measures of deprivation) and they document the range of winners and losers compared with the current system.

- The policy options are grouped together according to whether they (1) supplement the existing system, (2) replace specific grants or (3) replace the entire system.

- The options in the first category approximate current Liberal Democrat policy. Out of the options we consider, these reforms financially benefit schools the most and increase progressivity. However, funding must be found from other sources: the Liberal Democrats have proposed cutting tax credits to above-average-income families, as well as other areas of spending.

- The second group of options replace specific grants from central government with a pupil premium. These options have a lower net cost and can be revenue-neutral, but at the same time they have the potential to create a vast number of significant losers.

- We also consider the implementation of a single national funding formula, a seemingly radical option. However, the number of significant losers from implementing such a system could actually be much lower than through replacing specific grants alone.

- More detailed analysis of a national funding formula illustrates a key problem with such a reform: the concentration of gains and losses across particular local authorities. This pattern does not appear to simply follow an urban/rural split; instead, it is likely to reflect local authority choices over central services, prioritisation of primary or secondary schools and historical factors.

- To ease any transition to this sort of funding system, interim mechanisms that truncate large potential losses (and gains) could be imposed. The cost of such measures would be small relative to the total schools budget. For example, imposing a floor of 5% on schools' annual real-terms losses and a ceiling of 15% on increases would enable one of the options to be phased in over five years, at an additional cost of £75 million per year (2010 prices). However, real-terms cuts of 5% are still likely to be painful for any school facing them; schools have become used to real-terms increases. The only way to reduce such losses is through a permanent increase in school funding.

This chapter simulates a number of options for the pupil premium and examines their likely impact on school finances. For each of the simulated options, we calculate the degree of 'progressivity' it would bring to the school funding system (i.e. the weighting of funding towards school-level measures of deprivation) and document the range of winners and losers.

This is the first comprehensive empirical analysis of a pupil premium system. As part of its proposals for a pupil premium, Policy Exchange undertook some limited modelling (see Freedman and Horner (2008)); however, the analysis here is more detailed and considers many more specific issues.

We begin in Section 4.1 by considering some important design issues, and then Section 4.2 outlines our data sources and methodology. In Section 4.3, we present empirical analysis of a number of hypothetical options for a pupil premium, some of which closely follow proposals from the Liberal Democrats and Policy Exchange. In Section 4.4, we conduct more detailed analysis of the winners and losers from a single national funding formula with a pupil premium – a long-term aspiration of the Conservatives – and discuss other issues such as transitional mechanisms.

4.1 The design of a pupil premium

Before any modelling can be carried out, it is important to examine a number of key issues relating to the design of a pupil premium. Specifically:

- How would 'disadvantaged' pupils be classified?
- At what level should the pupil premium be set?
- What would the total cost of the policy be?
- Would it replace any elements of the current school funding system?

A position must be taken on each of the issues above in order to arrive at a pupil premium that can be modelled; by varying these parameters, we can examine a whole range of policies in detail. In our analysis, we present a menu of possible options, setting out the different assumptions we make in each case and why we make them. Here, we discuss the two main issues that informed our choice of policy options: how disadvantage should be measured and how generously it should be targeted by a pupil premium.

Measures of disadvantage

The primary aim of a pupil premium is to narrow the achievement gap between advantaged and disadvantaged pupils; a pupil premium should thus be targeted towards groups experiencing 'educational disadvantage'. The most direct classification of disadvantage, therefore, would be any school where a large proportion of pupils fail to achieve good results. Unfortunately, this would create a perverse financial incentive for schools to perform badly. Whether or not schools would respond to such an incentive is unclear, but directly rewarding poor results seems to be unwise. Instead, one needs to use an indicator of deprivation that is a *proxy* for educational disadvantage. The question of which indicator to use here is similar to the economic question of which indicator of poverty to use for the purposes of income redistribution. This issue was addressed in a seminal article by Akerlof (1978), which listed three key characteristics of a good indicator. We adapt these criteria to an indicator of disadvantage as follows:

- highly correlated with educational disadvantage;
- difficult to manipulate by schools or pupils;
- easily observable.

There are a number of potential indicators that could be used that satisfy these criteria to varying degrees, including individual and geographic measures. These are discussed in detail in a number of publications by the Department for Children, Schools and Families

(DCSF).[36] The recent report by the National Equality Panel (2010) provides a comprehensive picture of how educational attainment varies with many of these characteristics.

However, it is important to remember that there is no objective or right answer to the question of which is the ideal indicator. Furthermore, not all sources of educational disadvantage may be appropriate targets for policy. For example, should policy target children living in well-off families whose parents have a negative attitude towards education? It is a moral question as to whether resources should just be targeted at those experiencing educational disadvantage as a result of material deprivation or due to special educational needs (SEN). Resources could also be targeted more widely, towards those experiencing disadvantage as a result of negative attitudes to education. We leave this as an open question, examining both proxy indicators for material deprivation and wider measures of educational disadvantage.[37]

The most widely used indicator of material disadvantage for school children is eligibility for free school meals (FSM), which includes those who are eligible for them but do not take them up. This indicator is certainly highly correlated with educational disadvantage, as indicated in Chapter 1. In addition, schools should not, in principle, be able to falsely declare pupils as eligible for FSM if they are not eligible, as eligibility is based on the receipt of certain means-tested benefits.[38] FSM eligibility is also easily observable in publicly-available administrative data. However, it is a rather blunt measure that cannot identify multiple degrees of deprivation. Furthermore, the take-up of relevant benefits is incomplete amongst families with children (Department for Work and Pensions, 2009), suggesting that there are a number of poor families with children that such an indicator might miss. It has also been found that schools do not always correctly identify all pupils eligible for FSM (Hobbs and Vignoles, 2009), which may limit its effectiveness (although the introduction of a pupil premium may well create an incentive for schools to improve reporting). Nevertheless, the FSM indicator is widely used, readily understood, relatively easy to observe and highly correlated with attainment. It has also been proposed by the Liberal Democrats as their preferred indicator of deprivation, and one of this Commentary's aims is to analyse existing proposals as closely as possible. Therefore many of the options we present in our empirical analysis use eligibility for FSM as the main indicator of educational disadvantage.[39]

Other potential individual-level indicators include having English as an additional language (EAL), belonging to a low-achieving ethnic minority group, and being identified as having special educational needs. All of these are associated with low levels of educational attainment. However, which ethnic groups have the lowest attainment varies across the different stages of schooling (see National Equality Panel (2010)), and using an indicator of membership of a low-achieving ethnic group on its own would certainly miss a number of low-achieving pupils from other ethnic groups. Although there are centrally defined criteria, SEN (without a statement) and EAL are in practice open to some

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[36]See http://www.teachernet.gov.uk/docbank/index.cfm?id=10254 and PwC (2009).

[37]It is worth noting that the government currently uses a relatively wide description of additional educational needs (AEN) – for example, Home Environment, Communication and Interaction, and Behavioural, Emotional and Social Interaction.

[38]See http://direct.gov.uk/en/Parents/Schoolslearninganddevelopment/SchoolLife/DG_4016089.

[39]Another potential indicator is whether children have ever been eligible for free school meals, rather than just those eligible in any particular year. However, a problem with such an indicator is that any additional pupils captured may well just be those who are temporarily, rather than permanently, poor.

interpretation by schools; their use in a pupil premium could thus incentivise over-reporting of these characteristics in order to receive extra money. However, they are proposed as indicators of educational disadvantage for a pupil premium by the Liberal Democrats and are widely used by many local authorities in their fair-funding formulae at present. We therefore also illustrate some options that feature additional payments for pupils with EAL or SEN without a statement. Recognising the perverse incentives that could be created by large premiums for these children, we keep these additions as small as possible. Pupils with statements of SEN are treated separately in our analysis: the level of additional funding for these pupils is fixed at existing levels.

Another potential direct indicator of educational disadvantage is whether a child has low levels of prior attainment. For instance, secondary school pupils with low prior attainment could be defined as those who failed to achieve the expected level in their Key Stage 2 (KS2) tests, taken in the last year of primary school. Such a measure is easily observable, hard to manipulate (given that it is determined before secondary school) and clearly correlated with current educational achievement. In primary schools, however, the only corresponding indicator would be based on teacher assessments at Key Stage 1 (KS1) or Foundation Stage Profiles. Unfortunately, KS1 tests are also taken in primary school and could therefore be susceptible to perverse incentives in order to increase funding. Foundation Stage Profiles, meanwhile, are still relatively new and their relationship with later achievement is poorly understood at present. Hence, low prior attainment seems an ideal indicator for secondary schools but a poor one for primary schools.[40] Therefore, in one of the options analysed, we also allocate a premium to secondary schools for each pupil with low prior KS2 attainment, defined as failing to achieve Level 4 or above in Maths or English – the expected level in these subjects.[41] In contrast to FSM eligibility, which focuses on material circumstances, this measure of disadvantage covers all children with low prior attainment, regardless of the reason for it, and is thus a wider measure of educational disadvantage.

There is also a potential set of area-based indicators of disadvantage, including the Index of Multiple Deprivation (IMD)[42] and an indicator based on tax credits recently developed by DCSF. The most recently available IMD index (2007) measures deprivation across a variety of 'domains', such as employment, education, health and housing. The tax credit indicator is a weighted average of the proportion of families within a Lower Super Output Area receiving different levels or elements of tax credits (for example, children in out-of-work families receiving child tax credit, or children in working families receiving working tax credit and both elements of the child tax credit). This indicator was recently used by DCSF to allocate some elements of deprivation funding in the 2008–11 school funding settlement.

Both of these indicators are correlated with educational attainment, easy to observe and difficult to falsify. However, area-based indicators are relatively broad: not every single child living in a deprived area will be disadvantaged, and not every single disadvantaged pupil will live in a deprived area. One particular advantage of the tax credit indicator is

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[40]Some pupils at middle schools may also sit KS2 tests, but we exclude these from our low attainment indicator for the same reason of avoiding perverse incentives.

[41]Our measure of low KS2 attainment does not include Science, as it is no longer tested nationally during the KS2 assessments. As such, it may not be possible for secondary schools to know whether their pupils failed to achieve the expected level in that subject.

[42]See http://www.communities.gov.uk/communities/neighbourhoodrenewal/deprivation/deprivation07/ for more information.

that it may be able to capture families that are not eligible for free school meals but that nonetheless experience some level of material disadvantage. This would seem ideal for the wider pupil premium considered by the Liberal Democrats. However, the tax credit indicator is currently only available for 2005; it would thus miss changes in deprivation since then and, if not updated, would miss them in the future as well. Furthermore, it is not defined for all schools in our sample. Therefore, we do not use these indicators in our analysis, but accept them as potential alternative indicators to FSM eligibility. The tax credit indicator seems the better of the two, but to be used as part of a pupil premium this indicator would need to be updated more regularly.

Finally, there is also a set of geo-demographic indicators such as MOSAIC (developed by Experian) and ACORN (developed by CACI). These indicators classify all postcodes into a number of types which share certain characteristics and behaviours based on the Census and other data. MOSAIC and ACORN data are often used by commercial firms for market research and a number of local authorities have begun using them in their fair-funding formulae. However, in order to use such indicators for a pupil premium, one needs to rank MOSAIC groups by some measure of educational disadvantage. As part of the design of its proposed pupil premium, Policy Exchange suggested allocating a pupil premium to MOSAIC types with the lowest average GCSE scores. A pupil premium with such a measure of disadvantage would be similar to the low prior attainment premium considered above. It would focus on all MOSAIC types with low average attainment, ignoring the source of such disadvantage, be it material or cultural factors.

In order to analyse the policy proposal put forward by Policy Exchange, we will use a similar MOSAIC classification in some of our pupil premium options. The choice of MOSAIC over ACORN does not reflect any preference on our part, but simply reflects our desire to match Policy Exchange's proposals as closely as possible in order to examine them in detail. We group the 61 MOSAIC types into six broader groups in the analysis, as shown in Table 4.1, with each one corresponding to a particular level of GCSE attainment. Under our options for a MOSAIC premium, schools receive a certain amount of extra funding for each pupil in one of the lowest three MOSAIC groups, with a greater weight placed on pupils in the lowest and second-lowest groups.

One advantage of such an indicator is that it represents a more continuous way of targeting deprivation than allocating additional resources on the basis of FSM eligibility alone. Moreover, Webber and Butler (2007) have shown that MOSAIC groups are a stronger predictor of GCSE results than the IMD, which is not surprising since the former

Table 4.1. MOSAIC groupings used in our analysis

MOSAIC group	Corresponding GCSE attainment	Example GCSE grades
1	Less than 260 points	8 E grades (224 points)
2	260–279 points	8 D grades (272 points)
3	280–299 points	4 C grades and 4 D grades (296 points)
4	300–319 points	6 C grades and 2 D grades (308 points)
5	320–339 points	2 B grades and 6 C grades (332 points)
6	340 points or above	8 B grades (368 points)

Notes: Based upon average GCSE points score among Year 11 pupils in England. GCSE points score used is the capped KS4 score (including equivalent qualifications) on the current points tariff. For more information, see http://www.dcsf.gov.uk/performancetables/nscoringsys.shtml.

Source: Authors' calculations using National Pupil Database for 2006–07 and 2007–08, along with matched MOSAIC records at postcode level.

are based on more disaggregated geographic units. However, the construction of MOSAIC types is a relatively complicated formulation, taking into account a wide range of information that may not be publicly available, which might inhibit the pupil premium's simplicity and transparency.

Level and cost of the pupil premium

The evidence presented in Chapter 3 suggested that the direct impact of a pupil premium on educational attainment amongst disadvantaged children is likely to be positive but small. This suggests that the pupil premium would need to be very large indeed to completely close the achievement gap between rich and poor children. However, a relatively modest pupil premium that increased the level of funding weighted towards disadvantage could still help to narrow the gap, if one believes the evidence surrounding the direct impact of a pupil premium or if one believes it could have a positive, indirect impact via school admissions or new schools.

When determining the level of the pupil premium under our various options, we are largely guided by either the proposed levels of additional spending (as with the first group of options) or the level of grants or funding they could replace (as with the second and third groups). For instance, the Liberal Democrats (2009) have stated that they would spend £2.5 billion on a pupil premium, with the money largely raised through cuts to tax credits for families with above-average incomes. If we assume that all of this money were spent on a very simple pupil premium that allocated a fixed amount of money to schools for every pupil eligible for FSM, then it would allow for an FSM premium of £2,400 (in 2010 prices). This is shown in Figure 4.1, which also shows the different levels of FSM premium one could attain with different levels of additional spending up to £5 billion.

There is an argument for a higher disadvantaged pupil premium at primary level than at secondary level, on the grounds of early intervention to prevent attainment gaps between rich and poor from widening over time. Indeed, this is suggested by the Liberal Democrats. Figure 4.2 shows the FSM premiums that would be possible if one desired the FSM premium that primary schools received to be double the one that secondary schools received. A total budget of £2.5 billion would be able to finance a pupil premium of £3,000 at primary schools and £1,500 at secondary schools (2010 prices). In our analysis,

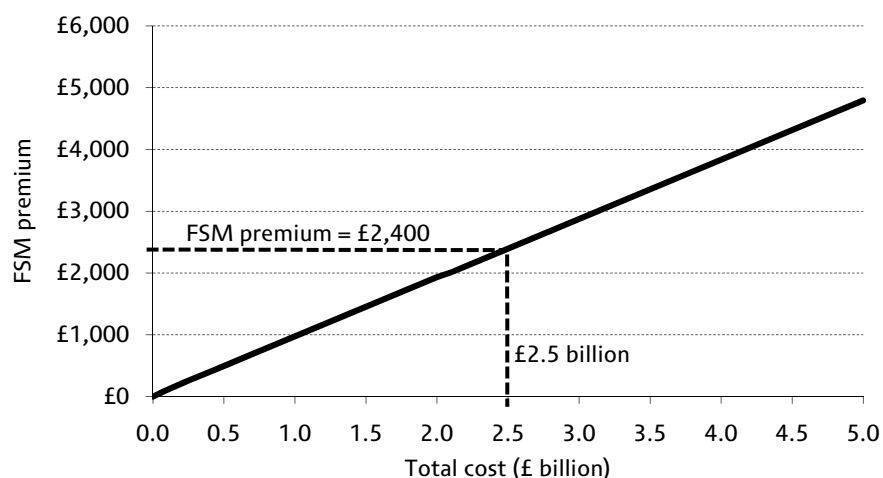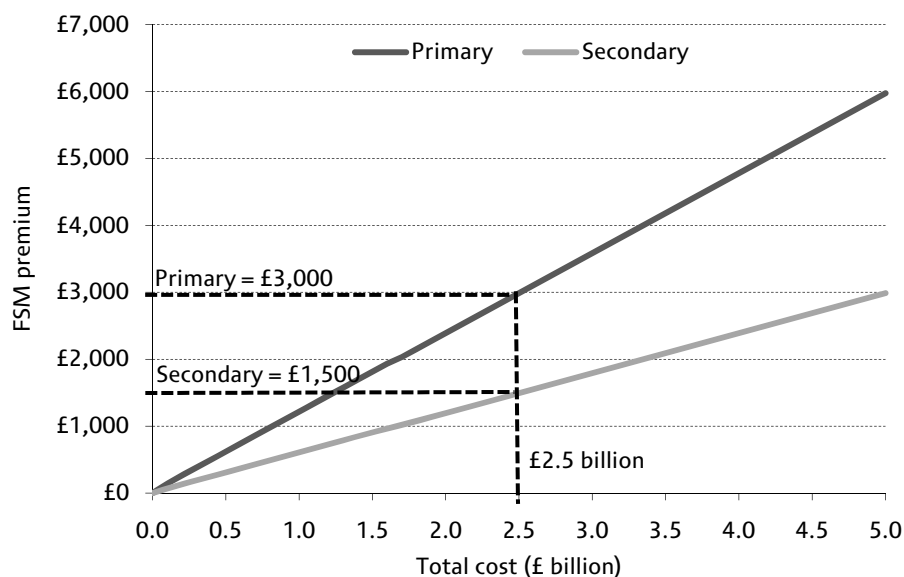## Figure 4.1. Feasible FSM premium by total cost

Figure 4.2. Feasible FSM premium by total cost, with the primary FSM premium double the secondary FSM premium

we present a number of options that vary the relative amount of the primary and secondary pupil premiums.[43]

The second group of pupil premium options are funded through the abolition of specific grants. In this analysis, we recycle all such grants into a pupil premium, making the overall policy revenue-neutral. Finally, we also undertake a more speculative analysis (in the third group of options) that attempts to create a single national school funding formula – the long-term aspiration currently set out by the Conservative Party[44] and proposed by Policy Exchange. Here, we set the pupil premium at a level that, at the very least, increases the weighting of funding towards deprivation. We are thus guided by how redistributive the present system is (i.e. present *implicit* FSM premiums), as well as by current average funding levels provided for pupils with EAL and for pupils in different age groups.

