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**Research Report**

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# Long-Run Trends in School Spending in England

IFS Report R115

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# Preface

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Data from the National Pupil Database were kindly made available by the Department for Education. This report also makes use of publicly-available school-level data that can be downloaded from the current Department for Education website (<https://www.gov.uk/government/organisations/department-for-education/about/statistics>) as well as archived versions of the website for its predecessor departments. Historical local-authority-level data were downloaded from the CIPFA stats website (<http://www.cipfastats.net/>) and Census data from Nomis (<https://www.nomisweb.co.uk/>).

The data creators, depositors, copyright holders and funders bear no responsibility for the analysis or interpretation of the data presented here. Responsibility for interpretation of the data, as well as for any errors, is the authors' alone. Correspondence to [chris\\_b@ifs.org.uk](mailto:chris_b@ifs.org.uk) or [luke\\_s@ifs.org.uk](mailto:luke_s@ifs.org.uk).

# Contents

Executive Summary	1
1. Introduction	5
2. Institutional Background	7
3. Data and Methods	13
4. Average School Spending per Pupil	17
4.1 Long-run trends in per-pupil expenditure	17
4.2 Relationship with pupil numbers	21
4.3 Summary and conclusions	26
5. Variation across Local Authorities and Schools	28
5.1 Level of variation	28
5.2 Balance between primary and secondary spending	30
5.3 Social deprivation	31
5.4 Regional differences	37
5.5 Summary and conclusions	38
6. Total Spending on Cohorts	41
6.1 Across-cohort analysis	41
6.2 Within-cohort analysis	44
6.3 Summary and conclusions	48
7. Conclusion	49
Appendix	51
References	57

# Executive Summary

The government has committed to freezing school spending per pupil in cash terms in England up to 2019–20. It has also committed to introducing a national funding formula for schools in England from 2017 onwards. In this report, we provide historical context for these changes by showing how spending per pupil has evolved since the 1970s – comparisons that were previously unavailable. We also provide the first estimates of total school spending received across different cohorts over time and the variation within individual cohorts.

## Institutional changes

The current school funding system in England follows a two-stage process. First, central government allocates a hypothecated grant for school funding to local authorities (the Dedicated Schools Grant). Second, local authorities allocate almost all of this funding to schools in the local area using their own locally-determined funding formula, the most important element of which is pupil numbers. Although Academies and Free Schools have more freedom over resources, management decisions and the curriculum, they are subject to the same funding system. However, the system has not always worked in this way and it is likely to change even more substantially over the next five years if government proposals are implemented as planned.

Reforms over the last 30 years have predominantly acted to reduce the role of local authorities, with individual schools and central government playing a larger role. In the 1980s, local authorities received a grant from central government for schooling, but were then largely free to determine how much to spend in total and determined the spending decisions of all schools in their area. Now, central government determines how much local authorities spend on schooling and schools then make their own resource decisions. Local authorities' remaining influence is to allocate budgets to individual schools using their own locally-determined (but heavily-regulated) formula and to control centrally-provided services. The Academies programme has further increased the role of schools in determining their own resource decisions.

Under current proposals, central government would set a formula that would apply across all state-funded schools. If implemented, this would largely abolish the role of local authorities in the school funding system.

## Average school spending per pupil

There has been significant growth in average school spending per pupil over the last 30 years. However, this has not happened evenly over time. Most of the growth was concentrated in the 2000s. In particular, we find that:

- Over the 1980s and 1990s, primary school spending per pupil grew by about 2.2% in real terms per year, on average, whilst secondary school spending per pupil grew by about 1.5% per year.
- The ratio of secondary to primary school spending per pupil fell from around 1.6 in the 1980s to 1.3 by the 2000s.
- Over the 2000s, the growth in primary and secondary school spending per pupil significantly accelerated to around 5% per year in real terms.
- This growth came to an end in 2011–12, with average school spending per pupil largely frozen in real terms between 2011–12 and 2015–16.

Over the current parliament, the government has committed to freezing school spending per pupil in cash terms. Given current inflation expectations, this is expected to result in a real-terms cut in school spending per pupil of at least 7% (or about 8% if we account for changes in the costs likely to be faced by schools). This would be the largest real-terms fall over any period since at least the late 1970s. However, due to the substantial growth in the 2000s, real school spending per pupil in 2019–20 would still be more than 50% higher than in 2000–01.

One feature of trends in school spending per pupil at the national and local authority level is the degree to which they reflect changes in pupil numbers. We consistently find that higher growth in pupil numbers at the local authority level leads to a fall in spending per pupil; a 10% increase in pupil numbers is associated with falls of 4% and 2% in expenditure per pupil at the primary and secondary phase respectively. This relationship has weakened over time, given reforms that have strengthened the link between spending and pupil numbers, but the relationship still exists today.

## Variation in school spending per pupil

There is significant variation in spending per pupil across schools and local authorities. In 2013–14, 10% of secondary pupils attended schools that spent more than £7,800 per pupil, while 10% attended schools spending less than £5,100. Some of these differences are readily explained by other features of the schools, but many are not. That is why the government is currently consulting on radical plans for the gradual introduction of a national school funding formula in England from 2017–18 onwards. We set these reforms in a proper historical context by examining changes in the variation in spending per pupil across schools and local authorities over time. We find that:

- There is nothing new about differences in spending per pupil across local authorities. Variation in spending per pupil across local authorities is now relatively low in historical terms and much more strongly linked to the characteristics of areas than throughout the 1980s and 1990s.
- At the same time, the differences in spending per pupil *within* local authorities have become a more significant source of variation. This reflects



decisions to focus spending on particular sorts of schools and in different ways across local authorities.

- One of the most important changes has been the ever-increasing focus of spending per pupil on the most deprived schools. The difference in spending per pupil between the most deprived quintile of secondary schools and the least deprived was about 30% in 2013–14; the equivalent difference for primary schools was 25%. These figures compare with differences of just over 10% in the late 1990s. This reflects both central government decisions to target funding at more deprived local authorities and schools, and decisions by local authorities to target their funding at the most deprived schools in their local area. Even among similarly deprived local authorities, increasing amounts of spending have been focused on the most deprived schools.
- There is also significant variation in the ratio between secondary and primary school spending per pupil across local authorities. However, this variation is also much less than it once was.
- Local authorities in London have for a long time received higher levels of spending per pupil than the rest of England, with inner London receiving the highest levels. Spending per pupil in inner London is 40% higher than outside London, reflecting higher levels of social deprivation and costs in London (e.g. higher teacher salaries). However, this differential was higher in the early 1980s, at around 60%.

The government has recently proposed replacing all 152 local-authority-specific formulae with one single national funding formula. This will ensure that areas and schools with similar characteristics receive similar levels of funding. We have shown that the local-authority-level variation in school spending is already strongly linked to local authorities' characteristics (e.g. deprivation level); therefore this reform is unlikely to lead to significant redistribution across local authorities (unless the government chooses to prioritise funding differently). More of the current variation in spending per pupil across schools reflects variation within local authorities and the different weights they put on different characteristics. Harmonising the formula across local authorities will therefore lead to big changes in funding within local authorities. How substantial these changes are will depend on the formula the government eventually proposes. When this is published, we will analyse how different sorts of schools and areas will be affected by the new formula.

## Total spending per pupil across and within cohorts

Although it is important to analyse trends in school spending per pupil, what may matter most for outcomes is the total spending pupils receive over all years they spend in school. In this report, we provide the first measures of total school spending received across different cohorts over time and the variation within individual cohorts. We find that:

- Children taking their GCSEs in Summer 2015 will have received £57,000, on average, in current school spending over their time in school from Reception to Year 11 (2015–16 prices).
- The total spending experienced by cohorts adjusts slowly to changes in the annual growth rate of school spending. For example, annual school spending per pupil rose by about 40% in real terms between 1999–2000 and 2004–05. In contrast, total cumulative spending per pupil had only risen by about 20% over the same period. By about 2011, this difference had unwound. The same effect, however, will cause the cumulative spending per pupil to continue to rise until at least 2020 despite constant or falling annual spending.
- There is a high level of variation in the total spending experienced by pupils within the same cohort (based on the level of spending at schools when pupils attend them). Amongst pupils taking their GCSEs in 2013, about 10% of pupils had experienced school spending levels in excess of £67,000, whilst 10% had experienced spending of less than £49,000 in 2015–16 prices. The sheer size of these figures illustrates the importance of ensuring that the school funding system faithfully reflects policymakers' priorities.
- Because cohort-level spending is the sum of spending over a long time frame, annual policy changes can have unintended consequences. For example, the sudden increase in school spending in the 2000s meant that cohorts taking their GCSEs in the early 2000s received a large share of spending when they were in secondary school. Going forward, real-terms cuts to spending per pupil mean that pupils taking GCSEs in the next five years will receive a larger share of spending in primary school than earlier cohorts. There is not much policymakers can do to avoid such consequences, but it does show that examining spending at the cohort level provides a richer description of what inputs pupils received and when in their schooling careers.

In future work, we will seek to relate changes in cohort spending to pupils' educational outcomes, making use of the unintended and sharp changes in spending we document in this report. Moreover, the level of spending pupils experience in schools is just one component of the total level of education spending pupils receive from the state. Future work will seek to incorporate spending on the early years and on further and higher education. This will allow us to examine how changes in spending and participation amongst different groups of pupils at different stages of education have affected the level of resources they receive from the state.

# 1. Introduction

The day-to-day or current school budget in England stood at £40 billion in 2015–16. Behind health, it represents the second-largest area of public service spending. Like the NHS, schools in England experienced a relatively protected spending settlement under the last parliament, at least compared with many other public services. The new Conservative government has protected school spending in this parliament too. However, due to a combination of rising costs and pupil numbers, we currently forecast that current school expenditure per pupil will fall by over 7% in real terms between 2015–16 and 2019–20. Although sizeable, this is still a lot smaller than the 18% cuts across unprotected departments expected over this parliament.

This tight spending settlement for schools in England raises a number of important questions. How does this compare with past changes in school spending per pupil? When was the last time schools experienced sustained cuts of this magnitude? However, answering these questions requires consistent long-run data on per-pupil spending in schools, which have hitherto been unavailable. In this report, we derive a consistent time series of current spending on primary and secondary spending per pupil at the local authority level and use this to provide a context for recent and future changes in school funding.

The new government has also signalled its intention to reform the school funding system, with a consultation in March 2016 setting out proposals for a new national funding formula for schools in England. This is aimed at ensuring schools in similar circumstances and areas receive similar levels of funding per pupil. In this report, we therefore also seek to provide historical context for these proposed reforms by showing how spending varies across areas and schools, and how these differences have grown up over time.

Although it is important to analyse trends in school spending per pupil, what matters most for outcomes and understanding the full effects of the school funding system is the total spending pupils receive over all years they spend in school. No pupil experiences the current or cross-sectional school funding system across all stages in any given year: each pupil experiences a succession of different funding systems as they progress through education. For instance, the total spending received by the cohort taking their GCSEs in 2015 was a product of the school funding systems in operation from 2003–04 to 2009–10 when they were in primary school and from 2010–11 to 2014–15 at secondary school. However, these totals are rarely measured.

In this report, we provide the first measures of total school spending received by different cohorts over time and the variation within individual cohorts. This analysis shows how long changes to the school funding system take to feed through to the total spending received by each cohort. It also indicates some unanticipated changes to school spending as a result of policy changes affecting different cohorts at different points in their life cycle.

The rest of the report proceeds as follows. In Chapter 2, we provide some background by briefly detailing how the school funding institutions in England have changed over time. Chapter 3 lists the methods and data sources we use. In Chapter 4, we present long-run changes in average school spending per pupil in England. Chapter 5 goes into detail on how spending differences across local authorities have grown up over time. Chapter 6 details the variation in total spending per pupil across and within different cohorts over time.

## 2. Institutional Background

School funding in England has historically been the responsibility of local authorities (LAs). However, the exact roles played by LAs and schools have changed considerably over the last 40 years. It is important, therefore, to see changes in the level of spending across LAs in their relevant context, and to look at how this context has changed over the years. These changes are summarised in Table 2.1 and described in more detail below.<sup>1</sup> Throughout we focus on changes in the distribution of funding for day-to-day or current expenditure.

Table 2.1. Changes to the school funding system over the past 40 years

<b>Key periods and individual reforms</b>
<b><i>1970s &amp; 1980s – local authority control over school spending and individual school budgets</i></b>
1981 – introduction of new Block Grant system
<b><i>1990s – schools gain control over their own budgets</i></b>
1990 – Local Management of Schools comes into force, with LAs now distributing budgets to individual schools on basis of locally-decided formula
1998 – School Standards and Framework Act places additional restrictions on formula (at least 80% must be allocated on basis of pupil-led factors)
1999 – Fair Funding is introduced, further restricting LA autonomy over formula
<b><i>2000s – further reduction in role of local authorities</i></b>
Whole period – extension of specific grants from central government
Early 2000s – ‘passporting’: LAs must pass on increases in Education SSA
2004 – introduction of Minimum Funding Guarantee
2006 – introduction of ring-fenced Dedicated Schools Grant
2006–10 – period of ‘spend-plus’, when Dedicated Schools Grant was increased by fixed percentage for each LA plus a bit extra
<b><i>2010s – simplification and continued reduction of role of local authorities</i></b>
2011 – specific grants folded into Dedicated Schools Grant
2011 – introduction of Pupil Premium
2012 – many LA responsibilities and spending devolved to schools
2011–15 – cash-terms freeze in LA funding per pupil
2013 – simplified LA formulae applying to all state-funded schools
2015 – top-up funding for ‘under-funded’ LAs

In the 1970s and 1980s, LAs had control over both the total level of school spending in their area and how this money was spent by individual schools.

<sup>1</sup> This information has been taken and collated from a range of different sources on changes to LA finance and school finance over time, including Derbyshire (1987), Department of the Environment, Department of Transport and Local Government Finance (1987), Department of the Environment (1990), Levacic (1993), West, West and Pennell (1993 and 1995), Emmerson, Hall and Ridge (1998), West et al. (2000), West and Pennell (2000), West et al. (2001), Chowdry, Muriel and Sibieta (2008) and Department for Communities and Local Government (2014).

Central government determined the amount it thought was desirable to spend on education and this was paid to LAs in the form of the Education Standard Spending Assessment (Education SSA) which was a component of the Rate Support Grant (RSG).<sup>2</sup> However, there was no requirement for LAs to spend this amount on education, nor about how much to spend on schooling specifically. They could divert resources to other areas of spending or supplement this spending with revenue raised through local taxation.<sup>3</sup> Local authorities also had direct control over the majority of schools' budgets, and so could decide how this money was spent. This included the amount spent on each individual school as well as within-school decisions such as the staffing/non-staffing expenditure split.