Another potentially useful source of information is the recent survey of the costs of additional educational needs (AEN) undertaken for DCSF by PwC (2009). This surveyed schools and found that the current cost of AEN for schools was about £1,750 for all pupils with AEN (excluding those with high-cost SEN). However, this amount only referred to the part of the cost that could be met through current funding allocations. On top of this, it also found there to be an 'unmet need' of about £1,800 on average for each child with AEN (again excluding those with high-cost SEN) – that is, a cost that schools were unable to meet through their current levels of funding.

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[43]The feasible FSM premiums may change considerably in future, following the announcement (in the December 2009 Pre-Budget Report) of the extension of FSM eligibility to all primary school pupils in low-income working families by 2011–12. This is expected to cover an additional 500,000 children. With a £2.5 billion budget, the feasible FSM premium would therefore be about £1,650 if applied equally to all pupils. If the FSM premium were twice as much for primary pupils as for secondary pupils, the feasible amounts would be £1,900 and £950 respectively.

[44]Speech by Michael Gove, Shadow Secretary of State for Children, Schools and Families, 6 November 2009, http://www.conservatives.com/News/Speeches/2009/11/Michael_Gove_A_comprehensive_programme_for_state_education.aspx.

However, to estimate the cost of educating children with additional needs (either met or unmet), one needs to specify some objective for these children's educational outcomes. The PwC estimated costs, for instance, do not measure the costs of closing the achievement gap. Instead, the 'current cost' measures the current level of *spending* on additional educational needs. As such, it is a useful reference for calculating how much should be allocated for such children if one were to replace aspects of current deprivation funding, but it is not useful in terms of calculating how high the pupil premium should be to significantly close the achievement gap. The 'unmet need' calculation is potentially informative, as it indicates the amount of money that schools would like to be able to spend on helping children with AEN. However, the concept of 'unmet need' is quite elastic and is not a measure of how much it would cost to actually narrow or close the achievement gap.

Another issue is whether the pupil premium should be linear – that is, whether the assumption of a fixed cash amount for each disadvantaged pupil is sensible. This means that a school receives the same amount of additional funding for the first disadvantaged pupil as it does for the tenth, fiftieth and hundredth disadvantaged pupils. It may not be the case, however, that the 'marginal cost' of teaching disadvantaged pupils is constant: a school that currently has no disadvantaged pupils enrolled may have to incur costs to provide additional educational inputs when a disadvantaged pupil joins, whereas a school that already has such pupils will already have these structures in place. Linearity may not therefore be a realistic feature for the purposes of compensating schools for the costs of AEN. Nevertheless, it is retained throughout this chapter for simplicity and tractability.

One last issue to consider is how the pupil premium would be set over time. If one fixed the total cost of the scheme (for example, at £2.5 billion adjusted for inflation), then the actual level of the pupil premium would necessarily vary over time, given that pupil numbers vary over time as do levels of deprivation (for example, the number of pupils eligible for FSM is likely to have increased during the recent recession). Such a scheme could create an undesirable level of uncertainty for schools. It would seem more sensible to fix the initial value of a pupil premium, and then allow the total cost to vary with pupil numbers or the level of deprivation.

4.2 Data and methodology

The analysis in this chapter is based on a combination of government and privately-owned data sources. First, we use Section 52 returns[45] to obtain a detailed picture of the actual financial resources and spending of all state schools in England. This data set also includes information on the source of a particular funding stream (LA formula funding, specific grants to schools and so forth), in order to break down total school resources by the type of funding, and is currently available up to 2008–09.[46]

We combine Section 52 data with the National Pupil Database, collected and owned by DCSF. This is a collection of several pupil-level data sets, including information on national examination results at each Key Stage from 1 (age 7) to 5 (age 18), as well as a

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[45]For more information, see
http://www.dcsf.gov.uk/everychildmatters/strategy/financeandfunding/informationforlocalauthorities/section52/section52.

[46]We primarily make use of outturn table B, which is available up to 2008–09. Budget tables for individual schools are, however, available up to 2010–11.

database of pupil characteristics (such as ethnicity, gender and SEN status) for all pupils in English state schools. This latter file is known as the School Census, and is submitted by schools each term. We use the Spring Census, submitted in January, to measure school enrolment and the prevalence of various measures of AEN at each school (such as FSM and EAL).

The latest Spring Census available to researchers was submitted in January 2008, pertaining to the 2007–08 academic year. We match these data to the 2008–09 Section 52 outturn tables to reflect the fact that a school's income in a given financial year is generally based on its pupil numbers during the preceding spring. We are also able to match the 2006–07 Spring Census to the 2007–08 Section 52 outturns. We add some information from EduBase – a DCSF administrative database of educational establishments – such as school type and school postcode.

We also make use of MOSAIC socio-economic classifications,[47] which assign each postcode in the UK to one of 61 'types'. This information was matched to the Spring Census in 2008 in order to facilitate analysis that replicates, and builds upon, the earlier research by Policy Exchange. In particular, it allows us to consider multiple measures of socio-economic disadvantage, including belonging to a low-achieving MOSAIC group.

Combining the various data sources above allows us to calculate how much money schools currently receive in practice, as well as how much they would receive under various hypothetical configurations of a pupil premium. By comparing a school's actual and hypothetical funding levels with its pupil characteristics, we are able to assess whether a specific policy increases the targeting of funds on deprivation and is therefore more 'progressive'; we can also examine the spread and nature of any likely 'winners and losers' (in monetary terms). When examining such winners and losers, we generally use the number of schools losing at least 10% as a gauge of those experiencing large or significant losses; equally, we use the number of schools gaining at least 10% as a gauge of those experiencing large or significant gains.

A fundamental assumption we make throughout this analysis is to hold the number of schools and pupils fixed while implementing the various policy options. In other words, our analysis does not take into account any possible responses to a pupil premium in terms of applications for school places, school admissions policies or the creation and closure of schools. While it may be desirable to allow for these mechanisms, doing so would require a model of school and parental decision-making, which is beyond the scope of this Commentary. We therefore model the *financial* impact only, holding the number of pupils (and their allocation across schools) constant.

Some other assumptions have also been made in order to streamline and simplify our empirical analysis. First, the Area Cost Adjustment (ACA) has been maintained as it stands, to reflect variations in the costs of teacher recruitment and retention across different areas of the country. This means that the pupil premiums we calculate will be worth more to schools in high-cost areas. Other features of the funding system that we retain are the current level of Learning and Skills Council (LSC) funding for sixth-form pupils and the current level of funding for pupils with severe SEN. Finally, all discretionary budget adjustments (such as corrections following an earlier overpayment or underpayment of funds) have also been retained.

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[47]See http://www.experian.co.uk/www/pages/what_we_offer/products/mosaic_uk.html for more information.

Having made these initial assumptions, we outline the various combinations of parameters that we use to characterise a specific pupil premium option. The main measure of deprivation in this analysis is FSM (leading to an 'FSM premium'). Some of the options below also consider implementing MOSAIC premiums, as well as a premium based on low prior attainment at Key Stage 2. The FSM premiums are implemented by giving each school a cash amount for each FSM pupil, the low KS2 premiums are allocated in a similar fashion, while the MOSAIC premium is implemented as a set of three additional payments, one for pupils in each of the lowest three MOSAIC groups.

Second, the relative sizes of the premiums between primary and secondary pupils need to be defined. There may be parity, where the FSM premium is the same for both types of pupil; alternatively, the FSM premium might be greater for primary pupils in an attempt to redirect financial resources towards younger children in poverty, or vice versa. The policies analysed below contain a mixture of these combinations. Other elements of funding that can be specified in order to make the model more comprehensive include premiums for other dimensions of AEN, such as EAL and non-statemented SEN.[48]

When we examine the creation of a single national funding formula, we must also provide base amounts for pupils in different Key Stages, based on the current system of Age-Weighted Pupil Units (AWPUs). We choose to use the average AWPU ratios across local authorities in England. We also include a fixed cost element[49] – a cash amount given to schools irrespective of their size. This provides a way of compensating smaller schools (which typically have very high income per pupil under the current system) for the loss of resources that they might otherwise incur from a national system of per-pupil funding.

4.3 Policy options

As stated above, the pupil premium options we consider can be grouped under three broad headings, each specifying how they would relate to the current system and how they would be funded. First, a pupil premium may simply be **implemented on top of the current funding system**, and therefore funded from outside the Schools Budget. This funding model generally corresponds to the current Liberal Democrat proposals and provides a starting point for our analysis. Alternatively, a pupil premium could **replace some elements of the funding system, such as specific grants** from central government, and be either revenue-neutral or require additional funds. Lastly, a pupil premium could **replace the entire funding system** – this is obviously a more radical approach and any analysis of this would be purely speculative. However, it would shed light on the question 'what price simplicity?' and outline the implications for each school of moving to a single national funding formula. This last version was proposed by a Policy Exchange report and is a long-term aspiration of the Conservative Party.

Table 4.2 lists the specific examples of each of these three different options that we consider, together with the deprivation measures used, whether there are any additional payments for EAL and non-statemented SEN, and the total additional cost (in 2010

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[48]The EAL premium can be modelled in two ways: one is to provide a certain amount of extra money for each pupil with EAL, while the other is to provide this money but only for one year. The latter approach, which is the one taken in this chapter, reflects the idea that pupils entering the school system with a foreign first language may face initial educational disadvantages, but may then naturally catch up with their peers over time.

[49]This is implemented as the constant in a regression of total funding on a series of school characteristics, which is done separately for primary and secondary schools. See Table A.1 in the Appendix.

Table 4.2. List of options analysed in this chapter

Policy type (method of funding)	Deprivation measures	Additional payments for EAL and SEN	Additional cost (£ billion)
1. In addition to current funding			
Option 1a	FSM	No	2.5
Option 1b	FSM	Yes	2.5
Option 1c	FSM, MOSAIC	Yes	3.5
2. Replacement for specific grants			
Option 2a	FSM	No	0
Option 2b	MOSAIC	No	1
3. Single national funding formula			
Option 3a	FSM	Yes	0
Option 3b	MOSAIC	Yes	1
Option 3c	FSM, low KS2	Yes	1

prices). Table 4.3 at the end of this section summarises the results and distributional effects of these options.

In addition to current funding

The pupil premiums considered in this subsection are on top of the current system and therefore require additional spending. At first, we consider a budget of an extra £2.5 billion – the total cost proposed by the Liberal Democrats for their pupil premium.

Option 1a. Pure FSM premium only, with parity

| Measure of deprivation	FSM
FSM premium (primary/secondary)	£2,400/£2,400
EAL premium (primary/secondary)	£0
SEN premium (primary/secondary)	£0
Additional cost	£2.5 billion

In this very simple case, the additional £2.5 billion is spent only on extra money for FSM-eligible pupils. There are no other measures of deprivation or AEN taken into account and no differentiation in the FSM premium between primary and secondary pupils.

A budget of £2.5 billion devoted purely to an FSM premium means that, in 2008–09, each school would have received an additional £2,400 for each pupil eligible for FSM (in 2010 prices). Note that this would be on top of any implicit FSM premiums from current deprivation funding. Clearly, no school would be made worse off, as the policy consists of additional money on top of existing funding.

Figure 4.3 shows the proportion of primary schools (dark grey line) and secondary schools (light grey line) that experience increases in their funding of less than a given value. The horizontal axis starts at zero since none of the schools sees a fall in its funding level. Reading across to the vertical axis shows the proportion of schools experiencing a change in funding per pupil of a given amount (shown on the horizontal axis) or less. The dashed black vertical line at 10% on the horizontal axis is a threshold that defines, for our purposes, a 'significant' increase in funding; all schools on the graph to the right of this

Figure 4.3. Cumulative distribution of gains and losses in 2008–09

Option 1a. Pure FSM premium only, with parity (£2.5 bn)
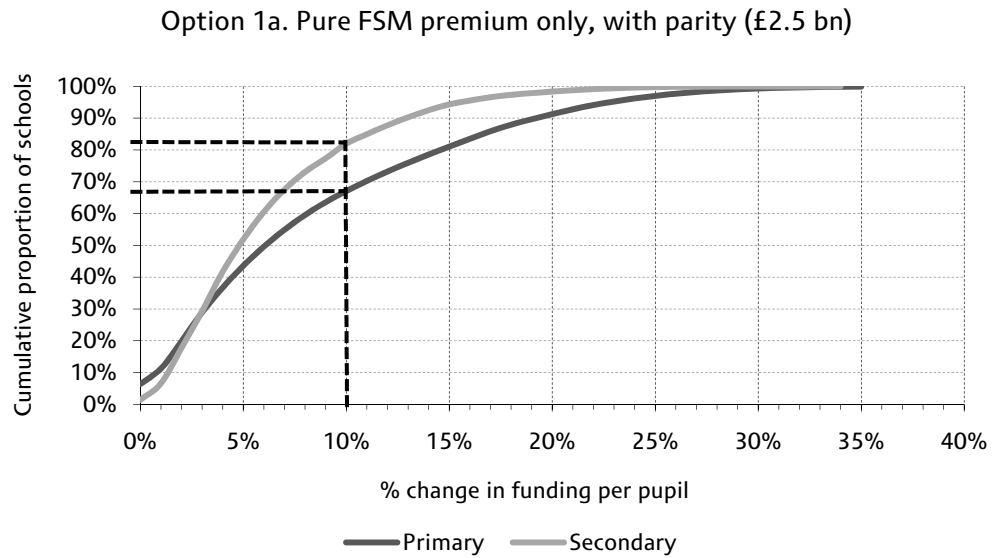
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

line can be thought of as significant winners. This vertical line meets the dark grey line at a value of 67% (indicated by the lower horizontal dashed line) and the light grey line at a value of 82% (indicated by the upper horizontal dashed line) on the vertical axis. This means that two-thirds of primary schools would experience gains of less than 10%, while the same is true for 82% of secondary schools. As a result, a third of primary schools would receive funding increases of *at least* 10%, compared with 18% of secondary schools. This policy would thus lead to more large gains (in relative terms) amongst primary schools than amongst secondary schools.

While Figure 4.3 sheds light on the overall gains across the state school system, it does not say anything about *which* schools gain the most. Specifically, we are interested in how progressive the policy would be. Since this policy targets FSM alone, deprived schools would necessarily receive a larger boost to their resources, while schools with no deprived pupils (in terms of FSM) would receive no increase in funding. To confirm, we break down the gains in Figure 4.3 by the level of school deprivation, and then compare the gains in less disadvantaged schools with those in more disadvantaged schools. Figures 4.4 and 4.5 present separate decile charts for primary and secondary schools. These split schools up into 10 groups of equal size based on the proportion of their pupils that are eligible for FSM. The schools in the first decile are the most disadvantaged, while those in decile 10 are the most affluent.[50]

In both graphs, the dark grey bars represent baseline funding per pupil – that is, the actual amount of funding received in 2008–09 divided by the actual number of enrolled pupils. This is higher in more disadvantaged schools (the lower decile groups), reflecting the progressivity and deprivation targeting that currently exist. The light grey bars give the counterfactual amounts, i.e. the simulated funding per pupil under this policy option. Unsurprisingly, the very most deprived schools gain the most: among these, primaries and secondaries would both experience an increase of roughly £1,000 per pupil under

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[50]Note that the deciles are designed so that the total number of pupils at schools in each decile is the same for each decile. This means that the number of schools in each decile will vary.

this policy. The right-hand axis displays this change in percentage terms, indicating that the extra £1,000 amounts to a relative increase of 23% for the primary schools and 16% for the secondary schools.

Moving across both graphs, we see that the gains dwindle in both absolute and relative terms, as schools that are less deprived will inevitably have fewer FSM-eligible pupils to attract the premium. At the right-hand end of the graphs, the schools with the most affluent pupil enrolments are almost unaffected by this policy: having very few FSM-eligible pupils, they receive funding increases of less than 1%. The policy clearly increases the amount of progressivity in the funding system. Such an outcome was inevitable, given the structure of the policy.

It is also the case that primary schools are the largest beneficiaries of this policy: they receive the same pupil premium as secondary schools, but have lower baseline levels of funding, and thus experience a greater relative increase in resources.