Although LAs had considerable autonomy over school spending, central government could indirectly influence the level of spending through the size of the Education SSA (and hence RSG) allocated to each LA. The method of this funding to individual LAs has changed over the years. Prior to 1981–82, the RSG and the Education SSA were determined through a needs-based formula derived from the statistical association between past expenditure and needs.<sup>4</sup> Effectively, need was assessed based on how it was assessed in the past. If in the past it was deemed that LAs needed £*X* per pupil, then funding would reflect this. Hence this method reinforced past spending patterns. In 1981–82, it was replaced with an alternative system known as the Block Grant. Under this new system, the size of the grant was determined by multiplying a set of unit costs of various elements of services by the number of units the LA provided. For education spending, the main 'unit' was the number of individuals of school age<sup>5</sup> in the LA; however, the sparseness of the population and an allocation for Additional Educational Needs were also included. At that time, children with Additional Educational Needs included any of the following: those born outside the UK, Ireland, the Commonwealth or the US; those living without exclusive use of a bath or inside WC; those living in a lone-parent family; those living in a household with four or more dependent children; those where the head of household was semi-skilled or unskilled; and those where a member of the household was claiming supplementary benefit. Reflecting changes in the nature of deprivation, the measures used today tend to focus on eligibility for free school meals, low prior attainment, pupil mobility or measures of neighbourhood deprivation.

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<sup>2</sup> Renamed Revenue Support Grant in 1990.

<sup>3</sup> Local authorities' autonomy to increase spending on education was partially constrained by the 1984 Rates Act, which gave central government the ability to cap LA *total* expenditure. The expenditure 'cap' in 1990–91 was set at either 12.5% above the SSA or £75 of spending per head above the SSA (Goldstein, 1994). Emmerson, Hall and Ridge (1998) show that between 1984–85 and 1990–91, around 5% of LAs had to be 'capped'.

<sup>4</sup> In particular, it was based on a linear regression of total expenditure on a set of background characteristics of LAs.

<sup>5</sup> This is lagged by one year. For example, the number of primary pupils used for the 1987–88 grant was the number of pupils aged 5 and over but under 11 on 31 August 1986 (i.e. those in primary school in the 1986–87 school year).

The level of grant provided to LAs corresponded to the level of 'need' as determined by the central government. However, each LA still had autonomy over the actual amount to spend on schooling.

The introduction of Local Management of Schools (LMS) in 1990 considerably reduced LAs' influence over school spending, although it significantly increased schools' financial autonomy. Local authorities could still choose the level of school spending, but responsibility for individual schools' budgets was devolved to schools.<sup>6</sup> Funding now had to be allocated to schools using a formula based on school characteristics. Local authorities could choose the exact specification of the formula and so had some control over the allocation of funds, but could no longer directly influence within-school spending decisions. There were also restrictions on the specification of the formula LAs could choose – for example, at least 75% of school funding had to be allocated on the basis of pupil-led factors. This was raised to 80% in the 1998 School Standards and Framework Act. In 1999, Fair Funding was introduced, limiting the amount of funds LAs could withhold to fund centrally-provided services and restricting the set of characteristics LAs could use in their allocation formulae.

The role of LAs was then further reduced over the 2000s, with increasing levels of autonomy given to individual schools and an increased role for central government. Throughout the decade, various individual policies and announcements strongly encouraged LAs to reduce the amount held for services delivered centrally, passing on greater levels of responsibility and funding to schools. Specific grants were introduced that had to be passed on to schools in full, with central government determining the precise formula (e.g. Schools Standards Grant, School Development Grant and various Standards Funds). Following on from a so-called school funding crisis in 2003 (when some schools thought they were going to see funding cuts), the Minimum Funding Guarantee (MFG) was introduced in 2004. The MFG ensured all schools received a minimum increase in funding per pupil of at least a given level. This is still in operation today, although it has been set at the much lower level of -1.5% since 2011-12.

Reforms to local authority grants also reduced LAs' autonomy over the 2000s. Until 2006, they had control over the total level of the school spending in their area. They could spend more or less than central government's assessment of their needs. However, in the early 2000s, the policy of 'passporting' meant that central government strongly encouraged LAs to pass on any increases in the Education SSA<sup>7</sup> to schools in full. This meant that, by 2006, LAs could not control individual school resource decisions, the size of the LA-controlled central budget was constrained and LAs faced considerable pressure to pass on any increases in central government allocated education spending. In 2006, this reduction in LA autonomy was formalised when the Education SSA was replaced with the

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<sup>6</sup> Devolved school budgets were first introduced in 1986, but the policy was only formalised with the introduction of LMS in 1990 (Department for Communities and Local Government, 2014).

<sup>7</sup> Or the Schools Formula Spending Share as it had been renamed.

Dedicated Schools Grant (DSG). This grant was ring-fenced. Local authorities had to pass the full amount on to schools (other than the amount held back for central LA school spending). However, in the short term, the introduction of the DSG was not a substantial restriction on LAs as the level of Dedicated Schools Grant in 2006 was determined on the basis of past *spending* levels rather than *funding* levels. In addition to limiting the short-term impact of the reform, this distinction also made the reform relatively generous. Local authorities that spent more than their SSA amounts were now compensated in the form of the grant. This also meant that it was relatively unattractive for LAs to further top up DSG allocations. Indeed, almost no LA topped up its school budget in 2013–14 (Sibieta, 2015a).

Since 2006, the level of the DSG has been determined by central government. However, there was a break from the formula-based approach used to calculate the Education SSA. Instead, funding was calculated using the so-called 'spend-plus' methodology (see Chowdry, Muriel and Sibieta (2008) for more details), which was also introduced in response to the so-called school funding crisis of 2003. Under this approach, the level of the DSG per pupil for each LA was simply calculated as a flat-rate increase on what LAs received the previous year (i.e. last year's DSG per pupil plus  $x\%$ ), with some small additional funding streams on top of this. This meant that the DSG per pupil for each LA failed to change in response to LAs' changing characteristics from year to year. This 'spend-plus' methodology has been in place in one form or other ever since. As a result, LAs' funding levels seem likely to have become increasingly divorced from their characteristics. 'By how much?' is an empirical question, which we address later in the report.

The changes and reforms to the school funding system between 1980 and 2010 had some important, and long-lasting, effects. First, the role of LAs was reduced, with greater devolution of powers to individual schools and a greater role for central government in determining the funding and spending levels within LAs. Second, school funding policy became increasingly focused on delivering stability in funding levels for individual schools and LAs. This had the advantage of giving schools and LAs predictability, but had the adverse consequence that the funding levels of individual schools and LAs are likely to have become increasingly divorced from their changing characteristics and needs (becoming increasingly based on what they received the previous year). Third, the system also became much more complex, with a raft of specific grants and historical factors.

The period since 2010 has seen further reforms to the school funding system, continuing some of the previous trends and (partially) correcting some flaws. Specific grants were streamlined into the Dedicated Schools Grant in 2011, reducing the complexity of the system. In 2012, LAs were required to devolve greater responsibilities and funding to schools, continuing the reduction in the role of the LA. The Pupil Premium was introduced in 2011 providing additional funding in line with the number of pupils eligible for free school meals. This was another separate specific grant, albeit one that was simpler than many of the previous specific grants in operation over the 2000s. A further important reform



to school funding occurred in 2013–14,<sup>8</sup> when LAs were required to use much simpler school funding formulae, with only a certain set of factors allowed to be included. This significantly reduced the complexity of the system and increased transparency.

It is also important to acknowledge the way the Academies and Free Schools programmes have changed the school funding system. Academies and Free Schools are both outside the control of LAs. In light of this, they receive funding from central government to cover the cost of services that would have previously been provided centrally by their LA, and LAs receive a cut in their funding as they have to provide services to fewer schools. The conversion of many schools to Academy status has thus further reduced the role of LAs, a trend which seems likely to continue. Local authorities do, however, continue to play a role in the determination of funding for Academies and Free Schools. Since 2013–14, these funding levels have been determined on the basis of the new simpler funding formula in operation in each LA. This means that the funding of maintained schools, Academies and Free Schools within the same LA will now be determined by the same formula. Prior to this, their funding was determined in a rather complex manner to ensure similar funding to other schools in the same area.

One theme that continued after 2010 was the level of stability in LA funding levels, with allocations (excluding the Pupil Premium) to LAs frozen in cash terms per pupil. This meant that LA funding levels continued to be based on what they were the previous year. This link with historical funding levels was partially broken in 2015, when LAs that were deemed to be under-funded<sup>9</sup> received top-up funding. This equated to £390 million of extra funding for LAs deemed to be under-funded or a 1.3% cash-terms increase in funding per pupil across all LAs (Department for Education, 2014). Around half of all LAs saw an increase in funding as a result, though it will have been significant for only a small number of LAs (Sibieta, 2015a).

Problems remain, however, which has prompted the new government to announce a commitment to introduce a national funding formula for schools from April 2017. The government published a consultation in March 2016 proposing a national funding formula for all state-funded schools in England. This would replace all 152 different LA funding formulae currently in operation with one single formula applying right across England. This would not happen overnight, but would happen gradually over time, with the transition beginning in 2017–18. If delivered, this would represent a substantial reform to the funding system and would largely abolish the role of LAs in determining the funding levels of individual schools. Separate grants would fund central services that would continue to be provided by LAs. At the time of writing, the government is only consulting on the principles and structure of the proposed national funding

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<sup>8</sup> See Department for Education (2012).

<sup>9</sup> According to characteristics such as deprivation level and demographics, which are deemed to represent need.

formula. It has yet to propose monetary levels for each factor and it is thus unclear how different schools and LAs will be affected.

The changes in the school spending system over the last 40 years have had far-reaching consequences. They have mainly acted to reduce the autonomy of LAs. On the flip side, the role of individual schools has significantly increased. The amount of school funding LAs receive has become less closely related to the characteristics that represent their funding needs, particularly with the introduction of the 'spend-plus' methodology. We will see that these changes are important for explaining some of the trends in school per-pupil expenditure in recent years in Chapter 4.

### 3. Data and Methods

Our objective is to create a consistent series of primary and secondary school spending per pupil at the national and local authority level between 1978–79 and the present day. We seek to do this for all pupils aged 5–16 and across all state-funded schools, including Academies where possible. We exclude special schools because funding arrangements for these schools are more complex and driven more by the needs of individual pupils.

In order to achieve this, we have combined three data sources: CIPFA Education Statistics Actuals between 1978–79 and 1999–2000, data from the Schools Section 52/251 returns between 1999–2000 and 2013–14, and data on Academies' financial returns from 2011–12 onwards.

The CIPFA Education Statistics Actuals compiles data returned by each local authority in England and Wales. This includes information about the number of pupils and teachers and a breakdown of expenditure on primary<sup>10</sup> and secondary schooling.<sup>11</sup> The CIPFA data include all expenditure by LAs on schooling.<sup>12</sup> Prior to Local Management of Schools in 1990, this expenditure was primarily spent directly by the LA. After 1990, this expenditure is the amount allocated to schools directly through the LA formula plus the amount spent centrally by the LA. The CIPFA data thus combine school-based and LA-based expenditures. We are unfortunately not able to separate these two components.

From 1999–2000 to 2013–14, we use the Section 52/251 data. These data are compiled from the returns of individual schools about their levels of funding and expenditure each year. Differences between funding and expenditure may emerge when schools do not spend their entire budget. As we are interested in the amount of money spent per pupil in each LA in each year, we use the expenditure data schools report. Importantly, this excludes central spending by LAs. As such, the data from Section 52/251 returns represent school-based expenditure. In all cases, we divide total expenditure in each financial year by the number of full-time-equivalent pupils in the January within the financial year to create per-pupil measures of school expenditure (e.g. January 2013 for financial year 2012–13).

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<sup>10</sup> The expenditure data for nursery and primary are combined for the years 1978–79, 1979–80 and between 1987–88 and 1995–96; therefore we estimate combined nursery–primary per-pupil funding. We then combine this with the primary per-pupil Section 52/251 data using the method outlined below. This is a reasonable assumption, as total nursery funding only constituted 1.2% of total nursery and primary funding in 1986–87.

<sup>11</sup> We use the Net Expenditure variable (available from 1978–79) for consistency across years. This includes spending on teaching staff, other staff, contributions to/from other local education authorities (LEAs) and other net expenditure.

<sup>12</sup> The CIPFA data are coded from PDF documents available from the CIPFA website. We have made every effort to check and correct the data but a small number of errors may remain.

Figures for Academies are not included in the Section 52/251 returns, and financial returns for Academies<sup>13</sup> are only available from 2011–12 onwards. This means all Academies are missing from the data for any period between their foundation or conversion and 2011–12. We do not include schools where information is only available for part of the financial year.<sup>14</sup> A number of further inconsistencies that remain mean the spending per pupil will be higher for Academies than for similar maintained schools. First, Academies' financial data relate to the academic year, rather than the financial year. Second, Academies' expenditure will include funding for services provided by LAs for maintained schools. Third, sponsor Academies tend to be located in more deprived, urban areas, which typically receive higher levels of funding. This means the exclusion of Academies before 2011–12 will likely depress the recorded measure of overall spending below its true level and their inclusion afterwards will create an artificial jump in spending per pupil (particularly for secondary schools).

To create a consistent LA-level measure of school spending, we need to use a consistent definition of LAs over time. Given that there were significant changes to LAs in the mid 1990s, we use the LAs as they were defined before 1996. We define 1996 LAs using the 'Gazetteer of the old and new geographies of the United Kingdom' produced by the Office for National Statistics (ONS).<sup>15</sup> The Inner London Education Authority was also abolished in 1990 and replaced by 13 smaller LAs (including the City of London). To create a consistent series, we combine these smaller areas to form a single LA in our analysis. This leaves us with 96 LAs in England (we exclude the Isles of Scilly and the Isle of Wight). We calculate LA-level expenditure-per-pupil data from the individual schools data in the Section 52/251 returns. All figures are weighted by pupil numbers to ensure that LAs with larger numbers of pupils are weighted more heavily in our analysis.

To combine our data sets, we apply the LA-level expenditure per pupil growth rates implied by the CIPFA data to extrapolate the Section 52/251 data backwards from 1999–2000. This creates an LA-level data series for school-based spending from 1978–79 through to 2013–14. However, there are three inconsistencies that remain between our data sets. The CIPFA data for the primary phase also include nursery pupils and spending, the Section 52/251 data exclude LA-based spending, and the Section 52/251 data record school expenditure whereas the CIPFA data record school funding (post-LMS).

In creating this series, we make the following assumptions:

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<sup>13</sup> Including both sponsor and converter Academies. We only count ongoing funding for day-to-day spending, thus excluding additional start-up grants.

<sup>14</sup> In 2011–12, data for schools that are part of multiple-Academy trusts are only available for the trust as a whole. We can therefore only calculate spending per pupil for the trust as a whole in 2011–12. For other years, data are available for all Academies at an individual school level.

<sup>15</sup> Available at <http://www.ons.gov.uk/ons/guide-method/geography/beginner-s-guide/glossary/geography-gazetteer.pdf>.