Figure 4.4. Decile chart for primary schools, 2008–09

Option 1a. Pure FSM premium only, with parity (£2.5 bn)
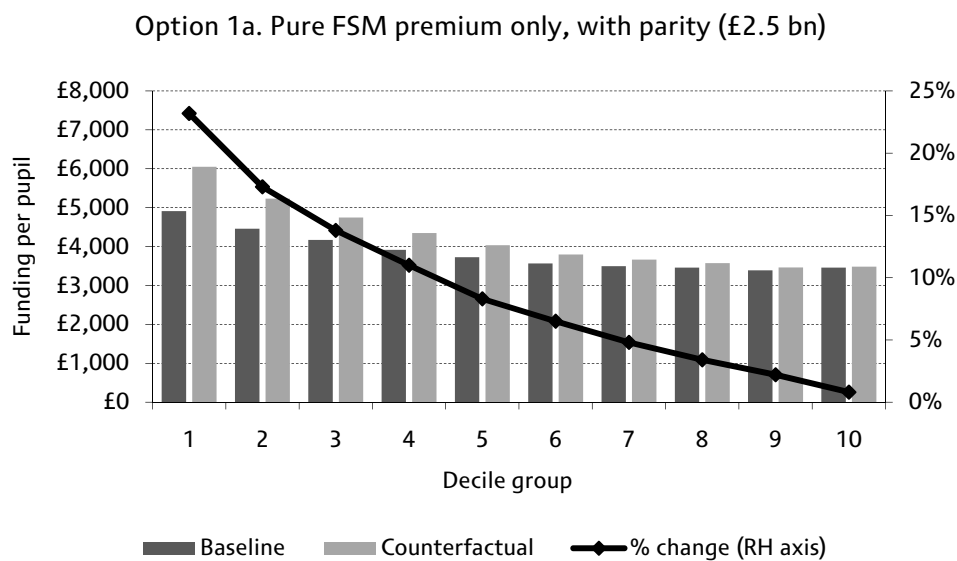
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

Figure 4.5. Decile chart for secondary schools, 2008–09

Option 1a. Pure FSM premium only, with parity (£2.5 bn)
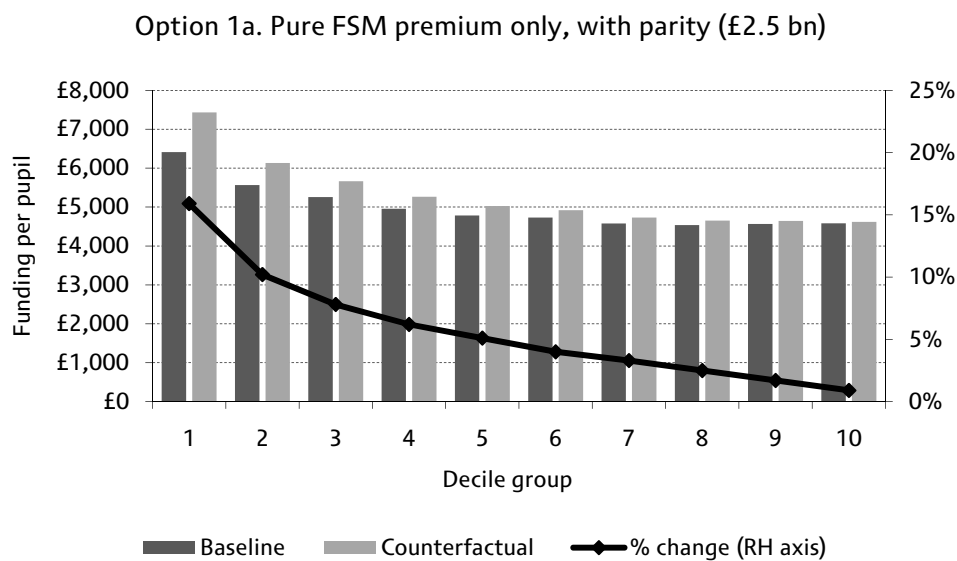
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

Option 1b. FSM premium, primary double secondary, with additional amounts for EAL and SEN

Measure of deprivation	FSM
FSM premium (primary/secondary)	£2,740/£1,370
EAL premium (primary/secondary)	£140/£140
SEN premium (primary/secondary)	£140/£140
Additional cost	£2.5 billion

The next option we consider has been chosen as the closest approximation to the Liberal Democrat proposals for a pupil premium.[51] The £2.5 billion costing is retained, but the FSM premium for primary pupils is now double the premium for secondary pupils, reflecting the Liberal Democrats' emphasis on providing more resources for younger children. Furthermore, the Liberal Democrats have stated that the pupil premium should cover pupils with low-level or medium SEN (which we interpret as pupils with non-statemented SEN) and those with EAL (in their first year of EAL). We have set additional premiums for each of these pupils worth 10% of the secondary FSM premium. Setting these at a relatively low value reflects the fact that high values might create too strong an incentive for schools to over-report these characteristics. With these changes in place, the £2.5 billion budget now allows for an FSM premium of £2,740 for primary pupils and £1,370 for secondary pupils (both rounded to the nearest £10); the 'add-ons' for EAL and non-statemented SEN are thus about £140 each.

By adding premiums for EAL and non-statemented SEN, less of the budget remains to fund the FSM premium. At the same time, the relativity of the FSM premium has been

Figure 4.6. Cumulative distribution of gains and losses in 2008–09


Option 1b. FSM premium plus EAL and SEN add-ons, primary FSM premium double secondary (£2.5 bn)
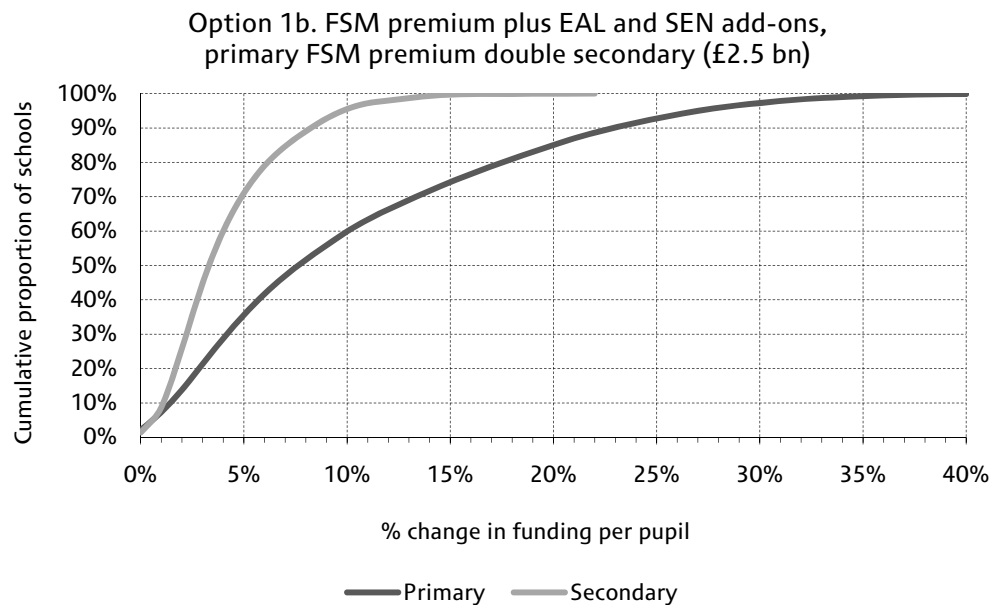
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

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[51]Note that the Liberal Democrats have proposed to vary the pupil premium across local authorities, which has not been done in this Commentary. They have also proposed to allocate a pupil premium to children in care. We were not able to model this proposed premium as the number of children in care at each school is not available to researchers within the National Pupil Database or Spring Census.

changed dramatically in favour of primary schools under this option. As a result, primary schools have the potential to gain more than previously, whereas secondary schools tend to gain less. As shown in Figure 4.6, whilst 40% of all primary schools would see their funding grow by 10% or more, only 4% of secondary schools would experience similar gains. Instead, almost three-quarters of secondaries would have their income boosted by less than 5%. Of course, it is still the case that no school loses out, as the policy supplements the existing funding that schools receive.

The decile charts in Figures 4.7 and 4.8 reinforce the fact that the policy is still a progressive one for both primary and secondary schools, but that the extra resources are skewed in favour of the former. The most disadvantaged primary schools would see their

Figure 4.7. Decile chart for primary schools, 2008–09

Option 1b. FSM premium plus EAL and SEN add-ons, primary FSM premium double secondary (£2.5 bn)
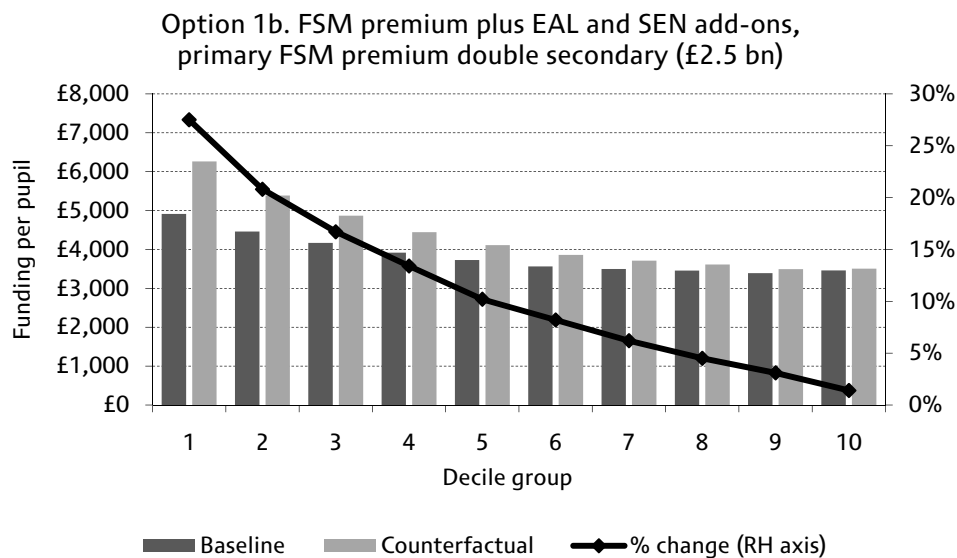
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

Figure 4.8. Decile chart for secondary schools, 2008–09

Option 1b. FSM premium plus EAL and SEN add-ons, primary FSM premium double secondary (£2.5 bn)
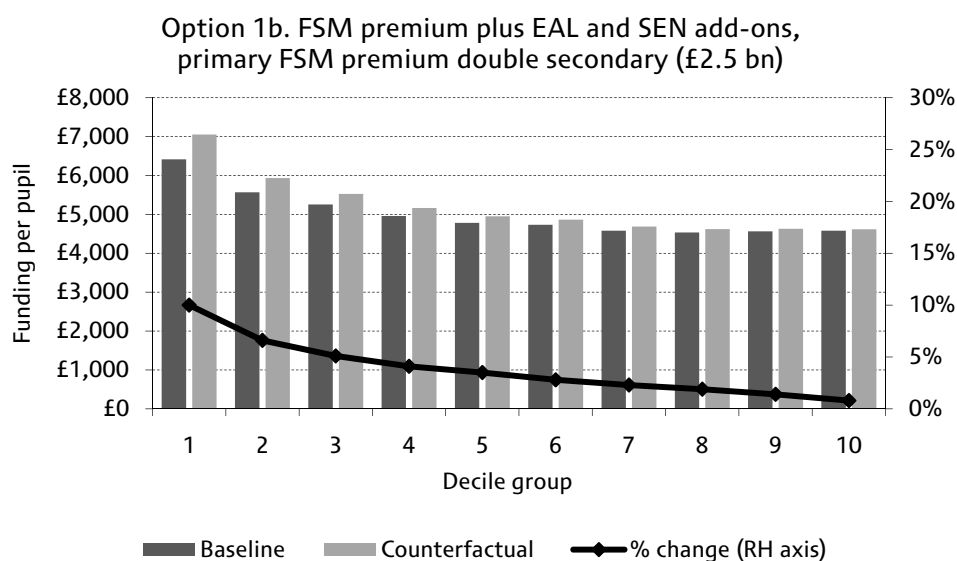
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

funding per pupil increase by over a quarter, whereas the most disadvantaged secondaries would only receive a 10% increase. It remains the case that the most affluent schools (both primary and secondary) would be largely unaffected by the policy.

Option 1c. FSM and MOSAIC premiums with additional amounts for EAL and SEN

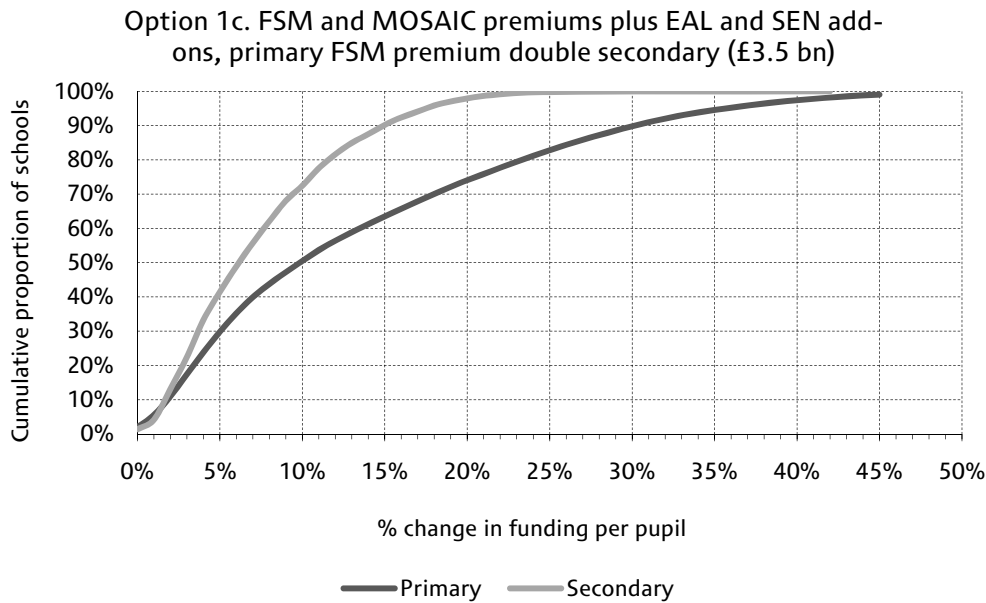| Measures of deprivation	FSM, MOSAIC
MOSAIC premium (groups 1–3)	£1,110/£740/£180
FSM premium (primary/secondary)	£2,230/£1,110
EAL premium (primary/secondary)	£110/£110
SEN premium (primary/secondary)	£110/£110
Additional cost	£3.5 billion

The Liberal Democrats have also stated that they would like to expand the pupil premium in future to cover pupils who are not eligible for FSM but who still experience some level of disadvantage. They have not stated which measure of deprivation they would use for such a pupil premium, nor how much it would cost, but they have said that they would consider using the tax credit indicator or MOSAIC (Liberal Democrats, 2009). Given the problems with the former (described in Section 4.1), we choose to consider an option involving MOSAIC, with an additional £1 billion of spending. This policy option thus illustrates the effects of using a broader measure of deprivation (MOSAIC) in conjunction with a simple binary measure (FSM), financed by an extra £1 billion. The policy is the same as the previous one but with the added feature that schools now receive an additional premium for each pupil in MOSAIC groups 1, 2 or 3. This deprivation measure has a much wider coverage than FSM: while just over 1 million pupils in the 2007–08 Spring Census data were eligible for FSM, more than 2.7 million pupils fell into the lowest three MOSAIC groups. Adding another measure of deprivation on which to target resources – for which an extra 1.7 million pupils would qualify – inevitably leaves less money available for an FSM premium (as well as the EAL and non-statemented SEN add-ons). However, the additional spending of £1 billion helps to prevent the FSM premium from falling too much; moreover, children eligible for FSM and also in the first or second MOSAIC group would receive more than they did under Option 1b.

The budget of £3.5 billion is now enough to afford an FSM premium of £2,230 in primary schools (£1,110 in secondary schools), and therefore EAL and non-statemented SEN add-ons of £110. The MOSAIC premiums are set on a sliding scale in order to be progressive, with the relativities chosen such that the premium for MOSAIC group 1 is equal to the secondary FSM premium, while the one for MOSAIC group 2 is two-thirds of that (£740) and the one for MOSAIC group 3 is a sixth of the one for MOSAIC group 1 (£180). This is the same set of relative weights used in the Policy Exchange proposals.

Figure 4.9 reveals the new spread of gains from the policy, which, with an extra £1 billion to spend, are now potentially higher for both primary and secondary schools. Half of primary schools would be significant winners (seeing an increase in funding of at least 10%), while a quarter of primaries would receive an increase of at least 20%. Just under 30% of secondary schools would be significant winners under this policy option. For the same reasons as above, no schools are net losers.

The decile charts in Figures 4.10 and 4.11 confirm that the policy is progressive, with very small gains among the most affluent schools and very significant gains among the

Figure 4.9. Cumulative distribution of gains and losses in 2008–09

Option 1c. FSM and MOSAIC premiums plus EAL and SEN add-ons, primary FSM premium double secondary (£3.5 bn)

Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

poorest schools. The most deprived primary schools receive a boost to their income of just over 30%, while the poorest secondaries receive an increase of approximately 14%. One qualitative difference that does emerge from these figures is that, in both cases, the black line is straighter than before, particularly between deciles 2 and 4. This means that schools in these deciles – those with moderate levels of deprivation – receive considerably larger increases than under option 1a or 1b, and are therefore brought closer to the funding levels received by schools in decile 1. This is attributable to the MOSAIC premium, which provides deprivation funding with much wider coverage than the FSM premium alone.