- The inclusion of nursery data does not significantly affect the *growth* rate of nursery and primary funding per pupil in the CIPFA data. Given that nursery spending was relatively small over the period covered by the CIPFA data (up to 1999–2000), this assumption appears relatively minor.
- The growth rate of LA expenditure (equivalent to school funding plus central LA expenditure) provides a good approximation to the growth rate of school-based expenditure within the LA between 1990 and 1999. This appears to be a relatively innocuous assumption. Between 1994–95 and 1998–99, national statistics on school-based spending and total school spending by LA show that both sets of figures for spending per pupil were largely frozen in real terms (Department for Education and Skills, 2004).
- The exclusion of central LA spending from the Section 52/251 does not significantly affect the trends and levels. This is not a benign assumption. Table 3.1 shows estimates of the level of school-based, LA-based and total school spending between 2000–01 and 2011–12 (we do not extend these data beyond 2011–12 as the fast process of Academy conversions and changes to definitions lead to major inconsistencies<sup>16</sup>). The table shows that LA-based spending represented a shrinking share of total school spending over the 2000s and that most of this reduction occurred over the early 2000s,

Table 3.1. School-based and LA-based spending

	School-based spending	LA-based spending	Total school spending	Local authority share
	£ billion, 2015–16 prices			
2000–01	24.2	4.7	28.9	16.2%
2001–02	26.4	4.6	31.0	14.8%
2002–03	27.4	4.5	31.9	14.1%
2003–04	27.4	4.2	31.6	13.3%
2004–05	28.3	4.3	32.6	13.1%
2005–06	30.2	4.5	34.8	13.0%
2006–07	30.7	3.8	34.5	10.9%
2007–08	31.4	3.9	35.4	11.2%
2008–09	31.6	4.1	35.7	11.6%
2009–10	31.4	4.3	35.7	12.0%
2010–11	31.4	4.4	35.8	12.3%
2011–12	34.0	4.1	38.0	10.7%
Real-terms change, 2000–01 to 2011–12	40.1%	–13.1%	31.5%	

Note: School-based spending equates to net expenditure on individual school budget plus devolved net expenditure on threshold and performance pay.

Source: Section 52/251 England Summary Data 2000–01 to 2011–12.

<sup>16</sup> Data are only available on a consistent basis from 2000–01 onwards.

### *Long-run trends in school spending in England*

falling from 16% in 2000–01 to 11% by 2006–07. The share of spending undertaken by LAs has actually remained relatively constant at 11–12% since 2006. In any case, these results suggest that trends in school-based expenditure probably represent an overestimate of the growth rate in total school spending over time. However, because the level of LA spending is relatively small, the difference is not substantial (school-based spending grew by 40% in real terms compared with a 31% growth in total school spending). These trends represent a genuine change in the amounts allocated to individual schools, although the services they are expected to provide with the funding have changed.

We also forecast spending per pupil through to 2019–20 on the basis of actual and proposed school funding policy in England, including changes in the Dedicated Schools Grant and Pupil Premium. From 2015–16 onwards, this forecast equates to a cash-terms freeze in spending per pupil.

## 4. Average School Spending per Pupil

In this chapter, we provide historical context for current and planned future changes in school spending across England by showing how average school spending per pupil has changed since the 1970s. This is the first time such comparisons have been available on a consistent basis for such a long time frame. We also discuss the relationship between changes in school spending and pupil numbers.

The measure of school spending used represents current or day-to-day spending by maintained schools and (converter) Academies in England. This relates to spending on teachers, other staff, learning resources (e.g. books) and other day-to-day running costs (e.g. energy). It excludes capital spending (i.e. spending on buildings). As stated in the previous chapter, we also exclude spending on special schools and central spending by local authorities. The latter represented about 11% of total school spending in 2011–12 (although this share was higher further back in time).

In calculating the long-run growth in average per-pupil expenditure, we adjust for the level of economy-wide inflation. We do not, for the most part, adjust for any additional costs faced by schools over and above the level of economy-wide inflation. For example, we have not adjusted for the 82% real-terms increase in average teacher pay between 1978 and 2007. We do not control for changes such as this because it is difficult to determine how much represents an increase in the cost of inputs and how much represents an increase in the quality of inputs. Increases in average non-teacher wages mean that higher teacher wages are likely to be required to achieve the same quality and number of teachers. For more recent years, however, we are able to describe the change in the actual quantity of inputs. We are also able to compare the likely costs faced by schools over the next few years with the overall level of inflation.

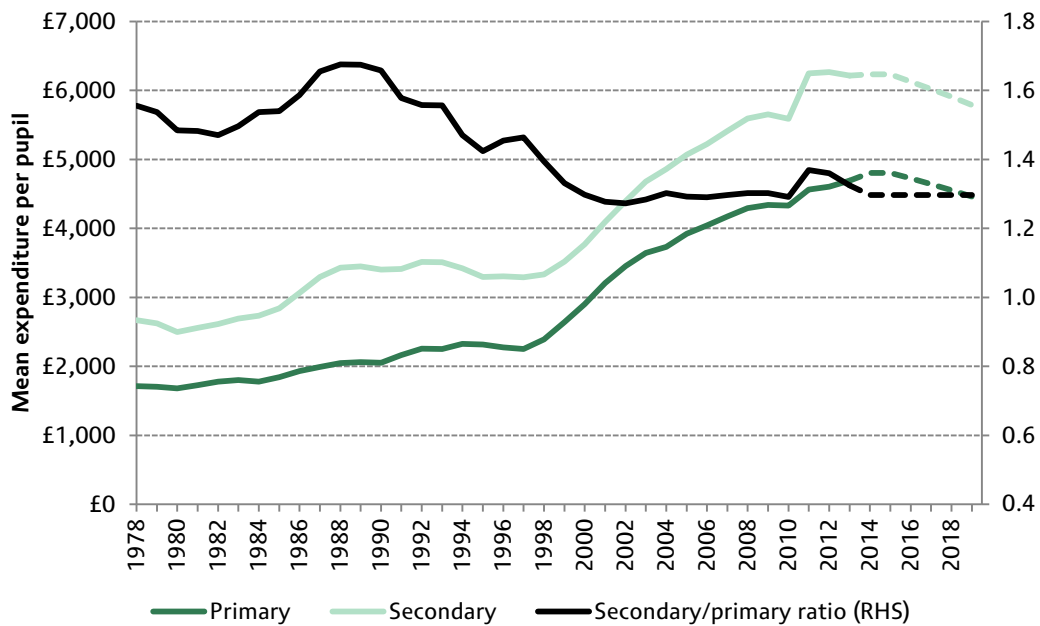
### 4.1 Long-run trends in per-pupil expenditure

Figure 4.1 shows the level of primary and secondary school-based expenditure per pupil between 1978–79 and 2013–14 (in 2015–16 prices), together with forecasts for the period up to 2019–20. Also shown is the implied level of the ratio between secondary and primary school spending.

In the most recent year (2015–16), spending per pupil is estimated to be £4,800 for primary schools and £6,200 for secondary schools. Over the period as a whole from 1978–79 to 2015–16, primary schools' spending per pupil has grown by an annual average of about 2.8% per year, compared with about 2.3% per year for secondary schools.

The faster growth in primary school spending means the ratio between secondary and primary school spending per pupil has fallen over time from around 1.6 in the late 1980s to around 1.3 in the present day. This means that a

Figure 4.1. Mean spending per pupil, primary and secondary (2015–16 prices)



Note: Years refer to financial years (e.g. 1978 = 1978–79). Expenditure adjusted for inflation using GDP deflator.

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies’ financial returns 2011–12 to 2013–14. Projections calculated based on actual policy and spending announcements for 2014–15 to 2019–20.

greater share of spending is now likely to be provided earlier in children’s schooling careers than was the case 30 years ago. We return to this finding in Chapter 6 when we explicitly estimate the level and balance of spending different cohorts have received over their lifetime.

It is also clear that growth in spending per pupil did not occur uniformly. During the 1980s and 1990s, primary school spending per pupil grew by an average of 2.2% per year in real terms. Secondary school spending per pupil grew at a slower pace of around 1.5% per year in real terms on average, with most of the growth occurring during the 1980s. During the 2000s, this growth accelerated significantly to around 5% per year on average for both primary and secondary school spending. This substantial increase in the growth rate of spending was intended to improve overall school standards and reduce inequalities. Alongside this, the government increased investment in school buildings by an even faster rate, with capital spending growing by over 10% on average per year between 1998–99 and 2009–10 (Chowdry and Sibieta, 2011).

In previous work, we have sought to detail how the increase in day-to-day spending over the 2000s translated into actual inputs (Sibieta, 2015b). We showed that around 20–30% of the increase in spending translated into greater numbers of teachers and higher teacher pay per head. A much larger share, however, went towards greater numbers of teaching assistants and non-teaching staff. Increased use of non-teaching staff was partly an intended shift by policymakers at the time and could have helped schools to achieve wider



objectives (e.g. health and well-being). Most research, however, finds that teaching assistants have a limited effect on educational attainment (Blatchford et al., 2011). This may be because teaching assistants are used inefficiently, rather than because they have little effect per se. Indeed, the Education Endowment Foundation has recently launched a campaign to improve the way in which teaching assistants are used.<sup>17</sup> Either way, the increase in spending over the 2000s also led to a substantial change in the mix of inputs used by schools.

There was then a significant jump in observed school-based expenditure in 2011–12, particularly for secondary schools (increases in spending of over £600 per pupil for secondary schools and about £200 per pupil for primary schools). A large proportion of this discontinuity reflects the fast pace of Academy conversion and the inclusion of sponsor Academies in the data.<sup>18</sup> Academies have higher levels of funding and expenditure because they have responsibility for services previously provided by local authorities. The large number of Academy conversions, particularly amongst secondary schools, therefore led to a genuine increase in school-based expenditure, but it came with additional responsibilities. The exclusion of sponsor Academies up to and including 2010–11 may also have artificially depressed observed spending per pupil amongst secondary schools up to 2010–11 (as they tended to be located in more deprived, urban and highly-funded areas), with an apparent increase then observed in 2011–12 when they are re-included. This clearly represents a break in the series and so we acknowledge this break where we compare figures before and after 2011–12.

The fast growth in school spending came to an end after 2011–12. Secondary school spending per pupil was largely constant in real terms between 2011–12 and 2015–16, whilst primary school spending per pupil rose by around 5% in real terms over the same time frame. These trends reflect the policy choices of the coalition government. Core school spending per pupil was frozen in cash terms for much of this period (and so was falling in real terms), and the Pupil Premium was introduced as an additional grant on top of this. The coalition chose to increase the Pupil Premium at a faster rate for primary schools than for secondary, which is why primary school spending per pupil rises and secondary school spending per pupil is constant in real terms. The creation of the Pupil Premium also means that schools and local authorities facing different levels of social deprivation will also have had quite different experiences under the coalition government, a subject we return to in the next chapter.

Going forwards, the new Conservative government has committed to freezing school spending in cash terms over the period up to 2019–20. It has not stated how funding will be split across primary and secondary schools. However, this

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<sup>17</sup> <https://educationendowmentfoundation.org.uk/campaigns/making-best-use-of-teaching-assistants/>.

<sup>18</sup> For example, the differences in expenditure per pupil between Academies and maintained secondary schools represented about £700 per pupil in 2011–12. Converter Academies represented just over a third of secondary schools in 2011–12. Academy conversions can therefore account for about £250 of the growth in secondary school expenditure per pupil.

policy is likely to mean real-terms cuts in spending per pupil of around 7% between 2015–16 and 2019–20.

This figure assumes school costs follow economy-wide inflation. The actual changes in costs faced by schools are likely to be quite different, however. The tight public pay settlement (1% per year on average) will likely reduce growth in school costs, though additional employer pension and National Insurance contributions in 2015 and 2016 will increase costs. Previous analysis of costs faced by schools suggests that accounting for the specific costs faced by schools means that real-terms cuts are likely to be slightly higher, at around 8% between 2014–15 and 2019–20 (Belfield and Sibieta, 2015).

Taking the period between 2011–12 and 2019–20 as a whole, per-pupil expenditure is forecast to fall by just over 2% at the primary level and just over 7% at the secondary level. Such sustained falls in spending per pupil at the national level are rare but not unprecedented; secondary school spending per pupil did not increase over the 10 years between 1987–88 and 1997–98. However, they would constitute the largest falls over any time horizon in the period covered by the data. Nevertheless, such was the rapid expansion in school spending in recent years, per-pupil expenditure will still be over 50% higher in 2019–20 than in 2000–01 (for both primary and secondary), albeit with schools now possessing some extra responsibilities (particularly Academies).

Another source of comparison for these national trends in spending per pupil is how frequently falls of a similar magnitude have been observed at the local authority level. Figures 4.2a and 4.2b compare the expected changes in spending per pupil at the national level between 2011–12 and 2019–20 with what LAs have experienced over the full period covered by our data. The green line shows the median change in spending per pupil across LAs for periods of increasing length (e.g. the median one-year change across LAs across all one-year periods, the median two-year change across all two-year periods etc.). The shaded areas then show how much this has varied across LA–year combinations (e.g. Avon in 1980–81). For example, over a five-year period, we know that 80% of cases saw LAs receiving increases in primary school funding per pupil of between 2% and 40%. Or put another way: over a five-year period, fewer than 10% of cases saw increases exceeding 40% and fewer than 10% saw increases below 2%.

What this makes clear is that sustained real-terms falls are rare, even at the local authority level. A fall of over 7% in real terms over eight years for secondary schools (as is expected between 2011–12 and 2019–20) is extremely rare, as would be a real-terms fall of over 2% for primary schools over eight years (as is expected between 2011–12 and 2019–20).

Therefore, the falls in school spending per pupil expected over the next few years, while not wholly unprecedented, are significant and rare, even amongst individual local authorities. However, they come on the back of rapid growth in school spending over the 2000s, meaning the level of per-pupil funding in 2019–20 is expected to remain more than 50% higher than the level in 2000–01.

Figure 4.2a. Variation in LA-level changes: primary

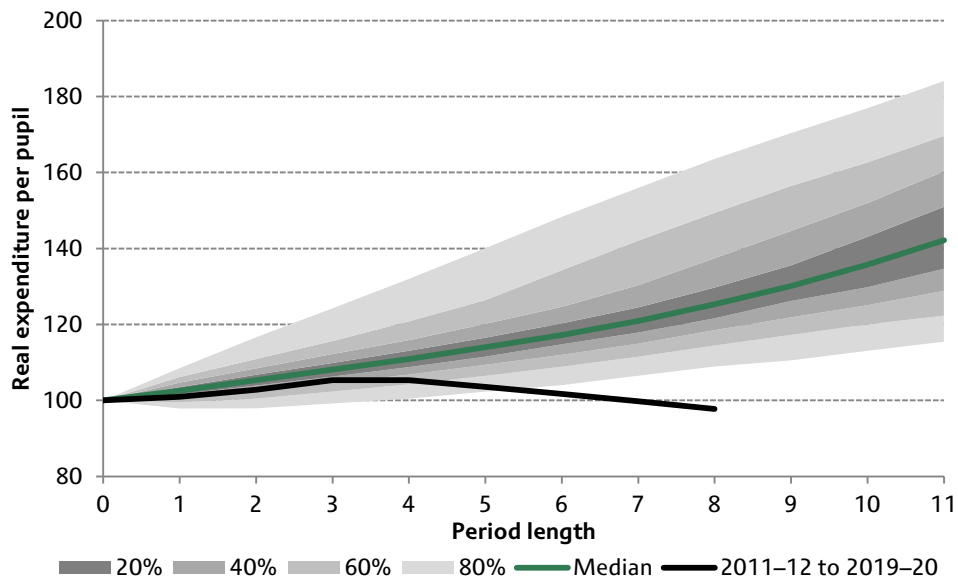
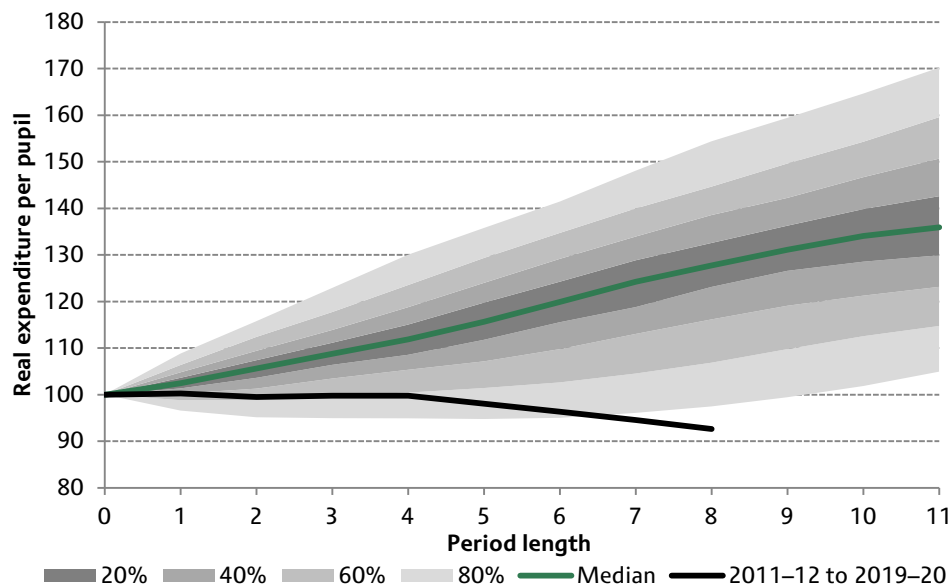


Figure 4.2b. Variation in LA-level changes: secondary



Note: Figures represent average and variation in real-terms changes in school spending across LAs for all periods of length 1 year to 11 years.

Source: CIPFA data 1978-79 to 1999-2000; Section 52/251 data 1999-2000 to 2013-14; Academies' financial returns 2011-12 to 2013-14. Projections calculated based on actual policy and spending announcements for 2014-15 to 2019-20.

## 4.2 Relationship with pupil numbers

One of the most important drivers of the demand for school spending is the number of school-age pupils. The number of pupils has varied significantly over time. For example, during the 1980s, the number of pupils of secondary age fell from 3.8 million in 1980 to 2.9 million by 1990. More recently, the school population has begun to rise, with the number of primary school pupils expected

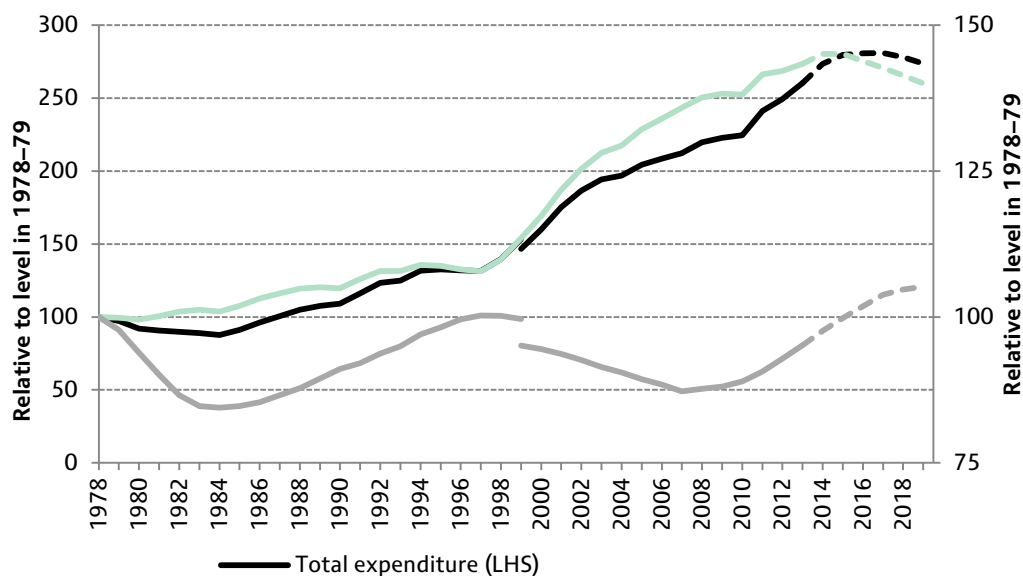
to have grown from 4.0 million in 2010 to reach 4.7 million by 2020, driving a further expected increase in the secondary school population from 2.7 million in 2015 to 3.0 million in 2020.<sup>19</sup>

In the long run, one would not want the level of the total school population in any given year to affect the per-pupil resources available to individual cohorts of pupils (with the exception of extreme cases where we may want to take account of economies of scale in schooling). In the short run, however, resources can be costly to adjust (e.g. hiring a new teacher for five extra pupils, opening or closing a new school) and one might not need per-pupil resources to respond one-for-one with pupil numbers. There are fixed costs that can be spread across pupils, and a small increase in pupil numbers can be accommodated by increasing class sizes in the short run.

In this section, we investigate the changing relationship between pupil numbers and spending, at both the national and local levels.

Figures 4.3a and 4.3b compare changes in the levels of total expenditure, per-pupil expenditure and pupil numbers between 1978–79 and 2019–20 (with future changes based on forecasts of pupil numbers and policy announcements). All figures are indexed to 100 in 1978–79.<sup>20</sup> Interestingly, changes in pupil numbers sometimes appear to have driven changes in spending per pupil, particularly during the 1980s and 1990s.

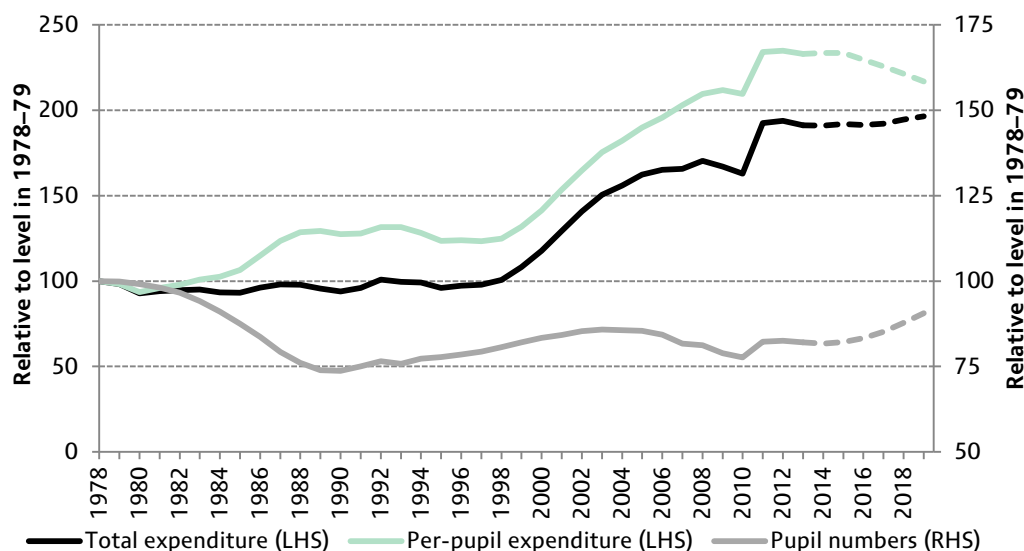
Figure 4.3a. Total and per-pupil expenditure and pupil numbers: primary



<sup>19</sup> <https://www.gov.uk/government/statistics/national-pupil-projections-trends-in-pupil-numbers-july-2015>.

<sup>20</sup> For actual levels of pupil numbers, see Figure A.1 in the appendix.

Figure 4.3b. Total and per-pupil expenditure and pupil numbers: secondary



Note: Years refer to financial years (e.g. 1978 = 1978–79). Expenditures adjusted for inflation using the GDP deflator.

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies' financial returns 2011–12 to 2013–14.

Focusing first on primary schools, the effect of changing pupil numbers appears to be relatively benign. Pupil numbers and total expenditure fell at similar rates during the first half of the 1980s, leading to stagnation in primary spending per pupil in real terms. However, from the mid 1980s to the late 1990s, total expenditure outstripped the growth in pupil numbers, leading to a real-terms rise in spending per pupil.

The picture is much more striking when we look at secondary schools, particularly during the 1980s and 1990s. Total expenditure in secondary schools was almost flat in real terms during the 1980s and most of the 1990s. The changes in spending per pupil instead appear to be highly (negatively) correlated with changes in pupil numbers. The rapid rise in secondary spending per pupil during the late 1980s looks to have been driven by a flat level of spending combined with a rapid fall in secondary school pupil numbers.

Conversely, the rapid expansion in both primary and secondary per-pupil expenditure that followed in the 2000s looks to be driven by a rapid (intentional) increase in total expenditure. Pupil numbers changed relatively little over the same period.

At this point, it is important to say that policymakers will clearly have been aware of the trends in pupil numbers and will have made decisions on total expenditure with these in mind.<sup>21</sup> However, the fact that trends in national spending per pupil

<sup>21</sup> As discussed in Chapter 2, pupil numbers are a significant component in the allocation of the Education SSA from central government to LAs; however, other factors – including budget pressures, political considerations and alternative components of need – are also important in

appear to be strongly correlated with pupil numbers, particularly at secondary level, does not look like optimal policy. It does not seem appropriate that the resources available to different generations should be driven to this extent by how many people are in that generation. This also has important parallels and lessons for today's policymakers. The present government has committed to protecting total school spending in real terms between 2015–16 and 2019–20. This is similar to the commitment under the coalition government. However, because the growth in pupil numbers is expected to accelerate significantly over the next few years, the commitments are expected to imply very different settlements in terms of spending per pupil.

The relationship between total expenditure and pupil numbers at the national level raises the question of how total expenditure responds to changes in pupil numbers at the local authority level. Tables 4.1 and 4.2 report the results of an LA-level regression of percentage change in per-pupil expenditure on percentage change in pupil numbers over all years between 1978 and 2013.<sup>22</sup> If total expenditure responded perfectly to changes in pupil numbers across LAs, we would expect the coefficient on the change in pupil numbers to be 0. That is, an LA seeing larger growth in pupil numbers would not see systematically larger or smaller growth in the level of per-pupil expenditure.

**Table 4.1. Relationship between changes in primary school pupil numbers and spending per pupil**

	Percentage change in primary per-pupil spending			
	1978–2013	1980s	1990s	2000s
% change in primary pupils	–0.379***	–0.537***	–0.382***	–0.290***
(t-value)	(–11.02)	(–9.91)	(–5.53)	(–4.06)

Note: \*\*\* indicates statistical significance at the 0.1% level.

**Table 4.2. Relationship between changes in secondary school pupil numbers and spending per pupil**

	Percentage change in secondary per-pupil spending			
	1978–2013	1980s	1990s	2000s
% change in secondary pupils	–0.181*	–0.575***	–0.530***	–0.112**
(t-value)	(–2.43)	(–7.44)	(–6.56)	(–2.71)

Note: \*\*\* indicates statistical significance at the 0.1% level, \*\* at the 1% level and \* at the 5% level.

setting the total amount and may be responsible for any divergence between changes in pupil numbers and changes in total expenditure.

<sup>22</sup> This analysis controls for the nationwide trends using year fixed effects.

We consistently find that an increase in pupils is associated with a decrease in the level of per-pupil expenditure. Specifically, LAs seeing a 1% faster increase in pupil numbers experienced falls of 0.4% and 0.2% in expenditure per pupil at the primary and secondary level respectively. Looking at each decade separately, we see that this relationship weakens over time. This implies that at the LA level, total expenditure has become more responsive to pupil numbers over time. It should be noted at this point that given the nature of our data on historical school spending levels and pupil numbers, there is likely to be a degree of measurement error in our data. This measurement error has the potential to cause downward bias<sup>23</sup> in our estimates and is perhaps driving some of the observed result. Having said this, every effort has been made to create the most consistent and accurate data set and we believe these estimates represent a true relationship in the funding system – only the magnitude of the coefficients is accentuated by potential measurement error.<sup>24</sup>

To understand these results, we must place them in the policy context discussed in Chapter 2. Since at least 1981–82, the share of national funding that LAs receive for school expenditure has been closely related to the number of pupils of school age. However, there are a number of reasons why actual spending might not reflect changes in pupil numbers. First, the total national level of funding is affected by factors such as budgetary pressures and political considerations as well as measures of need. Second, grants to LAs were based on pupil numbers in the previous, rather than current, year, which meant that grants were slow to adjust to changes in pupil numbers. Third, not all elements of the formula for determining grants to LAs were pupil led. Fourth, there was no requirement for LAs to exactly pass on changes in grants into changes in spending for individual schools.

Since 1981–82, there have been successive policy reforms that strengthened the relationship between total expenditure and pupil numbers, and could potentially explain the results in Tables 4.1 and 4.2. First, the introduction of Local Management of Schools in 1990 required LAs to allocate school expenditure directly to schools according to a formula, the largest component of which had to be pupil numbers. This meant that from 1990, changes in pupil numbers at the school level must have been met by changes in total expenditure. Second, from 2000, the policy of passporting and the subsequent introduction of the Dedicated

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<sup>23</sup> To see this, consider how measurement error would affect a perfectly responsive system – with a true coefficient of 0. An overestimate of growth in pupil numbers would lead to an underestimate of the growth rate of per-pupil funding (as the change in pupil numbers appears in the denominator), leading to a negative relationship between the two. Similarly, an underestimate of growth in pupil numbers would lead to an overestimate of the per-pupil-funding growth rate. An alternative but equivalent regression of the change in *total* school spending on the change in pupil numbers would suffer the same problem. In a perfectly responsive system, the coefficient on change in pupil numbers would be 1. A coefficient below 1 would indicate the system is less than perfectly responsive; however, attenuation bias caused by measurement error in pupil numbers could have the same results.

<sup>24</sup> There is also reason to believe measurement error is lower in more recent data, causing reduced (or potentially no) downward bias.

Schools Grant removed a level of LA autonomy to set total schooling expenditure. Local authorities now had to directly pass on any increases in the DSG into their school budget.

Allocations to LAs are also now based on pupil numbers measured close to the financial year in question (at the moment, October counts are used for the next financial year) rather than measured further back in time.<sup>25</sup> This will have further strengthened the relationship between spending and pupil numbers. However, the deviation from basing LA allocations on measures of need in the 'spend-plus' era may have reduced this effect. For example, in the late 2000s, increases in grants only took account of overall changes in pupil numbers rather than specific changes in primary and secondary pupil numbers. As LAs tend to spend more on secondary schools, differential changes in primary and secondary school pupil numbers could have affected how much LAs could allocate to primary and secondary schools. An LA experiencing faster growth in the number of primary school pupils will have been able to allocate more to schools in their area than an LA experiencing the reverse scenario.

Policymakers are undoubtedly fully aware of the importance of allocating grants to LAs on the basis of pupil numbers, but they may be unaware of the degree to which this was not completely achieved in the past, or even at present. One important change that could be made to address such a problem is ensuring that LA allocations are based on primary and secondary schools considered separately, rather than considering them together. The fact that the per-pupil resources available to different cohorts of pupils are driven by the number of pupils nationally, or locally, raises the question of whether this affected their educational outcomes. We will seek to address this question in further academic research.