Figure 4.10. Decile chart for primary schools, 2008–09

Option 1c. FSM and MOSAIC premiums plus EAL and SEN add-ons, primary FSM premium double secondary (£3.5 bn)
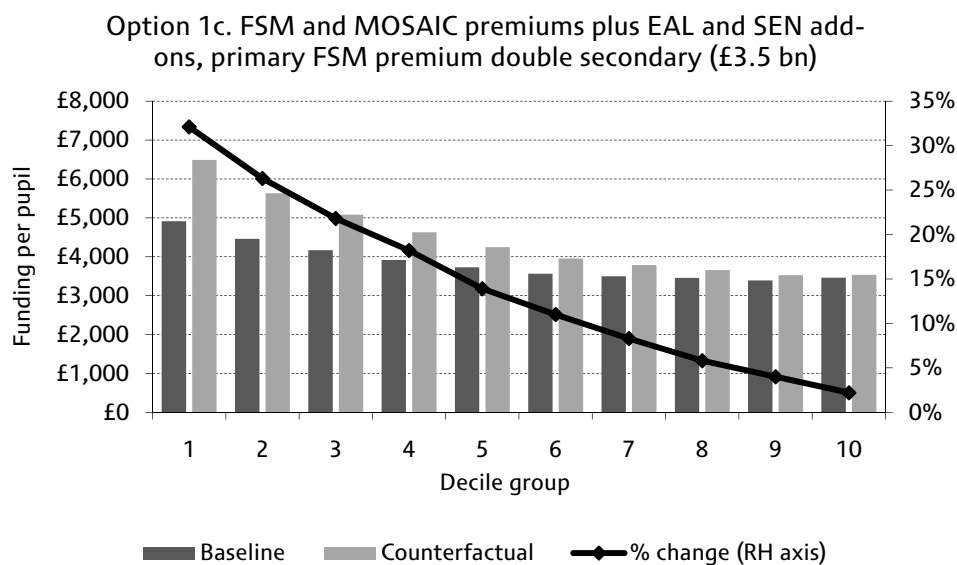
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

Figure 4.11. Decile chart for secondary schools, 2008–09

Option 1c. FSM and MOSAIC premiums plus EAL and SEN add-ons, primary FSM premium double secondary (£3.5 bn)
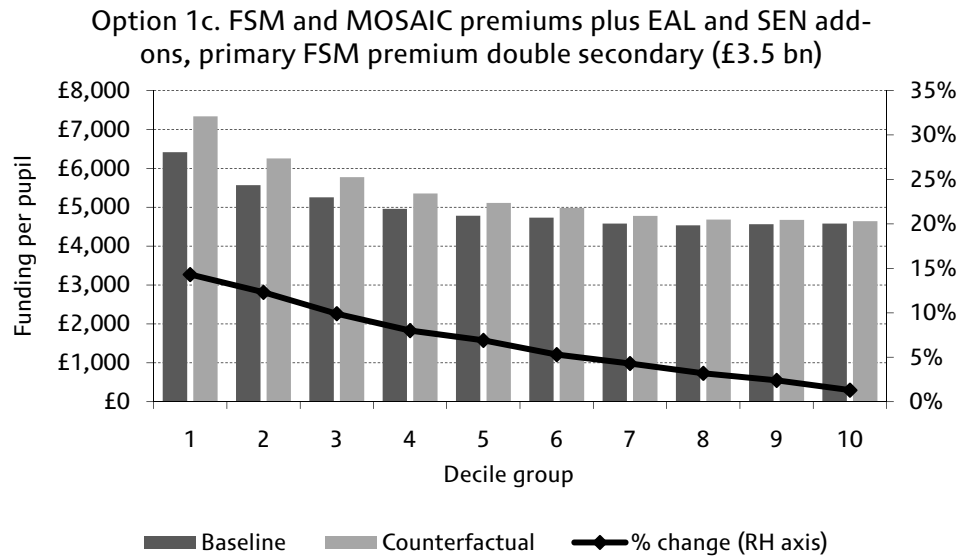
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

Summary of options in addition to current funding

A pupil premium implemented on top of the current system would naturally increase the progressivity of school funding, and there would be no losers from such a policy. The total additional cost of the scheme proposed by the Liberal Democrats is £2.5 billion. In this subsection, we considered two ways of financing a pupil premium with that budget. One (option 1a) had a flat-rate FSM premium across primary and secondary schools (£2,400 per pupil), leading to larger relative gains amongst primary schools due to their lower initial baseline funding. Option 1b, which is more in line with the Liberal Democrats' proposal, focused more on primary schools than secondary schools (on the grounds of early intervention) and included 'add-ons' for pupils with EAL and non-statemented SEN. These first two policies are based on the FSM indicator and therefore focus resources particularly at the most deprived 10% of primary and secondary schools. However, we have also shown, in option 1c, how providing extra premiums for pupils in low-achieving MOSAIC groups could spread the gains further amongst schools in the second, third and fourth deciles of deprivation, though here it is at the cost of an extra £1 billion.

The main problem with all of these schemes is that they require additional levels of spending, which will be difficult to fund given the current fiscal outlook. The Liberal Democrats have proposed funding their scheme mostly through cuts to tax credits paid to families with above-average incomes. Nevertheless, it seems wise to consider alternative options that are revenue-neutral or involve smaller increases in additional spending.

Replacement for specific grants

In this section, we consider pupil premium options under a different funding model: instead of providing wholly additional spending, the funding comes from scrapping all specific grants that schools currently receive from central government and redistributing the money as a pupil premium. These payments – such as the School Standards Grant (SSG), School Development Grant (SDG) and Ethnic Minority Achievement Grant (EMAG) – amounted to roughly £4.6 billion in total in 2008–09. While this is a larger figure with

which to finance a pupil premium than in our previous scheme, the loss of specific grants for some schools may not be fully compensated by the pupil premium.

The first option we consider is revenue-neutral. Such a policy invariably represents a zero-sum game: the total amount that any schools win from the policy will be exactly offset by the total amount that any schools lose. The second option uses additional spending of £1 billion in an attempt to minimise the number of losers.

Option 2a. FSM premium with secondary premium double primary

Measure of deprivation	FSM
FSM premium (primary/secondary)	£3,060/£6,130
EAL premium (primary/secondary)	£0/£0
SEN premium (primary/secondary)	£0/£0
Additional cost	£0 billion

First, it is important to note that specific grants currently represent an important source of income for deprived secondary schools (see Chapter 2), and that a pupil premium that replaced these grants could penalise these schools (without some sort of compensating adjustment). Therefore, in this option, we set the secondary FSM premium to be double the primary one. Replacing specific grants with such a pupil premium gives a primary FSM premium of £3,060 and a secondary FSM premium of £6,130 (2010 prices).

Figure 4.12 shows the spread of winners and losers from such a policy. As the policy must be revenue-neutral, there are many schools that are net losers: only 30% of primary schools and 43% of secondary schools would see an improvement in their financial position. Such figures illustrate that setting the secondary FSM premium at double the primary seems to penalise primary schools. Around one in four primaries would see large losses of 10% or more, while only one in ten would receive large increases (of 10% or more). Approximately 40% of secondaries would see smaller changes in their funding (gains or losses of less than 5%), whereas around one in seven secondaries would be significant winners and about one in ten significant losers.

Figure 4.12. Cumulative distribution of gains and losses in 2008–09

Option 2a. FSM plus EAL and SEN add-ons, secondary premium double primary (£0 bn)
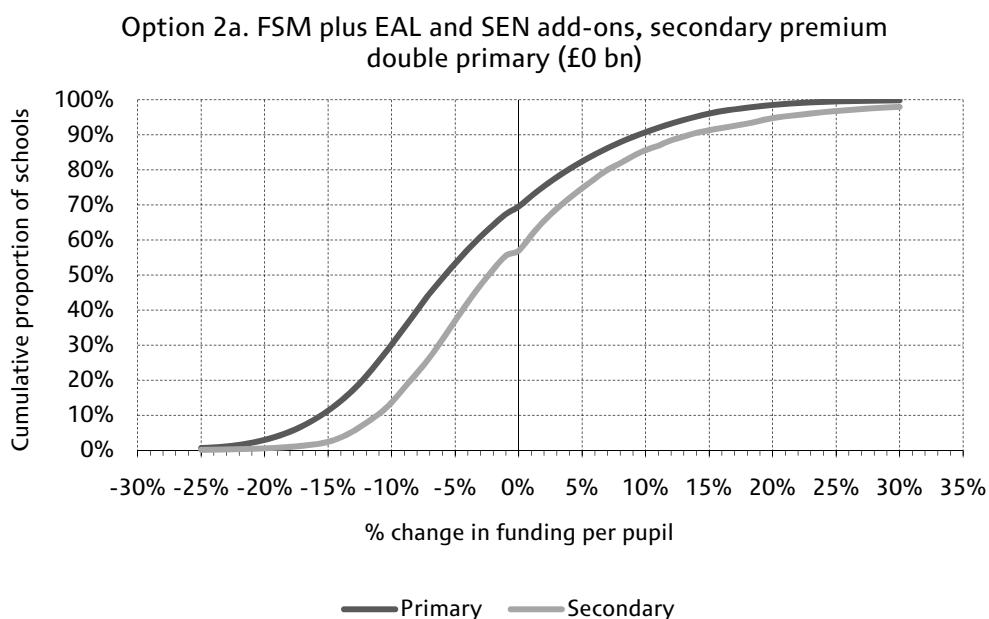
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

Even though some schools lose from the policy, the decile charts in Figures 4.13 and 4.14 show that this policy would be highly progressive amongst both primary and secondary schools. The most deprived primary schools would see an increase in funding of just over 13%, while the most affluent ones would see a reduction of a similar magnitude. The most disadvantaged secondary schools would see increases in funding of approximately 20%, while the affluent ones would lose around 10% on average.

Figure 4.13. Decile chart for primary schools, 2008–09

Option 2a. FSM plus EAL and SEN add-ons, secondary premium double primary (£0 bn)
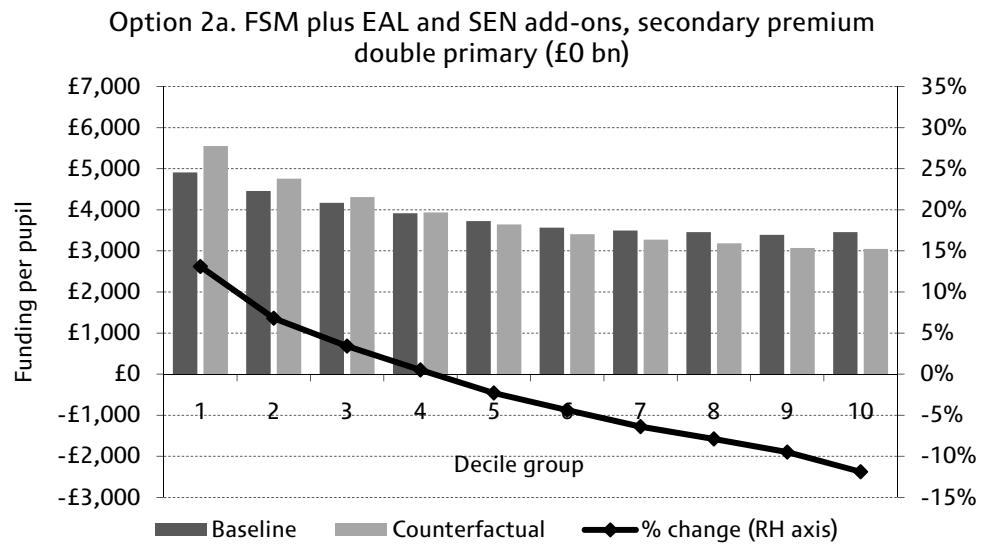
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

Figure 4.14. Decile chart for secondary schools, 2008–09

Option 2a. FSM plus EAL and SEN add-ons, secondary premium double primary (£0 bn)
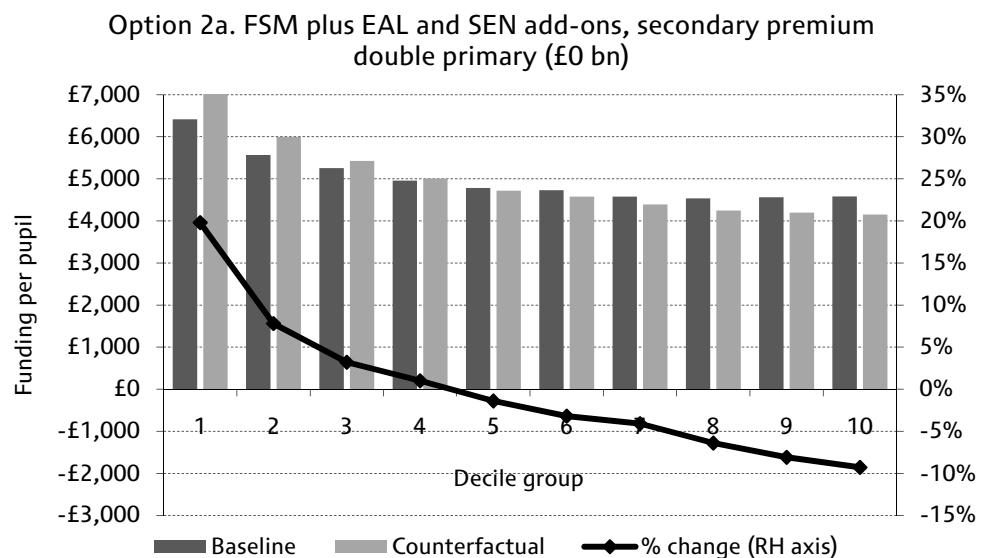
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

Option 2b. Pure MOSAIC premium with £1 billion additional funding

Measure of deprivation	MOSAIC
MOSAIC premium (groups 1–3)	£4,140/£2,730/£660
FSM premium (primary/secondary)	£0/£0
EAL premium (primary/secondary)	£0/£0
SEN premium (primary/secondary)	£0/£0
Additional cost	£1 billion

Option 2b uses a different measure of deprivation (MOSAIC) which is applied equally to primary and secondary school pupils. For consistency, this policy option uses the same relativities for the MOSAIC premium as proposed by Policy Exchange.[52] We have also added £1 billion of extra funding from outside the Schools Budget in an attempt to provide some additional compensation for the loss of specific grants. With a new budget of approximately £5.6 billion, the feasible MOSAIC premiums are £4,140, £2,730 and £660 for groups 1, 2 and 3 respectively.

Figure 4.15 shows the distribution of gains and losses arising from this policy. Since the MOSAIC premium is applied equally to primary and secondary schools, and replaces a funding source that was important for deprived secondary schools, it is not surprising that primary schools generally gain more than secondary schools. Nearly half of primary schools are net winners, compared with about 40% of secondary schools. Approximately 20% of secondary schools and 30% of primary schools would be significant winners. However, there are still a number of significant losers: nearly a quarter of primary schools and a seventh of secondary schools would experience falls of 10% or worse.

Figure 4.15. Cumulative distribution of gains and losses in 2008–09
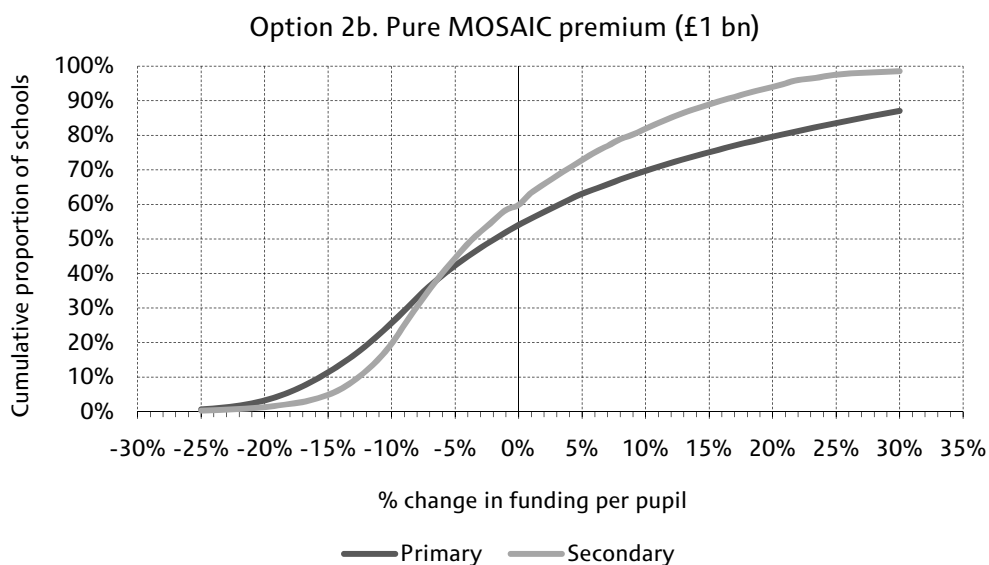
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

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[52]This policy option is similar to the approximate modelling undertaken by Policy Exchange as part of its policy proposal. However, there are some slight differences in the specific grants used to fund the pupil premium and the additional level of spending. Another difference is that we have not reallocated funds currently reported as being allocated on the basis of additional educational needs.