### **4.3 Summary and conclusions**

In summary, the growth rate in per-pupil spending has varied over time. During the 2000s, there was a significant growth of around 5% per year on average in real terms. Since 2010, the growth rate has fallen and real-terms cuts are expected between now and 2020. These are expected to lead to a real-terms freeze in spending per pupil over the decade between 2010 and 2020. Although rare, this is not without precedent. At the national level, secondary school spending per pupil was also frozen in real terms between the late 1980s and late 1990s.

Past changes in spending per pupil at both the national and local level appear to be partly driven by changes in pupil numbers. During the 1980s, local authorities seeing the fastest falls in pupil numbers also saw larger rises in spending per

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<sup>25</sup> Previously, for example, pupil numbers in the academic year 1986–87 were used to allocate funding for the financial year 1987–88. The change would mean that pupil numbers in the academic year 1987–88 would have been used instead.



pupil. This relationship has, however, weakened over time and looks set to weaken further with the introduction of a national funding formula for schools in England from 2017 onwards.

## 5. Variation across Local Authorities and Schools

In the previous chapter, we examined changes in the average levels of spending per pupil for schools in England. However, there is also significant variation in spending per pupil across schools and local authorities.

There are two key sources of heterogeneity in the school funding system in England. First, local authorities receive different levels of grants from central government. These are intended to reflect differences in costs and needs across LAs. However, the priority attached to different factors by central government has changed over time. Second, LAs make different choices with regard to how much to allocate to individual schools, though the choices they are able to make have changed over time. Before Local Management of Schools, schools were not allocated individual budgets. Since 1990, LAs have set their own funding formulae and the extent to which they prioritise different factors will have affected the distribution of spending across individual schools.

In what follows, we analyse how the distribution of spending across LAs and schools has changed over time. We start by analysing the overall level of variation, before addressing the extent to which spending is targeted at more deprived schools and areas, and then finally showing differences across geographical areas.

This provides further information on how the shape of the state is changing over the long run, particularly the way the state seeks to engage in redistribution. It also helps inform the current policy priority of reforming the school funding system to achieve a 'fairer' distribution of funding across schools and areas.

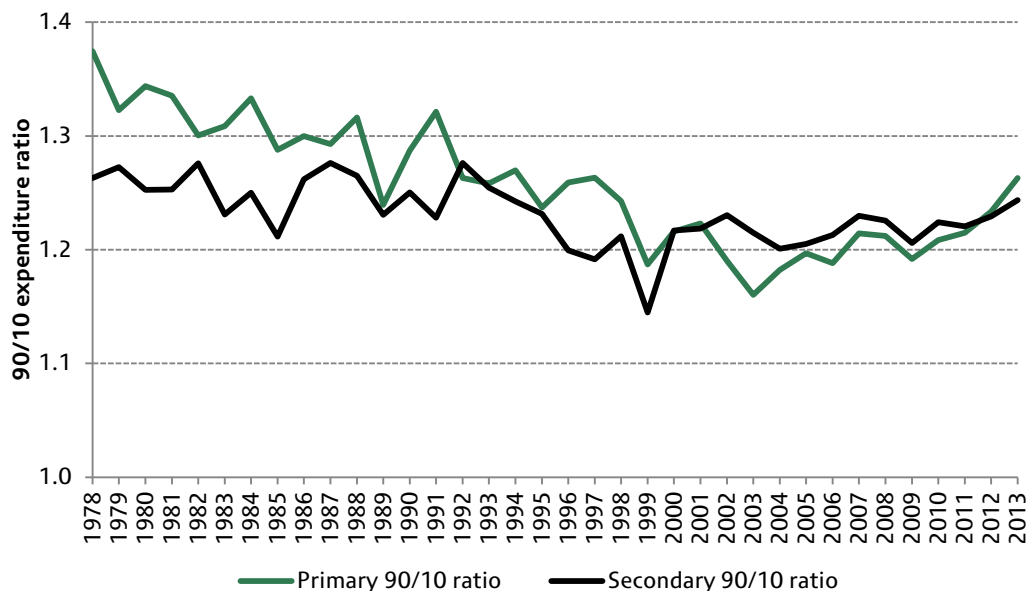
### 5.1 Level of variation

Figure 5.1 shows the variation in primary and secondary school-based spending per pupil across LAs over a long run. In particular, we show the ratio of the 90<sup>th</sup> to the 10<sup>th</sup> percentile in spending per pupil across LAs (these are weighted by pupil numbers, which means that 10% of pupils are in LAs with average per-pupil expenditure above the 90<sup>th</sup> percentile and 10% of pupils are in LAs below the 10<sup>th</sup> percentile).

The graph shows that there is significant variation across LAs. In 2013–14, the relative difference between the 90<sup>th</sup> and 10<sup>th</sup> percentiles stood at 26% for primary schools and 24% for secondary schools. This variation is not new, however, and was actually larger going further back in time. For instance, the gap between the 90<sup>th</sup> and 10<sup>th</sup> percentiles in the early 1980s was over 30% for primary school spending and over 25% for secondary school spending per pupil. The variation has, however, increased slightly since the mid 2000s, as we would have expected given the operation of the 'spend-plus' methodology reinforcing

the existing funding and expenditure differences. In what follows, we examine how this variation is explained by the region and deprivation level of the local

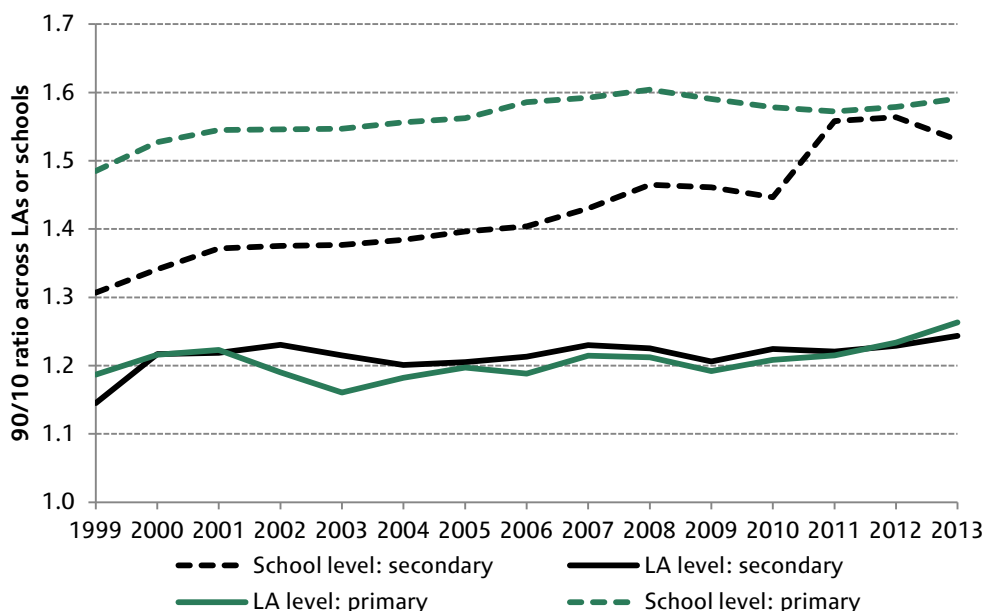
Figure 5.1. Ratio of 90<sup>th</sup> to 10<sup>th</sup> percentile for primary and secondary school spending per pupil across local authorities



Note: Years refer to financial years (e.g. 1978 = 1978–79). Adjusted for inflation using GDP deflator.

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies’ financial returns 2011–12 to 2013–14.

Figure 5.2. Ratio of 90<sup>th</sup> to 10<sup>th</sup> percentile of spending per pupil across local authorities and schools



Note: Years refer to financial years (e.g. 1999 = 1999–2000). Adjusted for inflation using GDP deflator.

Source: Section 52/251 data 1999–2000 to 2013–14; Academies’ financial returns 2011–12 to 2013–14.

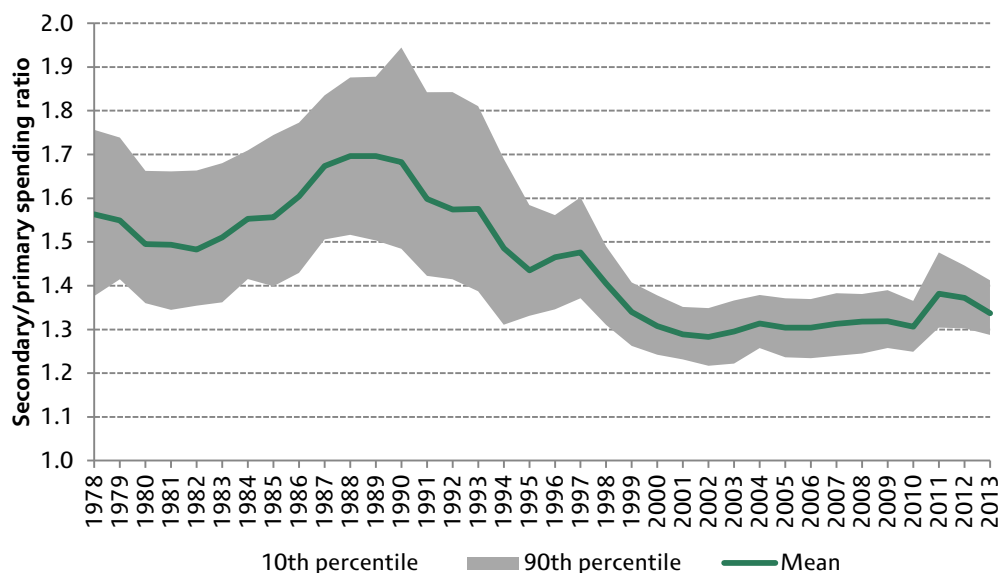
authority, how it compares with the variation in spending per pupil across schools and how these relationships have changed over time.

Figure 5.2 compares the level of the 90/10 ratio across LAs with the 90/10 ratio in spending per pupil across schools. As one might expect, there is greater variation across schools than across LA averages, reflecting the variation in expenditure that exists between schools within the same LA. The 90/10 ratio in spending per pupil is around 1.59 across primary schools (compared with around 1.26 across LAs) and 1.53 across secondary schools (compared with 1.24 across LAs). In cash terms, this means that 10% of pupils attended secondary schools that spent more than £7,800 per pupil in 2013–14, while 10% attended schools spending less than £5,100 (for primary, the figures are £5,900 and £3,700). Interestingly, however, whilst the variation in spending per pupil across LAs has been relatively stable over the past 15 years, the variation in spending per pupil across schools has increased substantially. This implies that the increased variation in spending per pupil has been driven by increased variation in spending per pupil *within* individual LAs. This is a theme we will return to throughout this chapter.

## 5.2 Balance between primary and secondary spending

One of the key choices local authorities make in their funding formulae for individual schools is how much they allocate to secondary schools relative to

Figure 5.3. Variation in the secondary/primary spending ratio across local authorities (mean, 10<sup>th</sup> percentile and 90<sup>th</sup> percentile)



Note: Years refer to financial years (e.g. 1978 = 1978–79). Adjusted for inflation using GDP deflator.

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies' financial returns 2011–12 to 2013–14.

primary schools. Fortunately, this is the one choice we can document over the long run in a consistent manner and it is a choice that LAs have always been able to make. Figure 5.3 shows the average level of the ratio between secondary and primary school spending per pupil across LAs, together with the 10<sup>th</sup> and 90<sup>th</sup> percentiles to represent the degree of variation across LAs.

Figure 5.3 shows that there is considerable variation across LAs: 10% of pupils live in LAs where the ratio is 1.41 or higher and 10% live in LAs where it is below 1.29. Although this variation is substantial, it is clearly a lot lower than it once was. The level of variation seems to have peaked in the late 1980s and early 1990s. For instance, in 1990, 10% of pupils lived in LAs where the ratio was above 1.94 and 10% lived where it was below 1.48. This greater variation is almost certainly connected to the fact that there were substantial changes in primary and secondary pupil numbers occurring at this time and the finding from the previous chapter that these changes in pupil numbers were not being fully reflected in the spending undertaken by LAs. In any case, there is still variation in the amounts LAs allocate to primary and secondary schools, but it is now considerably less than it once was.

## 5.3 Social deprivation

One of the key drivers of differences in spending per pupil across schools and local authorities is social deprivation, with higher levels of spending targeted at higher levels of deprivation, reflecting perceptions of differences in educational need. In this section, we document the dramatic changes in the levels of spending targeted at more deprived schools and areas over time.

### Across local authorities

We start with the changing patterns in spending per pupil by the level of deprivation at the LA level, which can be extended back to the late 1970s. The main challenge here is constructing a consistent measure of deprivation, as the standard measure – eligibility for free school meals (FSM) – is only available back to 1993. We focus on the proportion of individuals in each LA in social housing as measured in the Census. Those entitled to social housing are typically on out-of-work benefits or low earnings, so this measure provides a good indicator of social deprivation.<sup>26</sup> However, this measure is only recorded every 10 years (when the Census is conducted) and there were substantial changes in the proportion of people in social housing during the 1980s and 1990s as a result of the right-to-buy policy. Fortunately, our analysis shows that these problems are less severe than one might think. We focus on differences in spending per pupil by quintile of the proportion of people in social housing (at the closest Census). When the

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<sup>26</sup> Alternative indicators of deprivation – the unemployment rate and the percentage of FSM-eligible pupils (since 1993) – are used in Figures A.6 and A.7 in the appendix. These present qualitatively similar findings. Figures A.4 and A.5 repeat the analysis using social housing but excluding inner London; the trends are similar here too.

quintiles are updated every 10 years, there is little discontinuity in the levels and differences in spending per pupil. Furthermore, Figures A.2 and A.3 in the appendix confirm that the proportion of people in social housing is very well correlated with the proportion of pupils eligible for FSM for the period since 1993. Those in the most deprived quintile by the social housing measure also have the highest proportion of pupils eligible for FSM.