The decile charts in Figures 4.16 and 4.17 illustrate the distributional effect of using a broader measure of deprivation such as MOSAIC. As was the case under option 1c, using a wider degree of coverage means that schools with moderate levels of deprivation (such as those in deciles 3 and 4) can also see considerable increases in their funding. On average, primary schools in deciles 1 and 2 both receive an increase of 20% in their funding per pupil. Although schools in decile 2 would be expected to receive less MOSAIC funding, they may also be less reliant on specific grants, leading them to benefit just as much from the policy as the very poorest schools. The most affluent four deciles are, on average, net losers, with those in the top decile seeing a 9% fall in income.
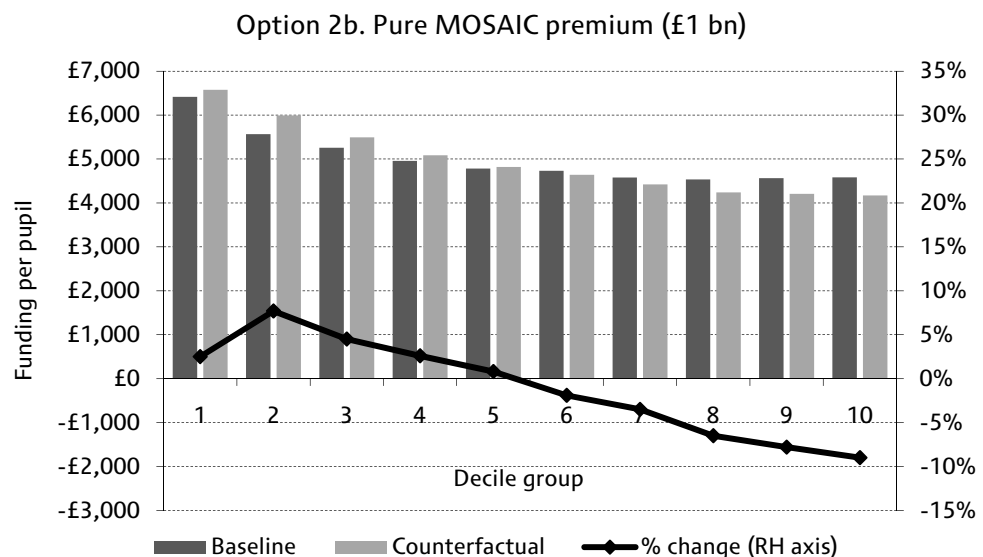
Figure 4.16. Decile chart for primary schools, 2008–09

Option 2b. Pure MOSAIC premium (£1 bn)
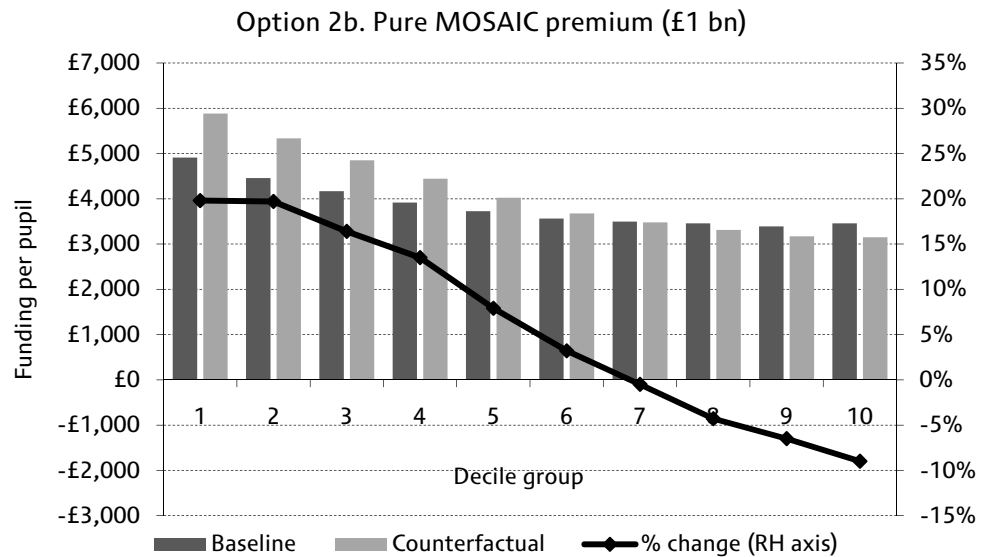
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

Figure 4.17. Decile chart for secondary schools, 2008–09

Option 2b. Pure MOSAIC premium (£1 bn)

Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

Importantly, the most deprived secondary schools are not the biggest winners amongst secondary schools. It is in fact schools in the second decile which gain the most, on average. This reflects the fact that secondary schools in the poorest decile are highly dependent on specific grants, so their net gains are small when a measure of disadvantage that does not target severe deprivation is used. As was previously the case with a MOSAIC premium (options 1b and 1c), schools with moderate levels of deprivation tend to gain significantly, with those in deciles 2 to 4 being net winners, while those in decile 5 are generally unaffected. Secondary schools in deciles 6 and above lose out on average, with the most affluent ones losing the same amount (in relative terms) as the most affluent primary schools.

Summary of options replacing specific grants

The creation of a pupil premium through the abolition of specific grants from central government may seem to be an appealing idea, as it provides a less expensive route towards a pupil premium. However, it is important to remember that deprived secondary schools are more dependent on such grants, and could thus lose out more through their abolition unless sufficiently compensated. Moreover, even with a pupil premium at secondary schools double that at primary schools, or when adding £1 billion of additional spending, there are still significant numbers of schools that lose at least 10% of their budget. Implementing such a policy, even over a long time frame, is unlikely to be easy.

Single national funding formula

This section presents the most radical set of policy options, all of which replace both LA formula funding *and* specific grants.[53] In 2008–09, state schools in England received a total of £26.6 billion from LA formula income, which, combined with the money for specific grants, gives a total pupil premium budget of about £31.1 billion. The first option presented here is revenue-neutral; the other two involve an additional £1 billion of spending from elsewhere. Such an increase would represent a 3.2% increase in school funding. However, this could be assumed to take place over a longer period than just a single year.

Some other features have to be incorporated in these pupil premium options in order to compensate schools for the loss of LA formula income. Under all the options in this section, schools receive a fixed amount of per-pupil funding that varies by pupil age according to predefined AWPU ratios. These ratios are set so that schools receive the same amount for each KS1 and KS2 pupil (ages 4–7 and 7–11), but 30% extra for each KS3 pupil (age 11–14) and 55% extra for each KS4 pupil (age 14–16).[54] These ratios, combined with the overall budget constraint, will then pin down the specific cash amounts that schools receive per pupil at each Key Stage. Note that these will be base per-pupil amounts, and any pupil premiums for deprivation or AEN will be paid to schools on top of them.

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[53] As with all of the analysis in this chapter, ACA factors, statemented SEN funding and discretionary budget adjustments are still retained at their existing levels.

[54] These AWPU ratios are roughly equal to the average AWPU ratios (across all local authorities in England) used in setting per-pupil formula funding.

For all the policy options considered here, schools also receive a fixed monetary amount that represents an imputed adjustment for fixed costs.[55] This is designed not only to cover some of the actual operating fixed costs that schools may face, but also to prevent smaller schools – for which fixed costs are very important relative to per-pupil operational costs – from suffering very large reductions in per-pupil funding.

Option 3a. Differential FSM premium with additional amounts for EAL and SEN

Base per-pupil amount (KS 1/2/3/4)	£2,460/£2,460/£3,200/£3,810
Measure of deprivation	FSM
FSM premium (primary/secondary)	£3,690/£4,920
EAL premium (primary/secondary)	£250/£250
SEN premium (primary/secondary)	£250/£250
Additional cost	£0 billion

The first option we consider here is an FSM premium to be paid on top of the basic per-pupil amount (defined by the AWPU ratios). Recognising that the current school funding system is weighted more strongly towards deprivation at secondary schools, we implement a secondary FSM premium that is 33% greater than that at primary schools in order to minimise the number of losers. We also include some 'add-ons' for EAL and non-statemented SEN. With a budget of just over £31 billion, the feasible payments are £2,460 for each KS1 or KS2 pupil, £3,200 for KS3 pupils and £3,810 for KS4 pupils. On top of these amounts, primary schools receive an extra £3,690 for each FSM pupil and secondary schools an extra £4,920. There are also additional amounts of £250 for pupils with EAL or non-statemented SEN.

Figure 4.18. Cumulative distribution of gains and losses in 2008–09

Option 3a. FSM premium plus EAL and SEN add-ons, secondary premium 33% higher (£0 bn)
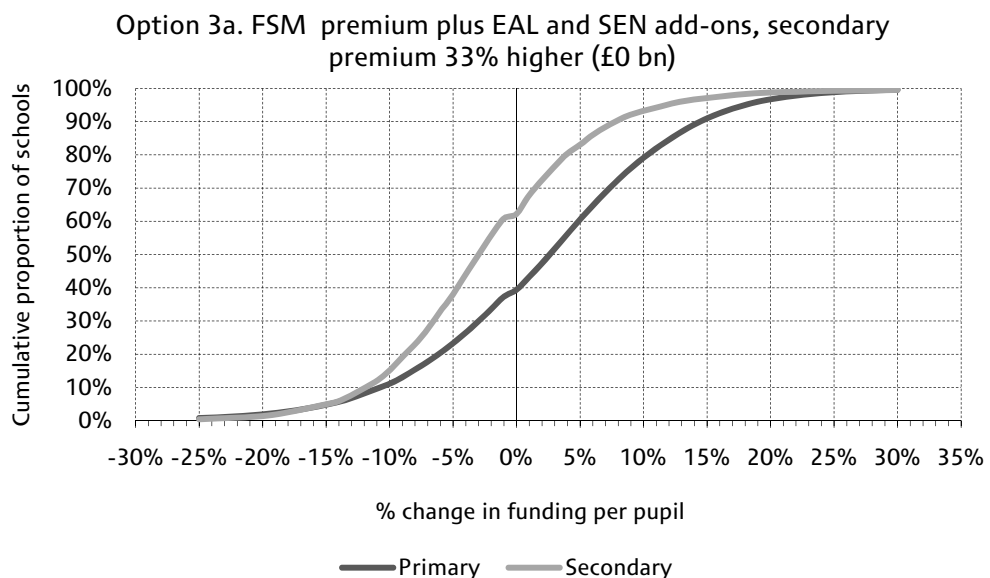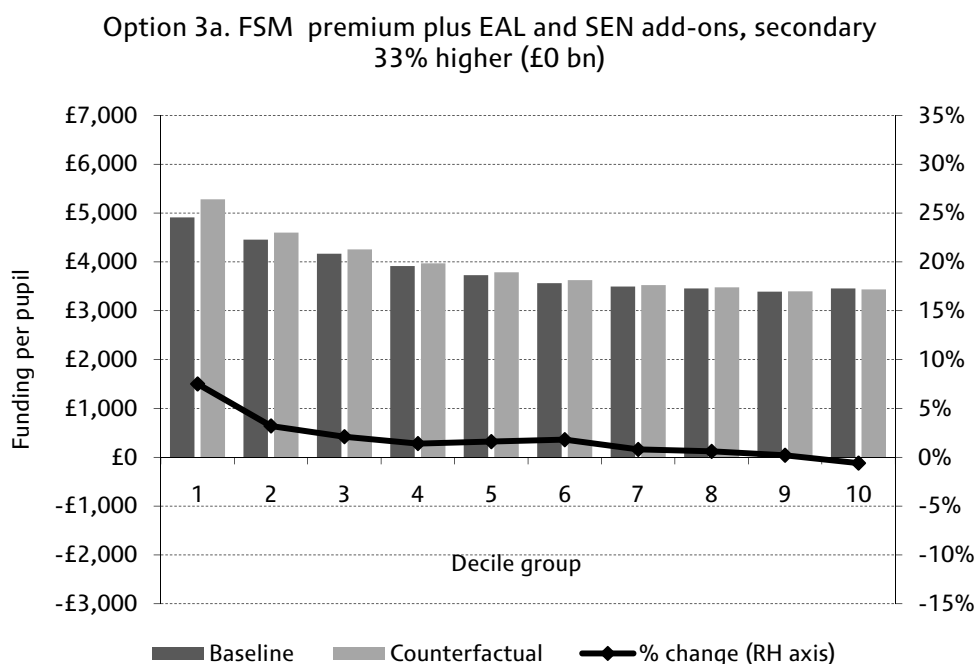
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

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[55]This is calculated as the constant in a regression of primary and secondary schools' LA formula income on a number of school-level characteristics. The imputed amounts are £125,000 for a primary school and £215,000 for a secondary school. See Table A.2 in the Appendix.

Figure 4.18 shows the spread of winners and losers from such a policy. It is clear that primary schools and secondary schools are treated very differently under this option. Secondary schools are much more likely to suffer losses in income – 60% of them are net losers, compared with only about 40% of primary schools. Even though secondary schools receive a higher base amount per pupil (by virtue of the AWPU ratios), these amounts are similar to their existing AWPU allocations and therefore do not bring in enough extra resources to compensate secondary schools for the loss of specific grants. As a result, while there is a wide dispersion in outcomes, primary schools generally fare better than secondaries under this policy: 20% of them experience large gains (10% or more of their current funding), compared with only 7% of secondary schools. However, it is worth noting that the numbers of significant losers are fairly similar, and are much lower than for the previous options that replaced specific grants only.

The decile charts in Figures 4.19 and 4.20 reinforce the difference in fortunes between primary and secondary schools. The policy appears quite progressive among primaries, with growth in income of approximately 8% among the most disadvantaged schools while the most affluent see hardly any change in their funding. On average, primary schools in all but the richest decile gain from the policy, though clearly some deciles gain more than others. However, in Figure 4.20, we see that while the policy is clearly progressive for secondary schools, on average they are actually worse off across all but the poorest decile. While the losses are smallest for schools in the second to fifth deciles, the richest secondaries do incur losses of over 5%, on average. The fact that secondary schools fare worse under this policy is not inherent to a single national funding formula; it simply reflects the parameter values we have chosen.

Figure 4.19. Decile chart for primary schools, 2008–09

Option 3a. FSM premium plus EAL and SEN add-ons, secondary 33% higher (£0 bn)

Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

Figure 4.20. Decile chart for secondary schools, 2008–09

Option 3a. FSM premium plus EAL and SEN add-ons, secondary
33% higher (£0 bn)
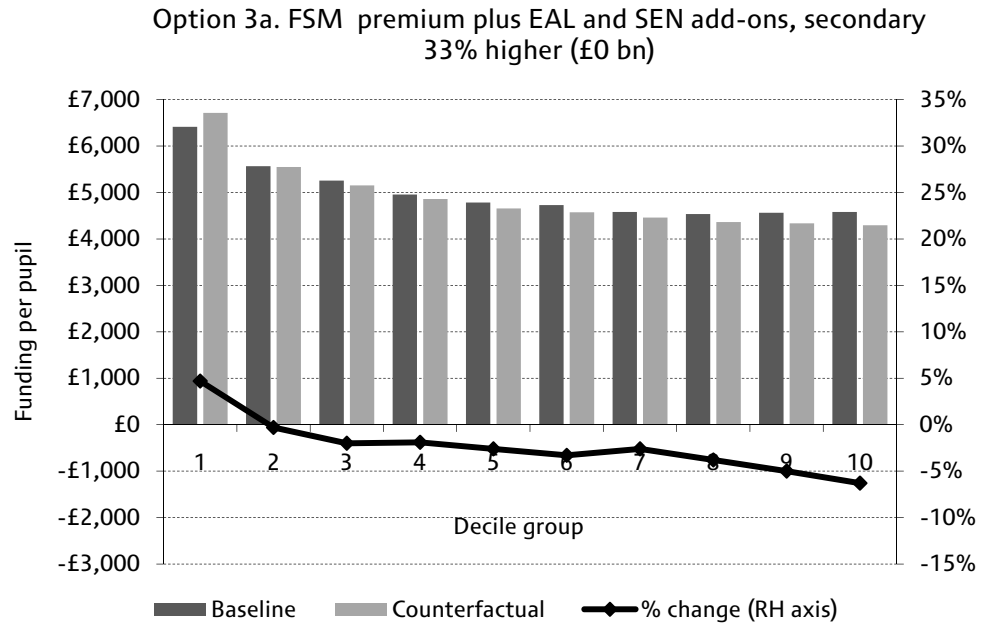
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

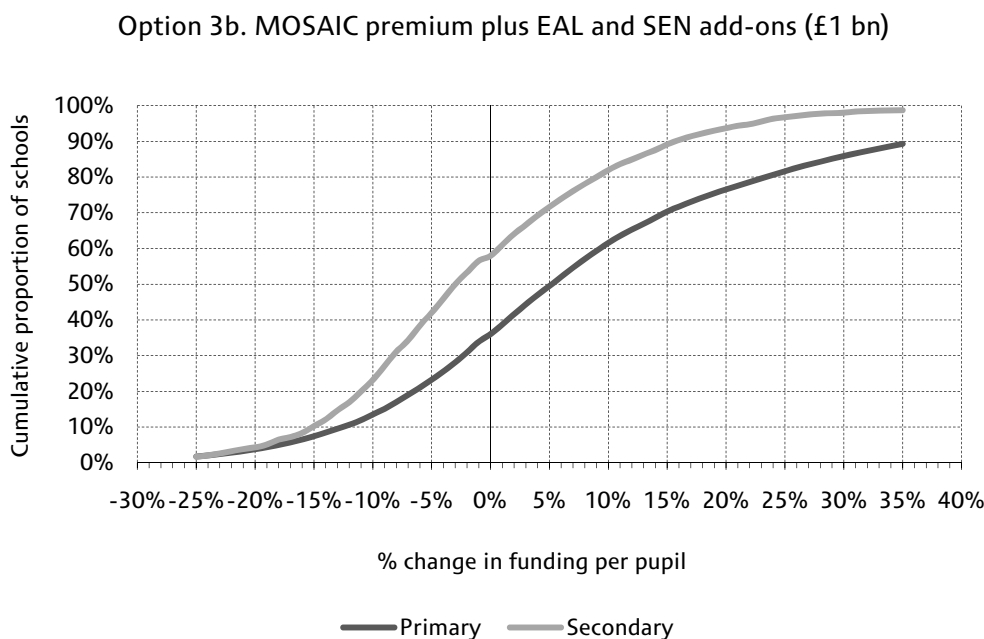## Option 3b. MOSAIC premium with additional amounts for EAL and SEN, plus an extra £1 billion

Base per-pupil amount (KS 1/2/3/4)	£2,330/£2,330/£3,030/£3,610
Measure of deprivation	MOSAIC
MOSAIC premium (groups 1–3)	£4,660/£3,100/£770
FSM premium (primary/secondary)	£0/£0
EAL premium (primary/secondary)	£230/£230
SEN premium (primary/secondary)	£230/£230
Additional cost	£1 billion

In this policy option, we replace the above FSM premium with a MOSAIC premium. This is our closest version to the single national funding formula envisaged by Policy Exchange. As per the Policy Exchange proposal, the relative MOSAIC weights are set such that the bottom MOSAIC group receives six times the amount allocated to MOSAIC group 3, and MOSAIC group 2 receives four times the amount received by MOSAIC group 3. The additional payments for EAL and non-statemented SEN are held at 10% of the base per-pupil amount for a KS1 or KS2 pupil. Policy Exchange's report also proposed cutting a small amount of education spending outside the Schools Budget and redirecting it towards a pupil premium to minimise the number of losers. To accommodate this feature in our policy option, we add an extra £1 billion of spending, bringing the total budget to just over £32 billion.

The MOSAIC indicator has much wider coverage and more pupils are eligible for the premium; thus there is less money available for the other features of the policy option, despite the extra spending. With the same level of additional spending as before (option 2b), the base per-pupil amounts are now £2,330 for KS1 and KS2 pupils, £3,030 for KS3 pupils and £3,610 for KS4 pupils. The estimated MOSAIC premiums are £4,660, £3,100

Figure 4.21. Cumulative distribution of gains and losses in 2008–09

Option 3b. MOSAIC premium plus EAL and SEN add-ons (£1 bn)

% change in funding per pupil

—— Primary —— Secondary

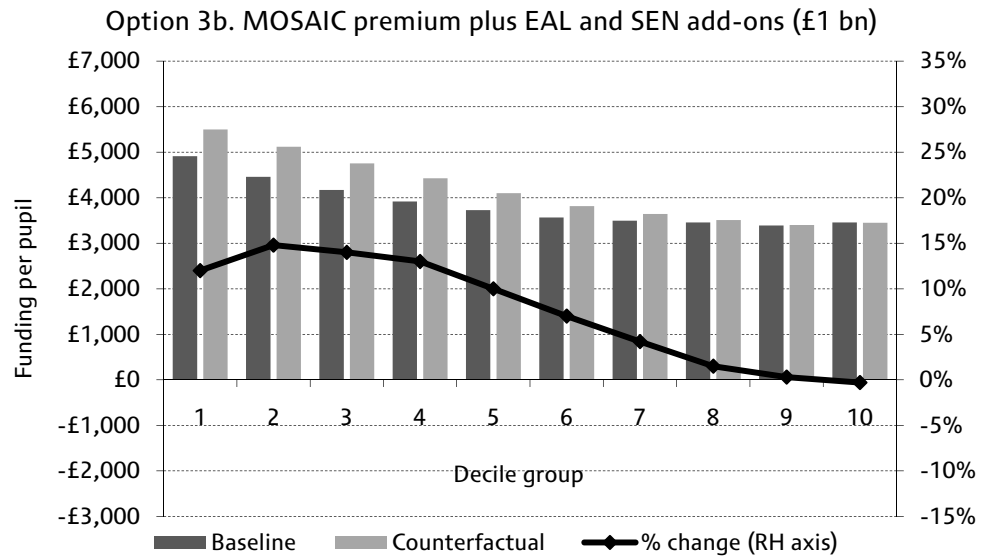Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

and £770 respectively for groups 1, 2 and 3, while the add-ons for EAL and non-statemented SEN are worth £230.

Figure 4.21 displays the implications of this policy for the overall spread of gains and losses. As was the case for option 3a, secondary schools are generally not fully compensated for their lost income sources and are more likely to be net losers than primary schools (57% versus 34%). About 12% of primaries would see a fall in income of at least 10%, yet nearly 40% of primaries would experience an increase in funding of the same magnitude. However, about one in five secondary schools would lose 10% or more of their budget under such a scheme, and a similar number would see large gains (of 10% or more).

Figure 4.22 assesses the progressivity of this policy option for primary schools. The black percentage change line displays the sort of pattern that tends to arise under a MOSAIC premium as in option 2b. The largest increases in resources occur among schools with moderate levels of deprivation, which have less to lose from the scrapping of specific grants and now receive some deprivation funding that they would not have attracted before. Nevertheless, the most deprived primaries do see, on average, an increase in funding of about 12%, while those in the richest deciles see, on average, little change in overall funding. The policy is mostly progressive amongst primary schools.

Figure 4.23 reveals a less positive picture for secondary schools: the most deprived ones, for which specific grants were a particularly important income source, actually lose about 3%, on average – only the most affluent 30% of schools would see a worse reduction in income. Meanwhile, the only beneficiaries, on average, from this policy option seem to be secondaries in deciles 2 to 5 – those with moderate levels of deprivation.

Figure 4.22. Decile chart for primary schools, 2008–09

Option 3b. MOSAIC premium plus EAL and SEN add-ons (£1 bn)

Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

Figure 4.23. Decile chart for secondary schools, 2008–09

Option 3b. MOSAIC premium plus EAL and SEN add-ons (£1 bn)
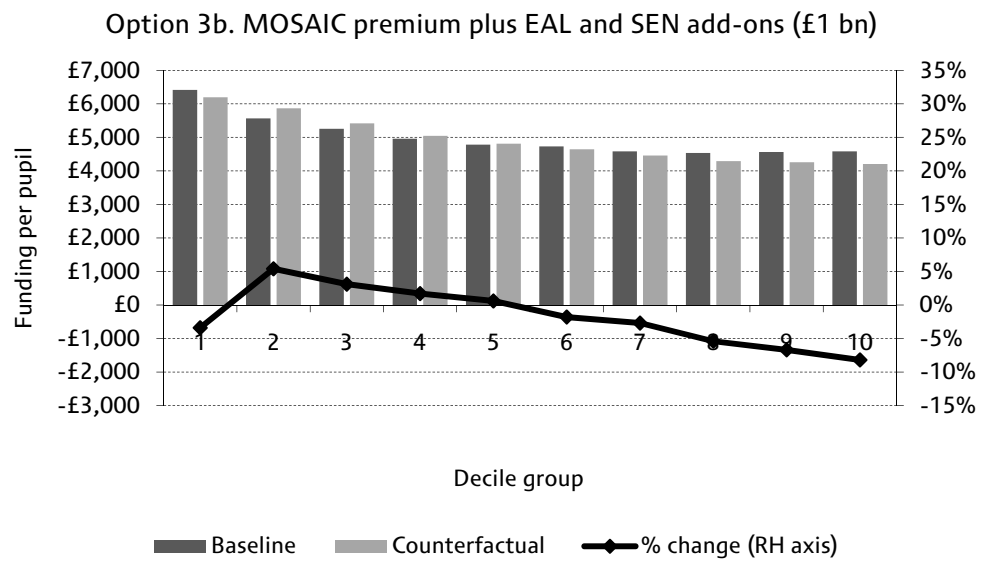
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

Option 3c. FSM and KS2 premiums with additional amounts for EAL and SEN, plus an extra £1 billion

|	
Base per-pupil amount (KS 1/2/3/4)	£2,360/£2,360/£3,070/£3,660
Measures of deprivation	FSM, low KS2
FSM premium (primary/secondary)	£3,540/£2,360
Low KS2 premium	£2,360
EAL premium (primary/secondary)	£240/£240
SEN premium (primary/secondary)	£240/£240
Additional cost	£1 billion

In this final policy option, we return to an FSM premium paid on top of the basic per-pupil amount (defined by the AWPU ratios), plus some 'add-ons' for EAL and non-statemented SEN. To this we also add a low prior attainment premium for secondary schools. This is allocated to secondary schools for each pupil who did not achieve the expected level at Key Stage 2 in Maths or English. We also keep the extra £1 billion of additional spending in an effort to reduce the number of schools facing large losses.

The secondary FSM premium is set to be the same as the base amount provided in Key Stages 1 and 2. Since we are now allocating both an FSM premium and a low prior attainment premium to secondary schools, we make them both two-thirds of the primary FSM premium. The EAL and non-statemented SEN add-ons are, as before, set at 10% of the base amount for KS1 and KS2 pupils. It turns out that with a budget of just over £32 billion, the feasible payments are £2,360 for each KS1 or KS2 pupil, £3,070 for KS3 pupils and £3,660 for KS4 pupils. On top of these amounts, primary schools receive an extra £3,540 for each FSM pupil. Secondary schools receive £2,360 for each pupil eligible for FSM and for each pupil with low prior KS2 attainment. Therefore, a pupil eligible for FSM who also happens to have low prior attainment will attract a total of £4,720 in additional funding. A premium of £240 is provided for pupils with EAL or non-statemented SEN.

Figure 4.24 shows the spread of winners and losers. There seems to be very little difference between primary and secondary schools – about 40% of both are net losers and about 10% experience large losses (of 10% or more). However, there is a difference in the proportions experiencing gains of 10% or more – 20% of primary schools but only 13% of secondary schools.

Figures 4.25 and 4.26 illustrate the changes in funding by decile group. Amongst primary schools, the policy is clearly progressive, with the most deprived primary schools gaining about 7% on average. The other deciles experience very small changes in their funding position, with the richest decile seeing a small income reduction on average.

Figure 4.24. Cumulative distribution of gains and losses in 2008–09

Option 3c. FSM and KS2 premiums plus EAL and SEN add-ons, primary FSM premium 50% higher (£1 bn)
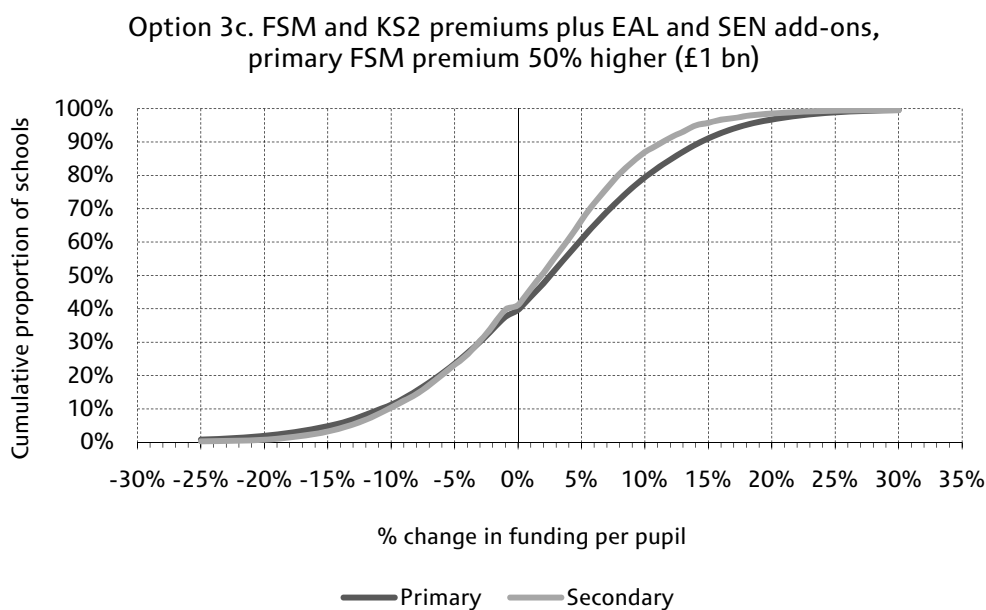
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

Figure 4.25. Decile chart for primary schools, 2008–09

Option 3c. FSM and KS2 premiums plus EAL and SEN add-ons, primary FSM premium 50% higher (£1 bn)
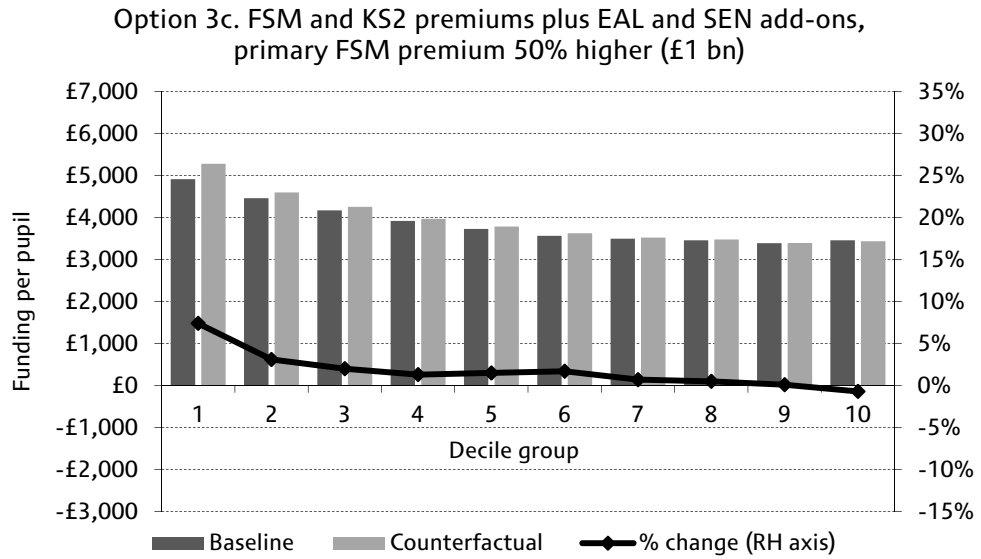
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

Figure 4.26. Decile chart for secondary schools, 2008–09

Option 3c. FSM and KS2 premium plus EAL and SEN add-ons, primary FSM premium 50% higher (£1 bn)

Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.
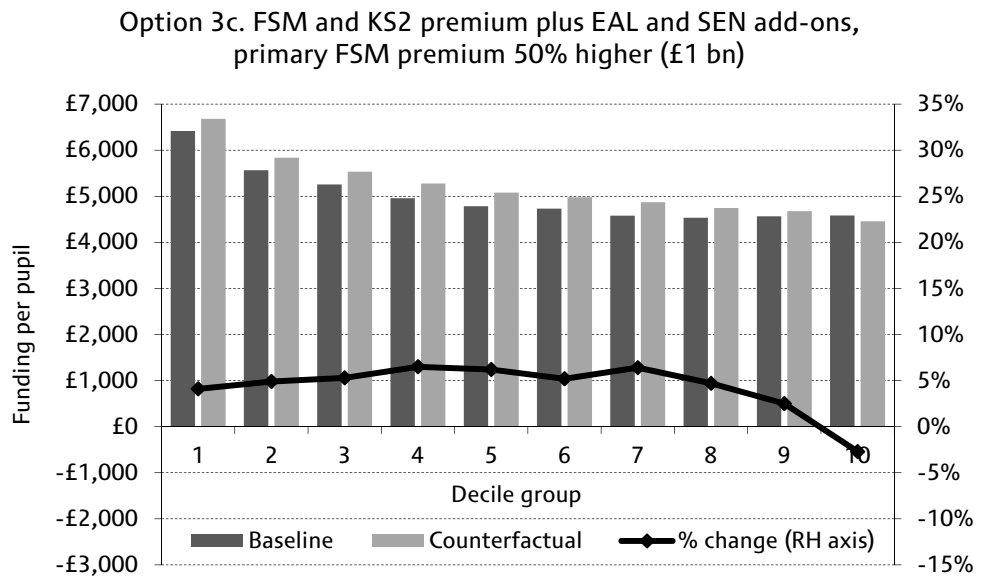
However, amongst secondary schools, the picture is different from what we have seen before. The most deprived schools gain about 4% on average, but the gains are actually slightly higher amongst the schools in the middle of the distribution, between the fourth and seventh deciles, while the most affluent secondaries are worse off by about 3%. It therefore seems as though the combination of the FSM and low KS2 premiums leads to an even wider spread of gains amongst secondary schools than either an FSM premium or a MOSAIC premium on its own. Whether this is desirable or not depends on the stated aims of the policy. We see here that a low KS2 premium would not be effective at redistributing financial resources to secondary schools with materially deprived pupils (even when combined with an FSM premium). It would, however, be an obvious lever to redirect

funding towards secondary schools whose pupils were low achievers at primary school, and can be thought of as redistributing away from schools with a high-ability intake to schools with a low-ability intake. As such, combining an FSM premium with a low KS2 premium would be appealing if policymakers were interested in both sorts of redistribution together.

Summary of options for a single national funding formula

In this section, we have attempted to model the effects of implementing a single national school funding formula. Option 3a looked at a differentiated FSM premium under complete revenue neutrality. This scheme was progressive at both the primary and secondary levels; however, 10% of primary schools and 12% of secondaries experienced large losses (of 10% or more). We then attempted to model the policy proposed by Policy Exchange, with a MOSAIC premium and £1 billion of additional spending (option 3b). This policy was mostly progressive amongst primary schools, but led to losses amongst the most deprived secondary schools. Despite the additional spending, this option actually led to a greater number of primary and secondary schools experiencing large losses than under option 3a. The last option we considered allocated an FSM premium at primary level, with an FSM and low KS2 prior attainment premium at secondary schools. This reform was clearly progressive amongst primary schools, but actually led to the largest average gains amongst secondary schools with low to moderate levels of poverty. The addition of the low KS2 prior attainment premium seems to spread the gains from a pupil premium more widely. The proportion of secondary schools that experienced large losses was significantly reduced, but the number of primary schools experiencing similarly large losses was the same as under option 3a.

Table 4.3 summarises all the options we have considered in this chapter. One conclusion from this analysis is that the number of significant losers from implementing a single national funding formula would be lower than the number losing significantly if only specific grants were replaced with a pupil premium. The price of simplicity in this seemingly radical option thus seems to be lower. This should not be surprising, as specific grants are received by all schools whereas a pupil premium would be focused on deprived schools.

Table 4.3. Summary of winners and losers: all options

Policy option (method of funding)	Deprivation measures	Extra cost (£bn)	Net winners (%)		Average change (%)		Average change for most deprived schools (%)		Schools with large losses (%)		Schools with large gains (%)	
			Prim	Sec	Prim	Sec	Prim	Sec	Prim	Sec	Prim	Sec
1. In addition to current funding												
Option 1a	FSM	2.5	100	100	8.3	6.1	23	16	0	0	33	18
Option 1b	FSM (*)	2.5	100	100	10.2	4.1	28	10	0	0	40	4
Option 1c	FSM, MOSAIC (*)	3.5	100	100	13.3	7.3	32	14	0	0	50	28
2. Replacement for specific grants												
Option 2a	FSM	0	30	43	–3.6	0.5	13	20	26	10	9	14
Option 2b	MOSAIC	1	46	40	4.6	–0.1	20	3	22	15	30	18
3. Single national funding formula												
Option 3a	FSM (*)	0	61	38	2.6	–1.5	8	5	10	12	21	7
Option 3b	MOSAIC (*)	1	64	42	8.9	–0.2	12	–3	12	20	38	18
Option 3c	FSM, low KS2 (*)	1	60	59	2.5	5.1	4	7	10	8	21	13

Notes: (*) indicates additions for EAL and non-statemented SEN. Averages are calculated as arithmetic means across the relevant group of schools. 'Large' gains and losses are defined as 10% or more.