Figure 5.4a. Primary school funding by quintile of social housing: ratios (relative to quintile with lowest share)

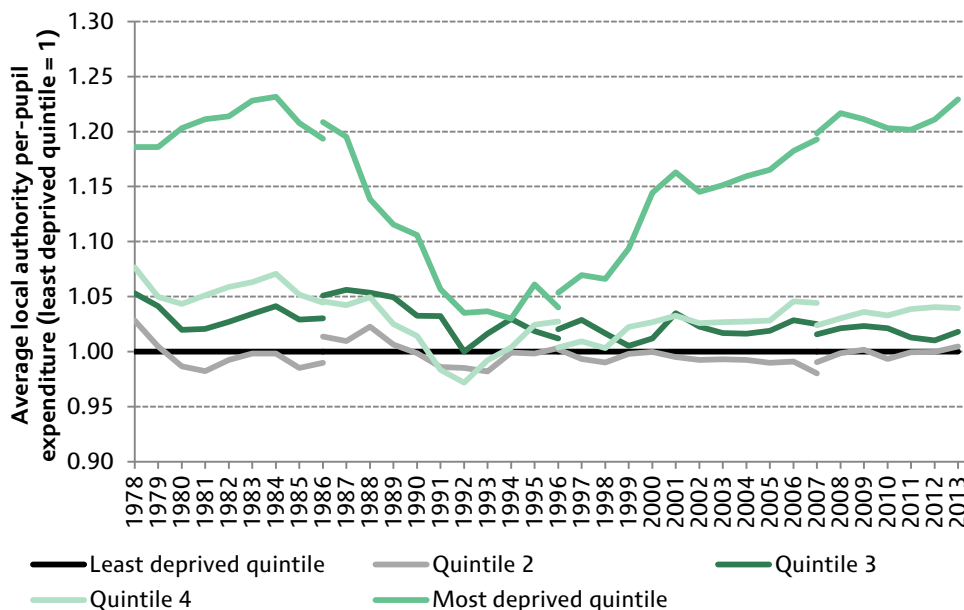
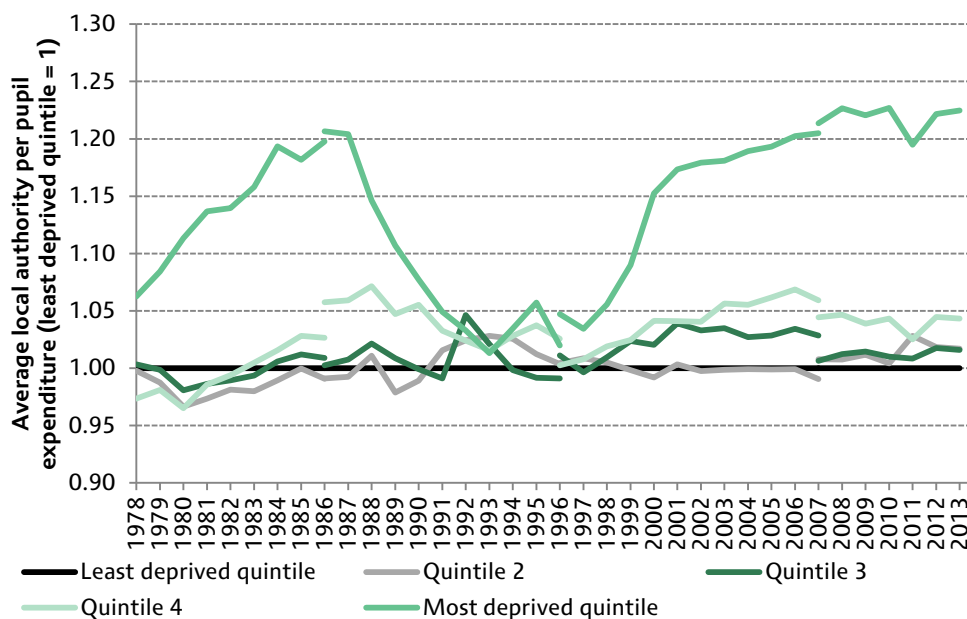


Figure 5.4b. Secondary school funding by quintile of social housing: ratios (relative to quintile with lowest share)



Note: Years refer to financial years (e.g. 1978 = 1978–79). Adjusted for inflation using GDP deflator.

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies’ financial returns 2011–12 to 2013–14; Census 1981, 1991, 2001 and 2011.

With this in mind, Figures 5.4a and 5.4b show the differences in the levels of school-based spending per pupil across quintiles (defined in terms of the proportion of individuals in social housing) for primary and secondary schools respectively. Differences are shown relative to the quintile with the lowest proportion of individuals in social housing.

Figure 5.4 shows that the most deprived quintile of LAs currently have levels of spending per pupil that are about 20% higher than the least deprived quintile. Interestingly, the differences between the other quintiles are much smaller, with the next most deprived quintile spending only about 5% more than the least deprived quintile. Therefore, the major source of difference in spending per pupil according to social deprivation is that between the 20% of pupils in the most deprived LAs and the rest. This matches the average intensity of deprivation within each quintile. Local authorities in the highest quintile of social housing had an average FSM rate of 27% in 2013, while the FSM rate in the other four quintiles ranged from 12% to 17% (see Figure A.2 in the appendix).

This gap in spending per pupil between the most and least deprived LAs has grown substantially over the last 20 years, from around 5% in the mid 1990s to the 20% level seen today.<sup>27</sup> However, the gap between deprivation quintiles in 2013 was similar to that seen in the early 1980s. Differences in spending per pupil between the most deprived and least deprived LAs stood at about 20% in the early 1980s, shrank to about 5% in the mid 1990s and have since risen back to about 20% in the present system.

The increase in spending targeted at the most deprived LAs over the last 20 years is not surprising given the active policy decisions by successive governments to achieve this aim. However, the fact that a large amount of spending was targeted at the most deprived LAs in the early 1980s too, before reducing substantially over the next decade, is more surprising. It is unclear what drove these earlier trends, as the data necessary to investigate potential explanations are not readily available. They could reflect decisions by central government (e.g. central government changing the level of funding targeted at Additional Educational Needs as part of the move to the Block Grant system in the early 1980s, or through changing the funding targeted at London as there is a strong correlation between region and deprivation level). Second, the trends could reflect decisions by more deprived LAs to change spending on schooling at different rates from other LAs (by increasing local taxation or reducing expenditure in other areas). Third, they could be driven by changes in the composition of the population (e.g. the large changes in unemployment during the 1980s). We will seek to investigate this in further work should the necessary data become available.

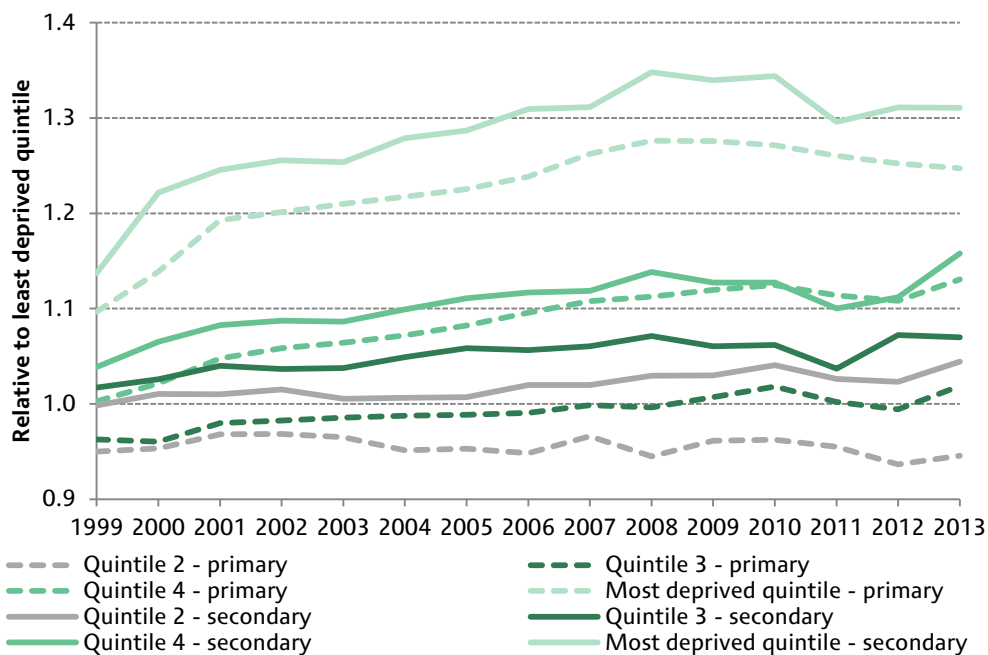
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<sup>27</sup> This trend is similar if we use eligibility for FSM as a measure of deprivation; see Figures A.6a and A.6b in the appendix.

## Across schools

Complementing the above analysis, Figure 5.5 illustrates the variation in spending per pupil according to the level of deprivation at the school level for primary and secondary schools from 1999 onwards. This analysis uses (the more standard) proportion of pupils eligible for FSM as a measure of social deprivation and divides schools into quintiles based on this measure. Figures are shown relative to the level of spending per pupil in the least deprived quintile for each phase of education.

Figure 5.5. Variation in spending per pupil across schools by quintile of percentage of pupils eligible for free school meals (relative to least deprived quintile)



Note: Years refer to financial years (e.g. 1999 = 1999–2000). Adjusted for inflation using GDP deflator. Quintiles are defined according to the proportion of pupils eligible for FSM (weighted by pupil numbers).

Source: Section 52/251 data 1999–2000 to 2013–14; Academies’ financial returns 2011–12 to 2013–14; LEASIS 1993–2009; Department for Education, ‘Pupils, schools and their characteristics January 2010–2013’.

Figure 5.5 shows that the differences in spending per pupil across schools by social deprivation are substantial and even larger than the differences across local authorities. The difference in spending per pupil between the most deprived and least deprived secondary schools was about 30% in 2013 (£7,400 compared with £5,600, in 2015–16 prices); the equivalent difference for primary schools was about 25% (£5,800 compared with £4,700). Furthermore, unlike at the LA level, there are also differences in spending per pupil across the least deprived 80% of schools, with the second most deprived quintile seeing spending-per-pupil levels around 15% higher than those for the least deprived schools. This reflects the fact that the intensity of deprivation varies more across quintiles of schools than across quintiles of LAs (e.g. in 2013, the most deprived quintile of



secondary schools have an average proportion of pupils eligible for FSM of 34%, compared with 19% for the second most deprived and 3% for the least deprived quintile).

It is also clear that the variation in spending per pupil across schools by social deprivation has increased substantially since the late 1990s, with the differences in spending per pupil between the most deprived and least deprived schools representing just over 10% in the late 1990s compared with the present levels of 25–30%.

These differences in spending per pupil across schools by social deprivation have already been documented (Sibieta, 2015b). To investigate the drivers of the phenomenon in more detail, Figure 5.6 seeks to illustrate the differences and changes in spending per pupil by social deprivation *within* local authorities. We split LAs into quintiles based on the proportion of pupils eligible for FSM. We then split all primary and secondary schools into the least deprived 60% of schools nationally and the most deprived 40% nationally and show the gap in spending per pupil between these two groups within the quintiles of LAs we have already defined.<sup>28</sup> This is measured on the vertical axis as the ratio between more and less deprived schools.

Figure 5.6 illustrates the degree to which spending per pupil varies by social deprivation within LAs and the extent to which this differs by the level of social deprivation at the LA level. For primary schools, we see that the difference in spending per pupil between more and less deprived schools within LAs ranges from just over 15% in the least deprived LAs to 22% for schools in the most deprived LAs. In other words, the difference in spending levels between more and less deprived primary schools is greater in more deprived LAs. For secondary schools, the differences are slightly smaller, ranging from 17% to 22%, and there is no systematic pattern by the level of deprivation at the LA level.

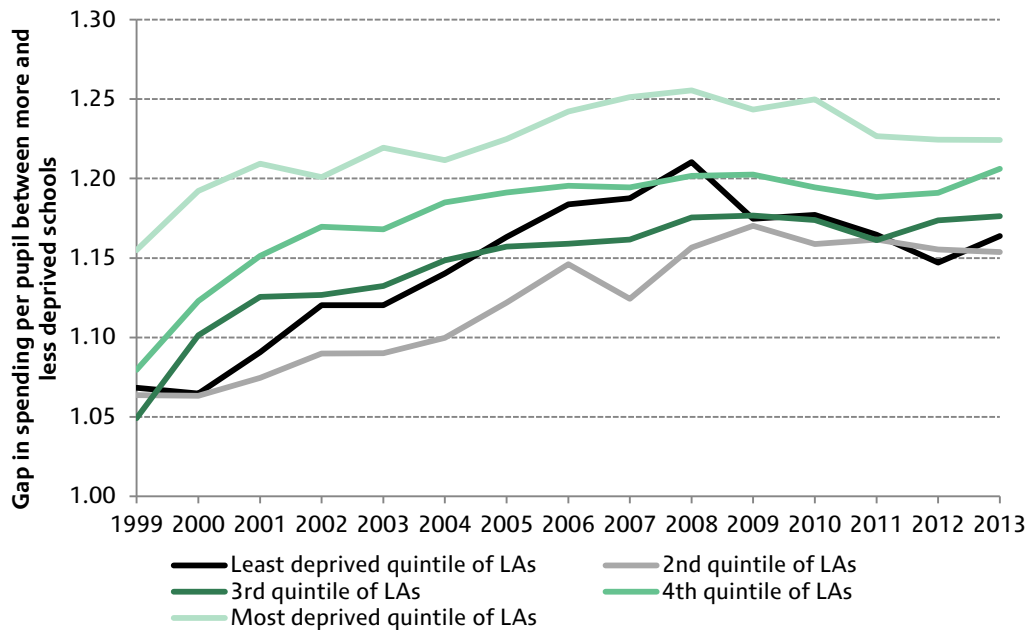
Perhaps more significant are the changes over time. The gap in spending per pupil between more and less deprived schools has increased substantially *within* LAs, particularly over the 2000s. One of the key factors driving this shift in funding and spending was the use of specific or additional direct grants from central government, which were heavily targeted at the most deprived set of schools, but decisions by LAs to increase the amount of funding targeted at social deprivation were also important (Chowdry and Sibieta, 2011). In any case, it is very clear that one of the key drivers of increased targeting of spending per pupil at the most deprived schools over the last 15 years has been increased targeting *within* LAs.

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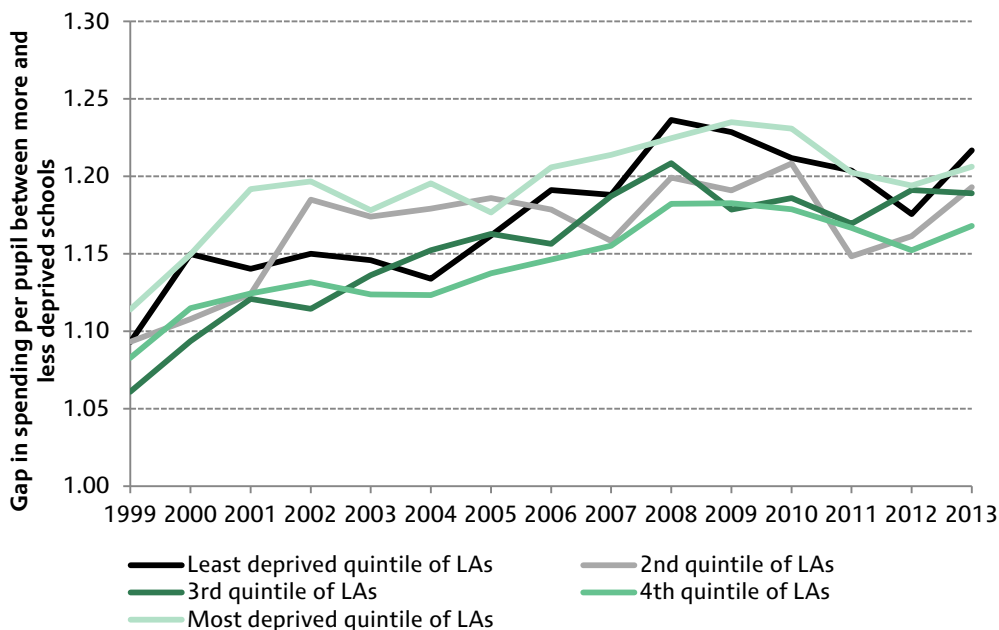
<sup>28</sup> Ideally, we would split by quintiles at the school level too, but there are few schools in the most deprived quintile on a national scale in the least deprived quintile of LAs, and vice versa. We split schools by the poorest 40% and richest 60% as Figure 5.5 suggests that spending per pupil is quite similar within the richest 60% and then successively higher amongst the two poorer quintiles.