4.4 Moving to a single national funding formula

The introduction of a single national funding formula would mark a significant reform to the system of school funding in England, as it would replace all LA-determined funding allocations with a completely centralised and transparent system. In the previous section, we showed three options for such a formula and the resulting changes in school finances. Although the exact proportions varied with each option, we showed that a non-negligible proportion of primary and secondary schools could experience large losses (and large gains) under a single national funding formula. Some of these gains and losses represent redistribution from relatively well-off schools to less well-off schools as a result of the greater weighting towards deprivation.

In this section, we provide some supplementary analysis that breaks down the winners and losers from such a reform into more detail. For brevity's sake, we only perform this analysis for one of the options we considered in the previous section. The option we have chosen to consider is 3a – the simplest of the three single national funding options – with a differentiated FSM premium across primary and secondary schools and no additional spending. Under this option, 10% of primary schools and 12% of secondary schools would experience large losses (10% or more). This section also considers transitional mechanisms and the potential costs of smooth transition. Finally, we list the unresolved issues relating to the introduction of a single national funding formula that we have been unable to consider.

## Profiles of winners and losers

We have already considered the profile of winners and losers under a single national funding formula by a school-level measure of deprivation (see Figures 4.19 and 4.20). We have also seen that primary schools gain and secondary schools lose, on average, from this policy. It is important to note that this reflects the particular parameter values we have chosen; it is not inherent to a single national funding formula. We now consider the profile of winners and losers by other characteristics: school size and geography.
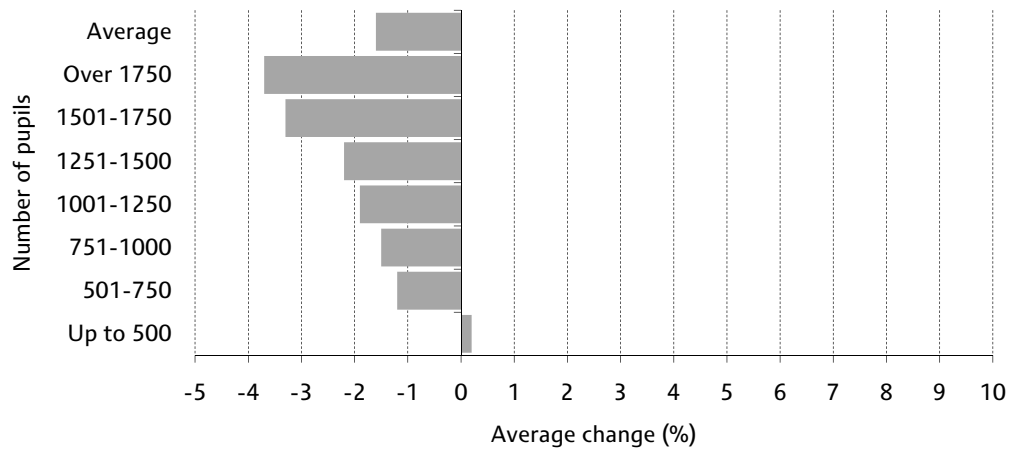
By size of school

Figure 4.27 illustrates the average gains and losses by size of school. Primary schools, on average, gain from this reform. The gains that they receive do not appear to be highly

Figure 4.27. Winners and losers by size of school

(a) Primary schools
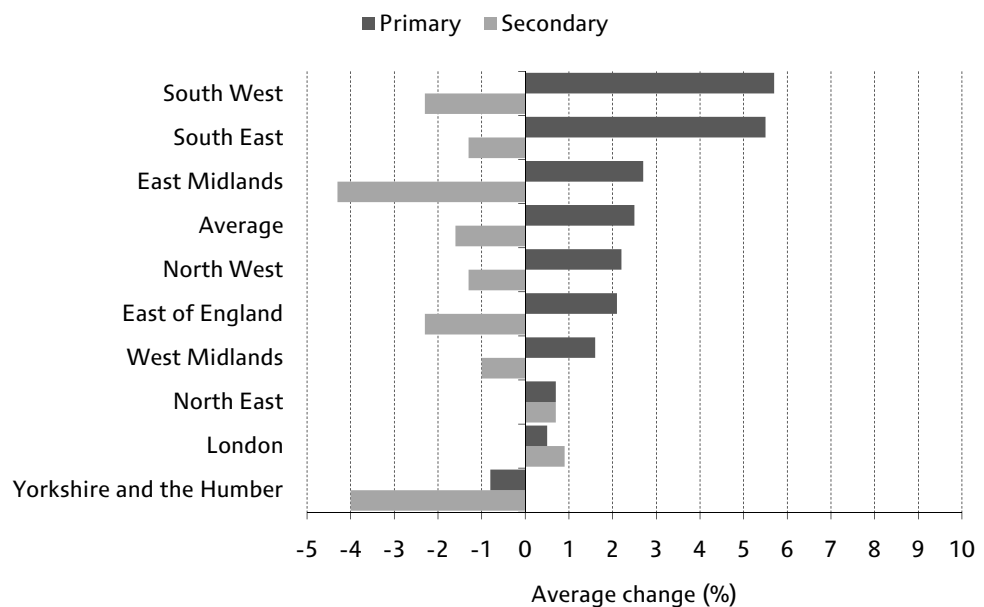

72
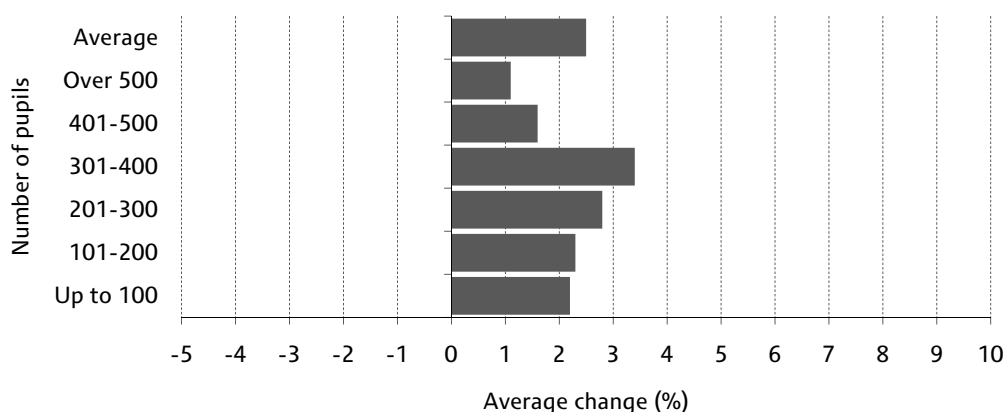
(b) Secondary schools

Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

differentiated by school size. Amongst secondary schools, it is clear that large secondary schools lose from such a policy and only the smallest ones would gain, on average.

By region

Figure 4.28 shows the average gains and losses across Government Office Regions. It shows that there are some differences between regions for primary schools, with those in the South West and South East gaining by over 5% and those in London and the North East gaining by less than 1%. But primary schools in Yorkshire and the Humber fare worst – they would actually be slightly worse off on average. However, the pattern is different for secondary schools: those in the North East and London are on average better off (albeit by less than 1%), whereas secondary schools across the rest of England are worse off on average. The largest losses for secondary schools are in the East Midlands and Yorkshire and the Humber. With the exception of Yorkshire and the Humber, there appears to be a negative relationship at the region level between the impact on primary schools and the impact on secondary schools.

Figure 4.28. Winners and losers by region

Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

By urban versus rural status

Looking at schools in urban and rural local authorities separately (Figure 4.29), one observes little average difference between urban and rural secondary schools – both types lose around 1.5% on average. However, rural primary schools seem to gain more than urban primary schools.

Figure 4.29. Winners and losers, urban versus rural
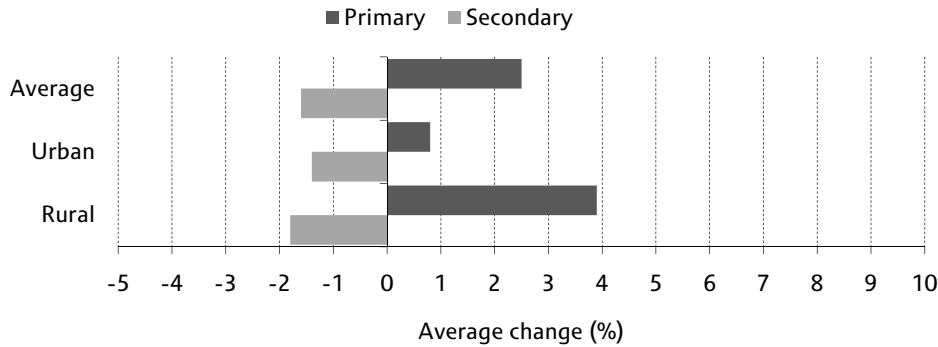
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

By local authority

Another important consideration is the spread of average gains across individual local authorities. Figure 4.30 illustrates the pattern of average gains and losses amongst primary (dark grey line) and secondary schools (light grey line) across LAs. In each case, we have ordered LAs from left to right, from those that lose the most to those that gain the most on average. As we already knew, primary schools gain on average more than secondary schools. However, it is now also clear that the average gains and losses are relatively spread out by local authority. Schools in some LAs lose by more than 5%, on average, whilst others gain by more than 5%. The variation by local authority is far more

Figure 4.30. Winners and losers by local authority
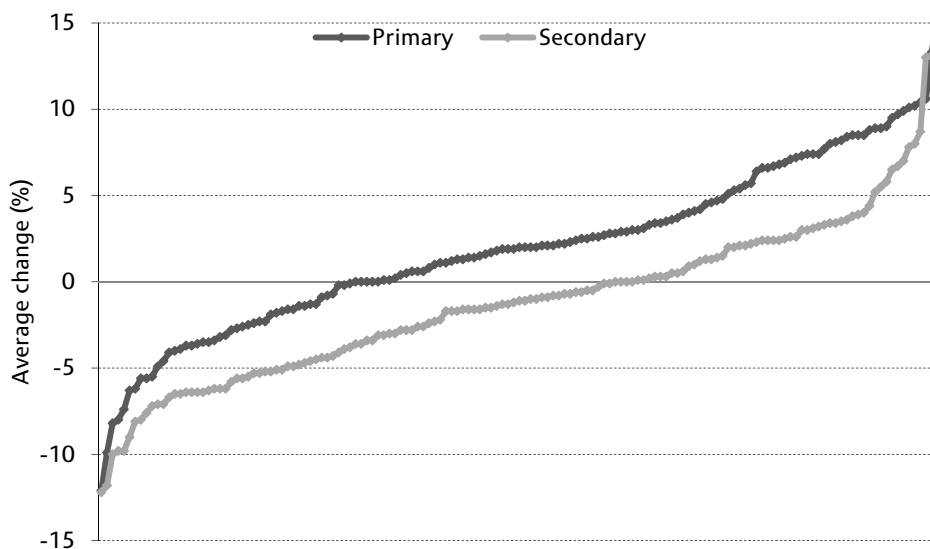
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

spread out than that observed by region, school size or the urban/rural split. What is driving such variation?[56]

We have used a single set of values to allocate funds to schools for pupils in each Key Stage, based on the average AWPU ratios currently used by LAs. However, there is naturally variation around these averages. Therefore primary schools in LAs that currently choose to prioritise primary school funding more than the national average will lose out under a single national funding formula, whilst secondary schools in these areas will tend to gain. Conversely, primary schools in areas that currently choose to prioritise secondary school funding more than the national average will gain from a single national funding formula, and secondary schools in these areas will lose on average. The pattern of gains and losses will thus partly result from local differences in the relative funding currently allocated to primary and secondary schools.

Local authorities also differ in the level of spending they choose to hold centrally, leading to differences in the amounts delegated to schools. If no account is taken of such differences (as in our analysis), then a single national funding formula will naturally redistribute some funding from schools in LAs with low proportions of spending on central services to schools in LAs with high proportions spent on central services. Account would need to be taken of such differences if this is not the intended outcome of the policy. However, it is worth noting that some differences in the amounts held centrally result from differing practices for spending on pupils with high-cost special educational needs: some LAs choose to delegate most of such spending to schools, whilst some choose to spend the money centrally.

Historical factors are also likely to drive some of the variation we observe across LAs. As we learnt in Chapter 2, the Minimum Funding Guarantee and spend-plus methodology have entrenched some historical differences in funding, which would be unwound in a single national funding formula.

Lastly, some differences could also be driven by measurement error or differing accounting practices across LAs. We believe that the pattern of Figure 4.30 is a fair reflection of the likely pattern of average gains and losses that would result from a single national funding formula, i.e. quite spread out by local authority. However, measurement error and differing accounting practices could well be driving some of the extreme values we observe. We have thus chosen not to publish a list of how much local authorities win or lose. These differences are important, but they should only be considered in detail once any policymaker is confident that any significant measurement error has been removed.

Impact on year-on-year volatility

Another issue with a single national funding formula is that, by making school incomes depend more explicitly on pupil characteristics and pupil numbers, a school's financial resources could fluctuate significantly from one year to the next as the student body evolves over time. Chowdry, Muriel and Sibieta (2008) showed that under the current system, this is unlikely to occur because of the role played by historical factors and the Minimum Funding Guarantee (MFG) in setting school allocations. While these might inhibit the potential for funding to follow the pupil, they also provide schools with a

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[56]Readers should note that, as we have retained the current Area Cost Adjustment, the schools that lose are not those that currently receive an uplift from this factor.

certain amount of stability. Under a pupil premium, there might be less stability (precisely because funding would follow the pupil explicitly).

Figure 4.31 addresses this question by comparing the actual annual changes in funding per pupil that occurred between 2007–08 and 2008–09 (solid lines) with the change that would have occurred had the pupil premium in option 3a been in place in both years. This is done for primary schools (dark grey lines) and secondary schools (light grey lines) separately. Note that the small number of schools that experienced actual real-terms cuts under the baselines could either have lost some high-SEN funding, or have observed a fall in real-terms funding as a result of the outturn for inflation being higher than the cash MFG.

The first point to note is that the solid and dashed dark grey lines coincide almost perfectly. This means that for primary schools, the same overall annual changes in income would have occurred under option 3a as had actually occurred between 2007–08 and 2008–09. This does not mean that individual primary schools would have experienced the same changes in funding under a pupil premium as they experienced under the actual system. Rather, it means that, in the aggregate, the distribution of gains and losses from one year to the next would have been about the same under option 3a as the actual distribution of gains and losses (from 2007–08 to 2008–09).

For secondary schools, there are small differences between the baseline volatility and counterfactual volatility. It appears that more secondary schools would actually have seen an annual increase in funding per pupil had option 3a been in operation, compared with the current system (73% versus 55%). Overall, there would have been a slightly lower degree of year-on-year volatility for secondary schools had option 3a been in place.

Figure 4.31. Year-on-year volatility under the current system and under a pupil premium
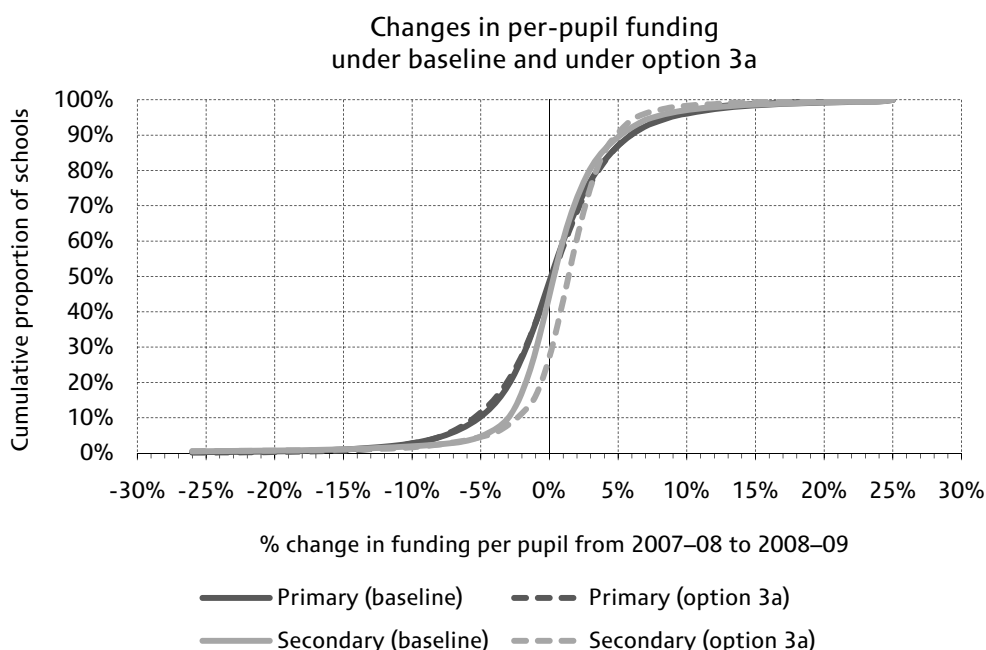
Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

Transitional mechanisms and costs

Our analysis has shown that a non-negligible proportion of schools would experience large reductions in per-pupil funding (of 10% or more) under a number of options for a single national funding formula. At the same time, a number of schools would experience large increases in per-pupil funding (of 10% or more). The implementation of these changes in a single year would undoubtedly be destabilising. Schools experiencing large losses would need to suddenly cut back resources, whilst schools experiencing sudden and large gains may not be able to spend all the extra funds immediately in an efficient manner. Here, we consider transition mechanisms to move to a national funding formula over a period of time (instead of instantaneously) and we look at the costs of doing so. We again only consider option 3a from the modelling in Section 4.3.

The most natural way to smooth the transition to a single national funding formula is to impose a limit on the maximum loss that schools can receive in any given year. This would effectively phase in a single national funding formula over a number of years rather than immediately. For instance, if a temporary floor of 5% is imposed, then no school can incur an annual loss of more than 5% of its real-terms funding per pupil; any school that would stand to lose more would receive some additional funding to limit its losses to 5% each year. As a result, schools that are potentially very significant losers from a pupil premium might instead lose 5% each year (for as many years as are necessary to arrive at their pupil premium allocation), enabling a smoother and more stable path of adjustment to the new system.

We have examined this issue by modelling a range of floors from 3% to 10%. For each floor, we have calculated how many years it would take for at least 99% of schools to reach the level of funding per pupil that they would theoretically have under a single national funding formula. The target of getting 99%, rather than 100%, of schools to eventually be on the new funding system reflects the fact that a small number of schools may have particular funding circumstances for which our modelling cannot control.

In such modelling, we assume no changes in school characteristics (for example, the proportion of pupils eligible for FSM) over time and no real increase in total school funding over time. The first of these assumptions simply reflects the fact that we do not know how school characteristics will change over time. We could have chosen to implement a single national funding formula in previous years and examined the changes over time. However, pupil numbers were falling up until 2008–09, but they are due to rise by just over 0.7% per year between 2010–11 and 2013–14 (Department for Children, Schools and Families, 2009b). The past experience of changes in school characteristics is thus not a fair reflection of likely changes in the coming years. We have chosen to assume a zero real increase in total school funding to reflect the necessary fiscal restraint in operation over the coming years, though such an assumption may well be overly-generous if plans for departmental spending cuts are shared equally across departments.[57] The government currently plans to increase 'front-line' school spending by 0.7% per year in real terms (HM Treasury, 2009, p. 104, para. 6.28), which will maintain real-terms 'front-line' school spending per pupil if the future increases in the pupil population materialise as expected.[58] Our assumption of a zero real increase in school spending is thus equivalent to assuming that Labour's current spending plans are

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[57]See Crawford, Emmerson and Tetlow (2010) for more information.

[58]Authors' calculations using Department for Children, Schools and Families (2009b).

Table 4.4. Possible durations and costs of transition

Floor on losses in real-terms per-pupil spending	Length of transition (years)	Cumulative total cost of transition (£m, 2010 prices)	
		Without ceiling on increases in funding	*With ceiling of 15% per year*
−3%	9	1,650	570
−4%	7	1,130	460
−5%	5	800	370
−6%	5	610	290
−7%	4	470	220
−8%	4	370	170
−9%	3	290	120
−10%	3	230	80

Notes: See Section 4.2 for data sources. All figures presented in 2010 prices.

maintained going forwards, with the real increase in total spending used to maintain spending per pupil in real terms.

Under these assumptions, the first column of Table 4.4 shows how long it would take for 99% of schools to reach their counterfactual level of funding per pupil under a single national funding formula for different values of the floor (again, using option 3a from Section 4.3). Naturally, the smaller the floor (that is, the closer the floor is to zero), the more losses are deferred to future years. Thus, with a smaller floor, the transition is slower and it takes longer for 99% of schools to complete their adjustment. Under a real-terms floor of 3% per year, it would take nine years to reach the formula (for 99% of schools), whereas it would only take three years under a floor of 10% per year. In between these, it would take five years to reach the new formula if schools were allowed to lose up to 5% of their funding per pupil annually.

The next column of Table 4.4 shows the temporary, cumulative increase in school spending required to maintain a given floor over the years that it is required. For instance, imposing a floor of 5% per year would cost a total of £800 million spread over five years (or £160 million a year) in 2010 prices. Extra spending is required in order to limit cuts in individual schools' budgets to 5%, instead of the larger cuts that the formula would imply.

It is clear that some of these floors are quite expensive to implement, and could potentially require more than £1 billion in additional funding. In order to help fund these floors, one could also choose to implement a ceiling on annual increases in per-pupil funding. This might also be appealing if one believes that any large sudden increases in funding would not be spent efficiently by schools. Imposing a ceiling would have the effect of staging any large gains over time. The final column of Table 4.4 illustrates the net cost of imposing each floor while also imposing a ceiling of 15% per year. As can be seen, this significantly reduces the cumulative amount of additional funding that is required. For example, if one chose to implement a floor of 5% and a ceiling of 15% per year, then 99% of schools would be on the new single national funding formula within five years of the reform, and the cost of such a transition would be a cumulative sum of £370 million over five years (or about £75 million a year) in 2010 prices.

Finally, it is important to remember that such transitional mechanisms would not stop individual schools from losing large amounts; they would simply stage such losses over a

number of years. Furthermore, real-terms cuts in per-pupil spending of 5% per year would still be significant for any school experiencing such cuts; schools have become used to real-terms increases. The only way to reduce such losses is through a permanent increase in school funding.

Unresolved issues

There are a number of issues that our modelling has not resolved, but which it would be important to consider for any policymaker implementing a single national funding formula. The most important of these are listed below.

- **SEN funding** – In our modelling, we have kept constant the level of funding for pupils with a statement of special educational needs. The system for funding such statements is currently governed by local authorities. If one were to implement a single national funding formula, one would need to either provide funds to LAs to maintain such a system or create a new body to administer such statements and funding. Our modelling has also ignored the funding of special schools, which would need to be accounted for in any single national funding formula.

- **Newly-opened schools** – We have frozen the funding for all schools that are either newly or recently opened, since such schools currently have special arrangements to account for start-up, transitional and fixed costs. Any national funding formula would need to have similar arrangements, especially in a context where the setting-up of new schools was actively encouraged, as under current Conservative proposals.

- **Central services** – Local authorities currently use about 10–15% of their Schools Budget to provide central services to pupils and schools, and most of these services would still need to be provided with a single national funding formula. Therefore, either funding would need to be provided to LAs to cover such provision or one would need to consider alternative arrangements. Furthermore, one anomaly in our modelling is that we currently penalise schools in LAs that spend small amounts on central services.

- **Area Cost Adjustment** – One of the most important factors influencing the actual funding that LAs and schools currently receive is the Area Cost Adjustment (ACA). This factor aims to account for the differential costs of schools across the country, including the cost of hiring and retaining teachers and support staff. However, the current ACA has not been updated since at least 2005. The current review of the Dedicated Schools Grant aims to consider an adjustment to the ACA; one piece of research commissioned by the review considered the options for a replacement.[59] Therefore, it is clear that any policymakers considering a single national funding formula should also contemplate changing or updating the current ACA.

- **Loss of complexity** – Finally, implementing a single national funding formula would restrict the ability of policymakers to consider local, school-specific or site-specific circumstances. For instance, it is difficult to imagine such a formula taking account of current funding for swimming pools or schools with split sites. Although a national formula would provide simplicity, it could clearly do so at the cost of local differentiation or perhaps a necessary amount of complexity.

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[59]See http://www.teachernet.gov.uk/management/schoolfunding/DSGformulareview/research/.

4.5 Conclusions

This chapter has set out our attempts to model the financial implications of a pupil premium. Doing so involved simulating a range of simple policy options and looking at their impact on both the population of schools as a whole and across various dimensions of school characteristics. Modelling these options has enabled us to scrutinise proposed policies on a much more elaborate level than has previously been attempted to inform the debate with objective empirical analysis.

The policy options have been grouped together according to whether they supplement the existing funding system, replace specific grants or replace almost the entirety of the system. The options in the first category, which we have adjusted in order to approximate current Liberal Democrat policy, are the most financially generous to schools and increase progressivity. However, the funding for them must be found from other sources: the Liberal Democrats have proposed cutting tax credits to above-average-income families, as well as other areas of spending. These options also have the potential to add to the complexity of the current school funding system, rather than reducing it. The second group of options, one of which is revenue-neutral, might be a first attempt at implementing a pupil premium during a period of unprecedented fiscal restraint. However, we have seen that such policies, based on scrapping specific grants, have the potential to create a vast number of losers. Finally, the last group of options represent, in principle, the most radical sort of reform: scrapping both LA formula funding and specific grants. Such an approach is ambitious and speculative but might tempt a policymaker wishing to streamline and centralise the current system. This was the option proposed by Policy Exchange, and it is currently a long-term aspiration of the Conservative Party.

Many key findings emerge from this analysis. First, there is a trade-off between the amount of coverage in a deprivation measure and the size of the premium that can be attached to it. Adding a new measure of deprivation, or moving to a broader measure, will clearly result in funding being spread more thinly across schools unless additional resources are committed. Second, specific grants are an important income source, particularly for secondary schools and schools with high levels of deprivation. Unless it is deemed acceptable to redistribute revenues away from these schools, compensation for schools that receive a large amount in specific grants would have to be implemented.

When we consider the implementation of a single national funding formula, the number of significant losers would be lower than when replacing specific grants only. There is a lower cost to implementing such an option than one might have expected. This should not be surprising, as specific grants are allocated to all schools to some extent whereas a pupil premium would be focused on deprived schools. However, LA formula funding may well have intricacies that are designed to achieve a complex set of aims: replacing them with a simpler set of funding rules could have the potential to leave some schools significantly worse off, and any compensatory measures must be carefully worked out.

Our more detailed analysis of a single national funding formula illustrated that one of the key problems with such a reform would be the concentration of gains and losses among particular local authorities. This pattern does not appear to follow an urban/rural split; instead, it is likely to reflect LAs' current split in funding between primary and secondary schools, spending levels on central services, historical factors and measurement error or differing accounting practices.

Another concern might be the risk of higher annual volatility in school funding levels under a transparent national formula. Our analysis, however, has revealed that this is unlikely to be a large problem, especially for primary schools. Furthermore, we also illustrated that one could impose transitional mechanisms in moving to a national funding formula over time, which do not necessarily have to come at a high cost. For example, our simplest option (3a) could be phased in over five years at a temporary, transitional cost of £75 million per year (2010 prices), by implementing a 5% floor in the real-terms cuts any school could receive and a 15% ceiling on any increase. However, this would not remove the possibility of large losses; it would merely stage them over time. Moreover, real-terms cuts in per-pupil spending of 5% per year would still be significant for any school experiencing such cuts; schools have become used to real-terms increases. The only way to reduce such losses is through a permanent increase in school funding.

In short, there are myriad potential ways of structuring a pupil premium, ranging from simple to elaborate. Parameters can be chosen to redistribute from secondary schools to primaries, or from rich schools to poor ones, or vice versa. To converge upon an optimal policy or a set of optimal policies is beyond the scope of this Commentary: doing so would necessarily involve a subjective judgement about whether certain schools receive insufficient funding or too much funding under the current system. Rather, the value of this chapter is in the greater understanding it provides of the implications at the micro level of various potential policy options. This understanding is crucial, and, as with all good policy design, is a necessary step towards minimising the risk of perverse or unintended consequences of any future reform.

5. Conclusions

Both the Conservatives and the Liberal Democrats have proposed the introduction of a pupil premium into the English school funding system, aiming to narrow the achievement gap between rich and poor by attaching greater levels of funding to pupils from disadvantaged backgrounds. In this Commentary, we have reviewed the theory behind the pupil premium, critically assessing the channels through which such a premium may affect the attainment of disadvantaged pupils. We have also empirically examined the options for a pupil premium, assessing their overall effect on the progressivity of the school funding system and the pattern of winners and losers that would result. This work has highlighted a number of key challenges and questions that any policymaker wanting to implement such a policy in the coming years must address.

Our reading of the literature suggests that, at best, the pupil premium is likely to lead to a modest reduction in the attainment gap between rich and poor through the direct effect of extra resources. This policy will not, on its own, abolish the attainment gap, which is still likely to remain large afterwards, still likely to lead to inequalities in later life outcomes and still likely to be passed down through the generations. In order to significantly narrow the achievement gap, interventions must be wider than changes in school resources and must also go beyond schools policy. Socio-economic inequalities in educational outcomes are just as much, if not more, the result of differences in the home-learning environment, parenting, attitudes to education and other factors. At the same time, it is vital that any wider policies be evidence-based, making use of robust evaluation techniques and careful analysis, especially in a tight fiscal environment. If a pupil premium truly reflects a desire to significantly reduce the attainment gap between rich and poor, then the first question to policymakers must be: 'What else are you going to do?'.

The next key question for policymakers is: 'What source of educational disadvantage do you want to target?'. If it is only families in poverty or those with very low incomes, then eligibility for free school meals seems like a good measure to use in a pupil premium; this would also have the advantage of simplicity and is unlikely to create perverse incentives. However, one may feel that such a definition is too narrow and that the measure of educational disadvantage should be wider, incorporating attitudes and socio-cultural factors as well as material resources. In this case, one should strongly consider either using some measure such as MOSAIC linked to average attainment or using a direct measure of pupils' performance at Key Stage 2. Such measures are likely to spread the benefits from a pupil premium more widely to schools with moderate levels of deprivation. Whether this is a good thing depends almost entirely on what sources of educational disadvantage the pupil premium aims to alleviate.

The third key question for policymakers is: 'How will the reform be funded?'. A pupil premium could be on top of the current system of school funding, as proposed by the Liberal Democrats; this option would clearly avoid any school losing its existing funding. Funding for such a scheme would need to be found from other sources: the Liberal Democrats have proposed cutting tax credits to above-average-income families, as well as other areas of spending. However, a pupil premium on top of the current system would not correct any existing flaws in the current system and could actually increase complexity. Moreover, given the level of fiscal restraint required in the coming years, it seems wise to consider alternative options that are either revenue-neutral or involve

smaller increases in additional spending. One alternative option might be to create a pupil premium through the abolition of specific grants from central government, streamlining them to form a pupil premium. This Commentary has shown that such a scheme would lead to a very large number of significant losers and cannot be seen as feasible, even with additional levels of spending. A more speculative option, as proposed by Policy Exchange and aspired to by the Conservatives, is the creation of a single national funding formula incorporating a pupil premium.

Following on from this, the next key question is: 'What level of losses for schools are you prepared to accept?'. The implementation of a very simple single national funding formula with no additional spending could lead to real-terms losses in excess of 10% for some schools. Such a redistribution of per-pupil funding could be undertaken as a gradual transition, however. It is possible to move to a new national funding formula over a period of five years with a 5% floor on the real-terms cuts that any school could receive in a given year (and a ceiling of 15%). This would come at a relatively low temporary cost of about £75 million per year. Nevertheless, such a mechanism would not avoid the need for large cuts in some schools; it would merely stage them over time. A 5% real-terms cut in per-pupil spending is still a significant reduction in per-pupil funding, especially if it is sustained over a number of years, which would have to be the case for some schools. The only way to avoid such losses is through a permanent increase in school spending.

It is obvious that the questions of where the money will come from and what level of losses a policymaker is willing to accept cannot be separated. They are both vital questions, and the answer to each informs the answer to the other. Unfortunately, in the present tight fiscal environment, any policymaker wanting to implement a national funding formula will have little additional spending with which to compensate schools experiencing large losses and is likely to face significant protests from the schools seeing their funding cut. Our analysis also reveals that schools experiencing large losses may be clustered together in certain local authorities, which could easily create a concentrated political constituency opposed to such a policy.

Finally, a single national funding formula would replace local discretion over school funding with a centrally-determined national formula. This would certainly increase transparency and reduce complexity. However, simplicity is a double-edged sword: it might restrict the ability of school funding decisions to respond to particular circumstances (for example, if a school has a swimming pool or a split site) or to reflect local preferences, and it would certainly reduce local accountability. Therefore, the penultimate question is: 'Do you want to replace local discretion over funding with a simple, central formula?'.

The pupil premium clearly has a noble aim: to narrow the achievement gap between rich and poor pupils. However, our analysis has shown that any revenue-neutral or low-net-cost option is likely to lead to significant numbers of schools experiencing large losses in per-pupil funding. Minimising such losses with additional public spending is likely to prove difficult given the level of fiscal restraint required over the course of the next parliament. The last question facing a policymaker is therefore: 'Do the likely gains from implementing a pupil premium – greater levels of funding for deprived schools, a modest reduction in the achievement gap between rich and poor pupils, as well as greater simplicity and transparency – outweigh the potential costs – loss of local discretion and significant levels of cuts to per-pupil funding across some schools?'.

Appendix
Regression results for 2008–09

Table A.1. Total income, 2008–09

	Primary	Secondary
Base per-pupil amount	2,401.258***	3,446.109***
Extra amount per FSM pupil	2,462.912***	3,366.849***
Extra amount per EAL pupil	391.013***	−31.072
Extra amount per SEN pupil with statement	11,610.627***	11,400.469***
Extra amount per SEN pupil without statement	509.890***	492.086***
Extra amount per boarding pupil	3,039.880	777.950**
Extra amount per nursery pupil	3,599.820***	n/a
Extra amount for being a Voluntary Aided or Voluntary Controlled school	−22,898.100***	−64,954.618***
Extra amount for having a sixth form	n/a	158,168.740***
Extra amount per sixth-form pupil	n/a	1,611.347***
Constant	165,830.889***	351,239.942***
Number of observations	17,021	3,247
Number of local authorities	149	148
R-squared	0.94	0.95
Mean income per pupil	3,900.73	4,864.12
Median income per pupil	3,705.74	4,700.89

EAL – English as an additional language; FSM – free school meals; SEN – special educational needs.

** – significant at 5% level; *** – significant at 1% level.

Table A.2. Formula income, 2008–09

	Primary	Secondary
Base per-pupil amount	2,245.704***	3,143.245***
Extra amount per FSM pupil	1,774.890***	1,889.815***
Extra amount per EAL pupil	171.167***	−45.122
Extra amount per SEN pupil with statement	10,329.351***	8,906.645***
Extra amount per SEN pupil without statement	287.864***	274.045***
Extra amount per boarding pupil	3,535.270	568.946***
Extra amount per nursery pupil	3,373.737***	n/a
Extra amount for being a Voluntary Aided or Voluntary Controlled school	−19,862.901***	−60,242.984***
Extra amount for having a sixth form	n/a	148,335.799***
Extra amount per sixth-form pupil	n/a	1,529.146***
Constant	124,416.000***	214,533.402***
Number of observations	17,024	3,249
Number of local authorities	149	148
R-squared	0.95	0.97
Mean income per pupil	3,317.08	4,093.84
Median income per pupil	3,170.70	4,037.43

EAL – English as an additional language; FSM – free school meals; SEN – special educational needs.

** – significant at 5% level; *** – significant at 1% level.

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