Figure 5.6. Variation in spending per pupil within local authorities by school-level deprivation (most deprived 40% of schools compared with least deprived 60% on a national level)

a) Primary schools



b) Secondary schools



Note: Years refer to financial years (e.g. 1999 = 1999–2000). Adjusted for inflation using GDP deflator. ‘More deprived schools’ refers to the 40% of schools with the highest proportions of pupils eligible for FSM (weighted by pupil numbers) and ‘less deprived schools’ are the 60% of schools with the lowest proportions of pupils eligible for FSM (weighted by pupil numbers). Source: Section 52/251 data 1999–2000 to 2013–14; Academies’ financial returns 2011–12 to 2013–14; LEASIS 1993–2009; Department for Education, ‘Pupils, schools and their characteristics January 2010–2013’.

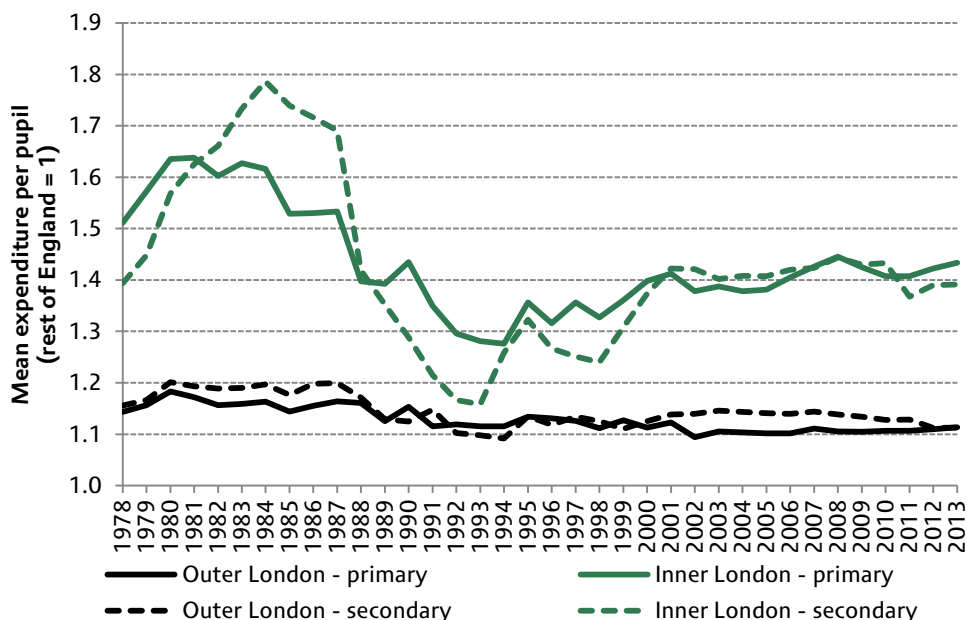
In summary, higher levels of spending per pupil by the most deprived set of LAs are not new. The difference in spending per pupil between the most and least deprived LAs is about the same now as it was in the early 1980s. However, having fallen over the course of the late 1980s and early 1990s, it has grown significantly over the last 20 years. This growth has been accompanied by a significant increase in the level of spending per pupil targeted at individual schools *within* LAs over the 2000s. This all equates to a major shift in the shape of public spending on schooling, with the state now targeting significant amounts of public spending on the most deprived set of LAs and schools.

## 5.4 Regional differences

We now examine how primary and secondary school-based spending per pupil varies by region. We focus on the differences between London and the rest of England as costs clearly vary between London and the rest of England, reflecting higher salary scales in London to compensate for a higher cost of living. Variation across regions outside London is much smaller and does not change substantially over time.<sup>29</sup>

Figure 5.7 presents the ratio of spending per pupil in inner and outer London relative to the rest of England. This analysis shows that there are big differences in spending per pupil between London and the rest of England. In 2013–14,

Figure 5.7. Ratio of funding between London and the rest of England



Note: Years refer to financial years (e.g. 1978 = 1978–79). Adjusted for inflation using GDP deflator.

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies' financial returns 2011–12 to 2013–14.

<sup>29</sup> Details available from authors' by request,

primary school spending per pupil was £6,500 in inner London, £5,100 in outer London and £4,500 outside London. Gaps in spending per pupil were equally large for secondary schools. Across both primary and secondary schools, the figures equate to inner London spending some 40% more per pupil, and outer London 10% more, than was spent per pupil outside London.

The higher level of spending per pupil in inner London will reflect two key features about inner London: higher levels of social deprivation and higher costs. However, previous work has already found that, even after controlling for social deprivation, spending per pupil is higher in inner London and the difference is larger than the difference in salary scales (Greaves and Sibieta, 2014). The government is aware of this issue and the April 2015 reforms implemented a new way of adjusting for differences in costs across areas that allows for the actual differences in salary scales. This is a more sensible approach, although it is less generous to inner London than the system to date.

Although the differences in spending per pupil between London and the rest of England are substantial, they are not as large as they once were. In the early 1980s, spending per pupil was around 60–70% higher in inner London than outside London. This difference declined to about 30% in the early 1990s and has since risen to its current level of 40%. The higher levels of spending per pupil in inner London during the 1980s were the subject of much political debate and the Conservative government of the time put forward the higher levels of spending in inner London as one reason for the abolition of the Inner London Education Authority (ILEA) in 1990 (believing that this higher spending was inefficient<sup>30</sup>). It is also clear that inner London's higher level of spending was being reduced in the lead-up to and following the abolition of ILEA.

The higher level of spending per pupil has been put forward as one reason for London's schools (particularly in inner London) seeing higher levels and faster improvements in GCSE results than the rest of England. However, the fact that inner London's funding advantage is smaller now than in the early 1980s suggests that this cannot be the sole explanation of London's schools having improved over time.

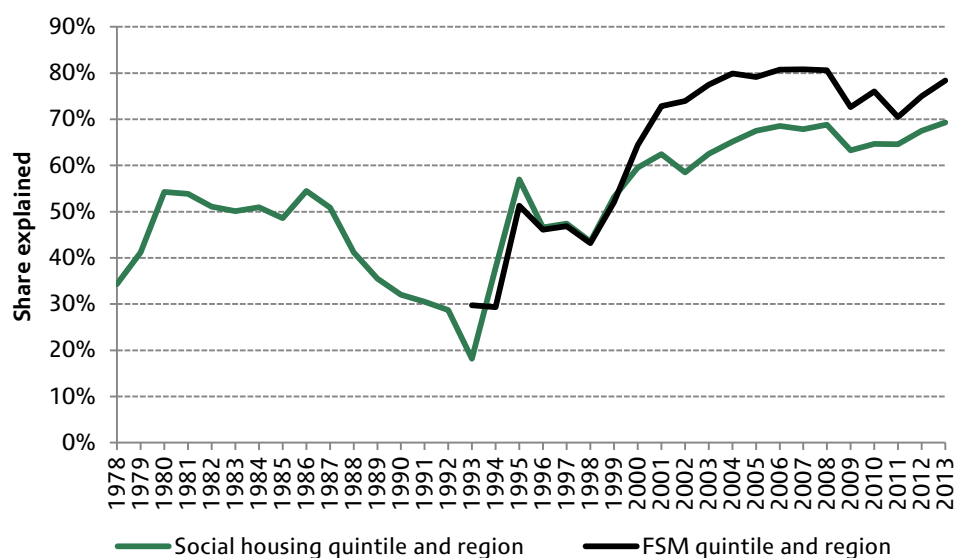
## 5.5 Summary and conclusions

There are wide differences in spending per pupil across local authorities and schools, with the most deprived areas and schools and the schools in inner London seeing higher levels of spending per pupil than elsewhere. However, overall differences in spending per pupil across LAs have actually shrunk over the long run. Furthermore, Figure 5.8 shows very clearly that a much larger share of the differences in spending per pupil across LAs can now be explained by their different characteristics. Although there was a small reduction in this share after

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<sup>30</sup> <http://hansard.millbanksystems.com/commons/1988/feb/10/inner-london-education-authority>.

Figure 5.8. Percentage of inter-LA variation in per-pupil funding explained by social deprivation and geography



Note: This figure presents the R-squared from the year-by-year regression of local authority average spending on indicator variables for the region (inner London, outer London, rest of England) and quintiles of deprivation (social housing or percentage eligible for FSM). Years refer to financial years (e.g. 1978 = 1978–79).

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies' financial returns 2011–12 to 2013–14; LEASIS 1993–2009; Department for Education, 'Pupils, schools and their characteristics January 2010–2013'.

the mid 2000s, as one would expect given the spend-plus methodology, these are small changes set in a longer historical context.

At the same time, school-level variation in spending per pupil has increased since at least 1999, and this increase has in turn been driven by increased variation in funding *within* LAs and increased targeting of funding at the most deprived schools by all layers of government. Local authorities also differ in the priority they attach to different factors in their own formulae, with the most important being the different weights they attach to primary and secondary school funding. There is also considerable variation in funding remains between schools with similar pupil intakes. Among the quintile of schools with the most deprived intake, 10% spent more than £9,000 per pupil while 10% spent less than £6,200. Some of these differences are readily explained by other features of the schools, but many are not.

This analysis provides two important conclusions for policymakers today. First, public spending on education is increasingly being used as a tool for redistribution, with more and more resources targeted at the most deprived set of schools and areas.

Second, the analysis provides some pointers as to the likely effects of planned reforms to school funding in England. The government currently plans to implement a single school-level formula to determine the funding of all schools in England, replacing the 152 local-authority-specific formulae with just one

formula. This is motivated by a desire to ensure funding is more strongly connected to the characteristics of pupils in the area and to remove differences in funding per pupil across schools that reflect the different choices LAs have made in their formulae. Our analysis suggests that differences in spending per pupil across LAs are smaller and more strongly tied to the characteristics of the area than they once were (as evidenced by Figure 5.8). Achieving the first goal is thus unlikely to be as tough as one might have thought. In contrast, variation in the choices made by local authorities is significant (as exemplified by the differences in spending on primary and secondary schools, shown in Figure 5.3) and the variation in spending per pupil *within* LAs has become larger. Harmonising formulae across LAs is therefore likely to have much larger effects. Detailed analysis, however, will be required to determine the exact effects of this reform once the government publishes its proposed formula in the second stage of the consultation.

## 6. Total Spending on Cohorts

Although it is important to analyse trends in school spending per pupil, what matters most for outcomes and understanding the full effects of the school funding system is the total spending pupils receive over all years they spend in school. No pupil experiences the current or cross-sectional school funding system in any given year, but each pupil experiences a succession of different funding systems as they progress through education. In this chapter, we provide the first measures of total school spending received across different cohorts over time and the variation within individual cohorts.

### 6.1 Across-cohort analysis

We measure the total spending received by each cohort as the sum of the average level of spending per pupil over the years children were (or are expected to be) in primary and secondary schools. We represent each cohort by the year they have taken or will take their GCSEs.<sup>31</sup> This means that, for example, we measure the total amount of spending for pupils taking their GCSEs in 2010 as the sum of average primary school spending per pupil in England between 1998–99 and 2004–05 and the average level of secondary school spending per pupil in England between 2005–06 and 2009–10. Our data allow us to repeat this calculation for all cohorts taking GCSEs between 1990 and 2020. For years after 2013–14, we are able to project spending per pupil based on actual and proposed policy on school spending.

All figures are measured in constant 2015–16 prices. We do not discount these amounts by the government’s cost of borrowing as our interest lies in the differences in real resources experienced by different cohorts. We do not seek to adjust these to take account of the fact that investments at different times may be more or less valuable.

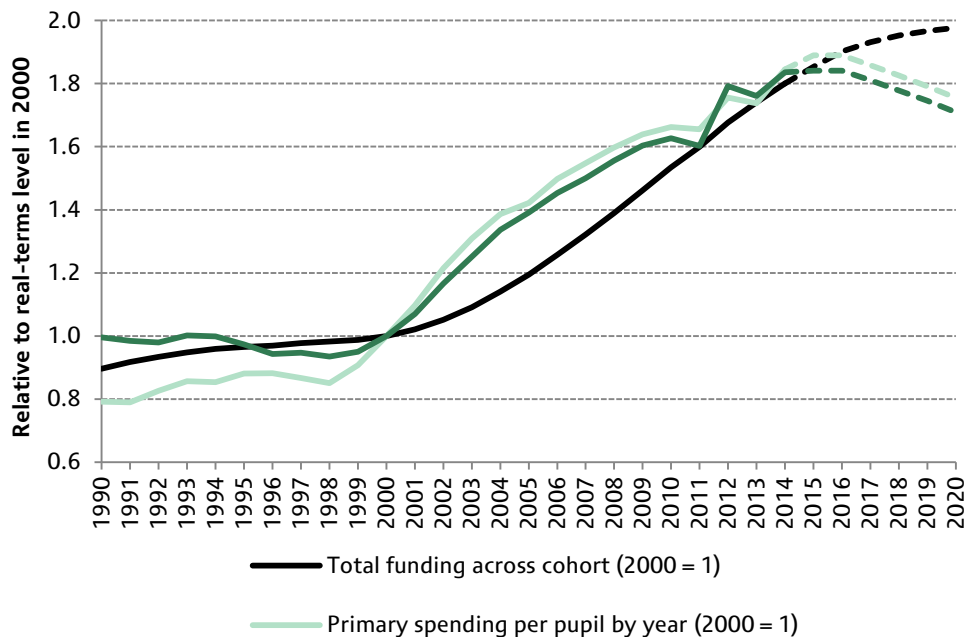
Using this methodology, we estimate that a pupil taking their GCSEs in the latest year (2015) received £57,000 in school spending over their time in school. This represents significant growth from the estimated £30,000 received by pupils taking their GCSEs 20 years earlier.

Figure 6.1 shows how our measure of total cumulative spending across cohorts compares with the annual real-terms trends in school spending per pupil for primary and secondary schools. All figures are indexed to be equal to 1 in 2000. The clear story is how slowly cumulative spending responds to changes in policy. This is because a change in any given year only represents a marginal change in the cumulative school experience of each cohort. The effect of this can be seen starkly at two different points in our data. First, annual school spending per pupil

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<sup>31</sup> This is the final year of compulsory schooling for most of the period in question.

Figure 6.1. Comparing trends in cumulative school spending with annual primary and secondary school funding per pupil (2000 = 1)



Note: Years refer to when pupils took or are expected to take their GCSEs. Adjusted for inflation using GDP deflator.

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies’ financial returns 2011–12 to 2013–14. Projections calculated based on actual policy and spending announcements for 2014–15 to 2019–20.

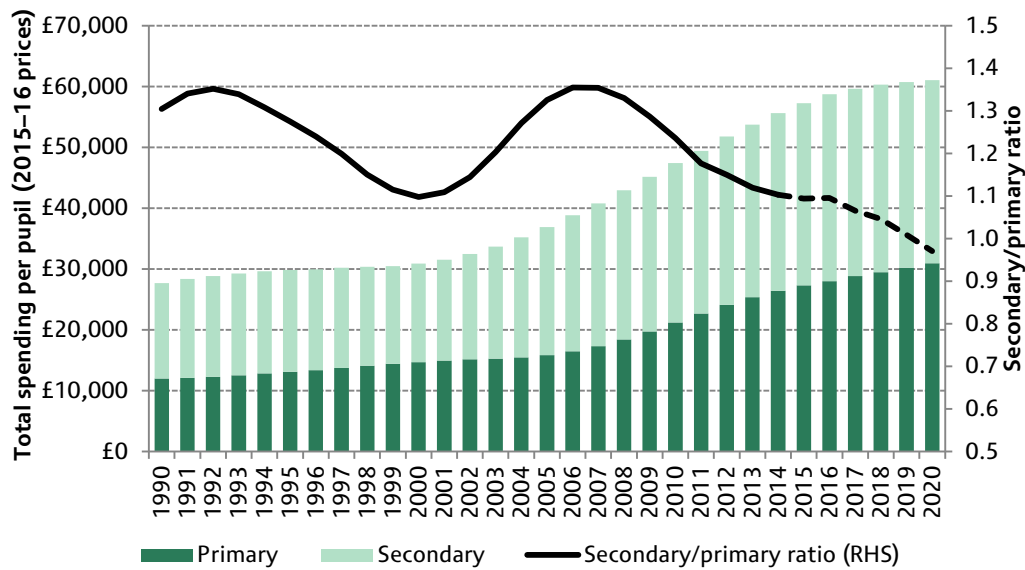
increased sharply in the early 2000s, growing by 40% between 2000 and 2005; however, over the same period, cumulative spending for each cohort only increased by 20%. Second, despite the fact that annual spending per pupil is expected to fall from 2016 onwards, cumulative spending per pupil is expected to continue rising until at least 2020. This is a result of the rapid growth in recent years. In both cases, the change to the annual school funding and expenditure system eventually feeds through to changes in cumulative spending, but it is important to recognise how long it takes before policy changes affect the amount of spending students taking their GCSEs have experienced.

It is important to consider that not only do pupils face many different education funding systems during their time in school, but they face different funding systems at different points of their school career. In particular, the system is different when they are in primary school from when they are in secondary school. Figure 6.2 shows the total amount of spending different cohorts have received in primary and secondary schools and the ratio of the spending received across the two phases (secondary relative to primary). The striking finding is that the ratio of secondary to primary expenditure each successive cohort received oscillates dramatically over the period.

In the long run, changes in the cohort-level secondary/primary ratio directly reflect long-term changes in the relative size of secondary and primary annual expenditure; however, short-run fluctuations can emerge from subsequent



Figure 6.2. Total cumulative school spending received across cohorts in primary and secondary phases, by year in which pupils have taken or will take their GCSEs



Note: Years refer to when pupils took or are expected to take their GCSEs. Adjusted for inflation using GDP deflator.

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies' financial returns 2011–12 to 2013–14. Projections calculated based on actual policy and spending announcements for 2014–15 to 2019–20.

cohorts facing the different education funding systems at different points of their school career. Both effects are present over the period in question.

During the 1990s, the ratio between total secondary and primary school spending declined (from 1.35 in the earlier 1990s to just under 1.10 by 2000). This directly reflected the decline in the ratio between annual secondary and primary school spending (see Figure 4.1).

Over the following 15 years, the cumulative secondary/primary ratio rose and then fell dramatically, despite the annual spending ratio remaining constant. In the early 2000s, growth in both primary and secondary school annual spending began to accelerate significantly. Students taking their GCSEs in the early 2000s experienced successively higher levels of secondary school spending, while the amount of primary expenditure they had received in the late 1990s had only grown slowly. This resulted in the observed rise in the secondary/primary expenditure ratio. Such an effect can only ever be temporary. Eventually cohorts who also benefited from the fast growth in primary school expenditure take their GCSEs and, indeed, the secondary/primary expenditure ratio gradually began to fall from 2007 onwards. The same effect is likely to cause the secondary/primary ratio to fall further after 2016, when subsequent cohorts receive lower levels of secondary expenditure although their primary expenditure was unaffected as they finished primary school before the cuts began.

This analysis powerfully illustrates how changes in the growth rates of school spending can have significant implications for the ratio between primary and secondary school spending. These effects are not permanent, but they are dramatic. The cohort taking their GCSEs in 2020 will have received more funding in primary school than in secondary school, which will be the first time this has happened in at least 30 years. This is a dramatic change compared with pupils taking their GCSEs in 2007, who experienced 35% more spending in secondary school than in primary school. This change could have significant implications for educational outcomes. It is widely hypothesised that public investments are more productive at earlier ages (Cunha and Heckman, 2007), but only if they are followed up with investments later in life too.

Although these changes in the spending ratio between phases seem unintended, this analysis does not imply that policymakers should always seek to increase school spending per pupil at a constant rate. There will always be shocks to the economy, the public finances and political cycles that lead policymakers to want to increase or decrease the rate of growth in school spending. However, it is important that policymakers are aware of the potential effects of their decisions; analysing the way in which different cohorts are affected has often been neglected to date.

## 6.2 Within-cohort analysis

We are also interested in the variation in the total spending experienced by different groups of pupils within the same cohort, and how such variation has changed over time. As in the analysis in Chapter 5, we can examine variation using either school- or LA-level expenditure data.

We calculate cumulative expenditure using the school-level data for all individuals taking their GCSEs between 2002 and 2013 (the set of years for which we have data on the schools that individual pupils attend). For years prior to 1999–2000, when we do not have individual school expenditure data, we ‘backcast’ the school’s spending level by trends at the LA level. A pupil’s cumulative spending is calculated as the sum of spending per pupil in each school they attended in the years they attended it. In most cases, this is just the level of their secondary school’s spending for the last five years and their primary school’s spending for the previous seven.<sup>32</sup>

We also calculate cumulative spending based on LA average expenditure. As this does not require information on the schools pupils attend or individual school expenditure, we are able to do this for all cohorts between 1990 and 2013. To calculate the LA average cumulative spending, we add up the spending a child

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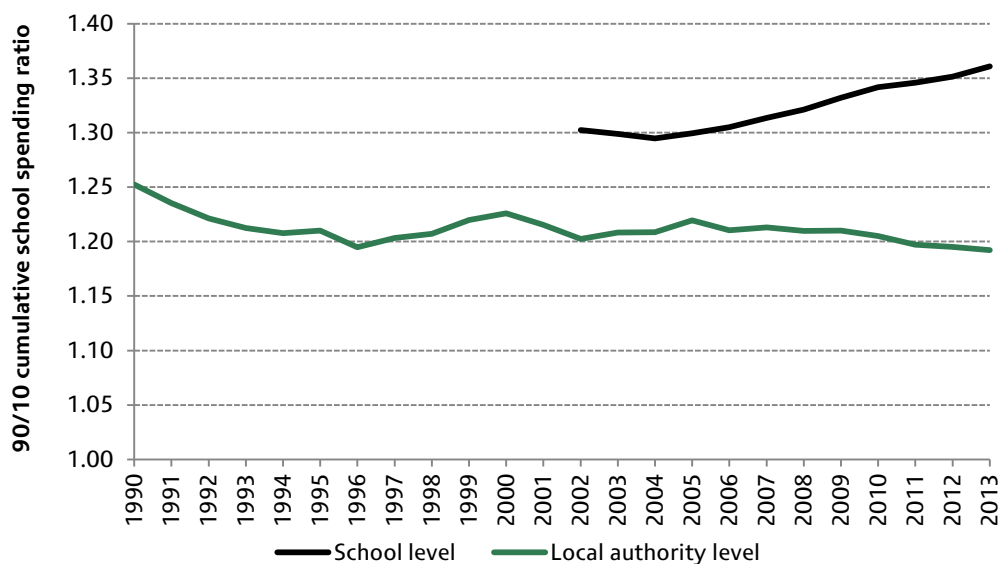
<sup>32</sup> We account for all moves between different state-funded schools and we drop pupils missing from the school census at any point in time or who have missing spending data, the most common reasons for missing data being immigration, emigration and movement to the private sector. The net result is that we lose about 3–4% of pupils based on their secondary school data and about 9–10% of pupils based on their primary school data.

would have received if they attended schools in that LA over their entire schooling career. A drawback of this approach is that we are not able to weight the analysis by pupil numbers as data on the number of pupils in each cohort in each LA are not readily available before 2002.

Using school-level expenditure data, we find there is considerable variation in the amount of cumulative spending for pupils within the same cohort. Amongst pupils taking their GCSEs in 2013, about 10% of pupils had experienced spending levels in excess of £67,000, whilst 10% had experienced spending of less than £49,000 (using school-level expenditure data). This is not surprising given that we have already seen there is variation in school-level spending per pupil. This analysis, however, shows that these year-by-year differences equate to relatively large differences when seen over an individual's whole schooling career.

This variation is not a new phenomenon, however. Figure 6.3 puts the variation in a long context, showing the ratio of the 90<sup>th</sup> and 10<sup>th</sup> percentiles of cumulative spending across cohorts, using both our school-level and LA-level expenditure data. The 90/10 ratio in school-level cumulative expenditure has increased from 1.29 in 2004 to 1.36 in 2013; however, there is substantial variation in the amount of funding individual pupils receive over their school career in all years of our data. Furthermore, the differences in cumulative expenditure between LAs are smaller than they once were. This combination of findings reflects the results in Chapter 5 that recent increases in the variation in school expenditure are driven by increased variation within, not between, LAs.

Figure 6.3. Ratio of 90<sup>th</sup> to 10<sup>th</sup> percentile for cumulative school spending within cohorts over time, by year in which pupils took their GCSEs



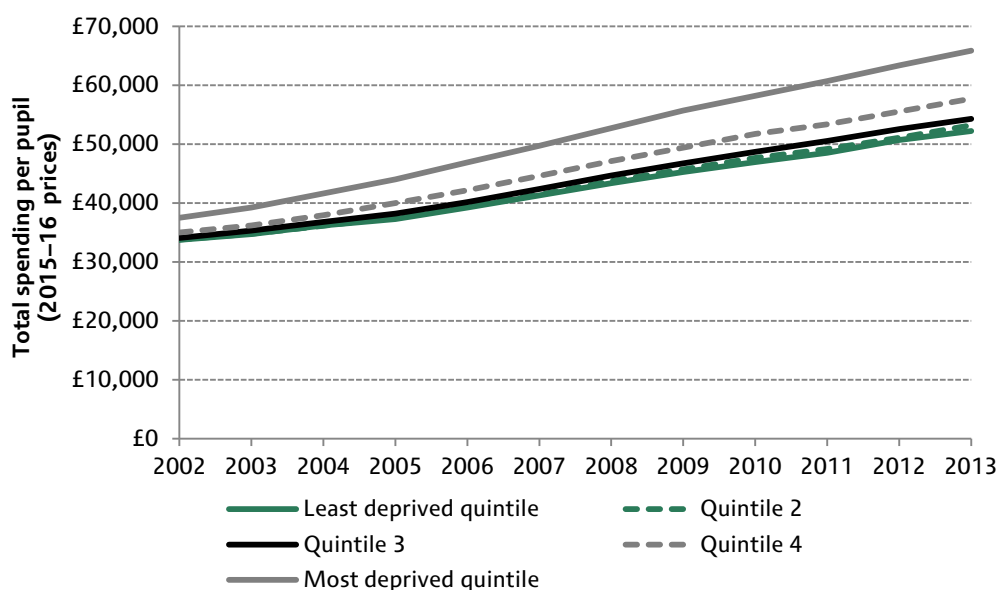
Note: Years refer to when pupils took or are expected to take their GCSEs. Adjusted for inflation using GDP deflator.

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies' financial returns 2011–12 to 2013–14; National Pupil Database 2002–13; authors' calculations based on actual policy up to 2015–16 and policy announcements covering school spending up to 2019–20.

Chapter 5 also showed that school expenditure has become increasingly focused on schools with a more disadvantaged intake. This has also fed through, albeit more slowly, to the cumulative spending pupils experience. Figure 6.4 splits pupils into five quintiles based on the proportion of children in their school eligible for free school meals (the most widely-used measure of school deprivation) and shows the level of cumulative spending experienced by pupils attending each type of school (according to school deprivation level).<sup>33</sup> As schools with more disadvantaged intakes have had higher per-pupil expenditure for many years, looking at this from a cumulative perspective accentuates the differences. Of pupils taking their GCSEs in 2013, those who attended schools in the most disadvantaged quintile experienced an average expenditure of £66,000, compared with the £52,000 per pupil spent in schools in the least disadvantaged quintile. This difference is the result of recent trends. Since 2002, cumulative spending per pupil in the least disadvantaged quintile grew by 55% in real terms, compared with 76% for those in the most deprived quintile.

Successive governments have made deliberate policy changes in recent years to focus more funding and spending in schools with the most disadvantaged intakes.

Figure 6.4. Variation in total spending per pupil by quintile of school deprivation, by year in which pupils took their GCSEs



Note: Years refer to when pupils took or are expected to take their GCSEs. Adjusted for inflation using GDP deflator.

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies’ financial returns 2011–12 to 2013–14; National Pupil Database 2002–13; authors’ calculations based on actual policy up to 2015–16 and policy announcements covering school spending up to 2019–20; LEASIS 1993–2009; Department for Education, ‘Pupils, schools and their characteristics January 2010–2013’.

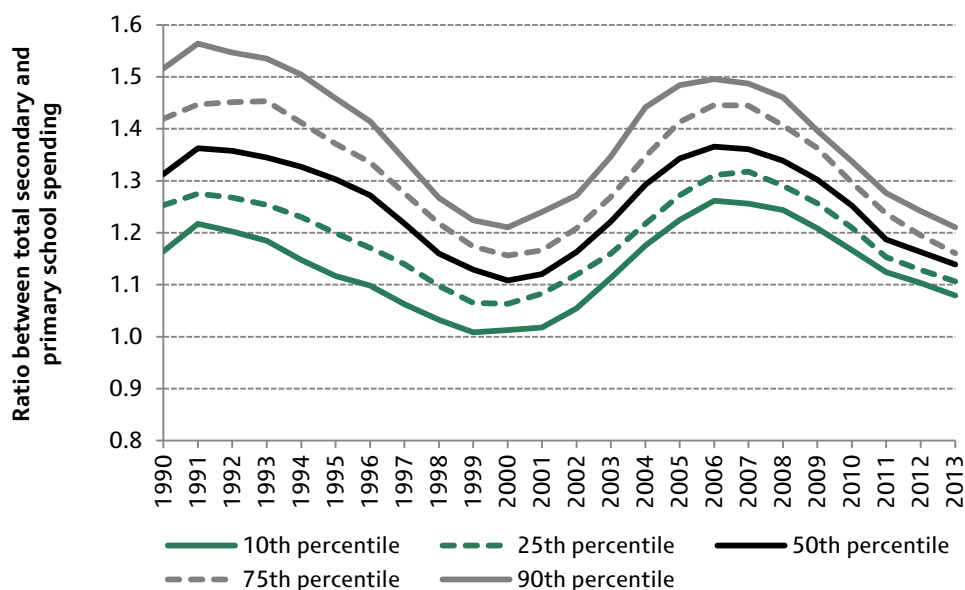
<sup>33</sup> We only perform this analysis using the school-level data because data on the proportion of pupils eligible for FSM are not available before 1993 and so we would not be able to extend this very far back in time, even using the LA-level data.

We have shown that this has fed through to the cumulative expenditure pupils in these schools experience. However, there is a subtle distinction between targeting spending at pupils from disadvantaged backgrounds and targeting spending at pupils who attend schools with a high proportion of their intake from disadvantaged backgrounds. This analysis has shown that the government has achieved the latter; however, further research is required to show the extent to which it has achieved the former. There is clearly an overlap between the two groups, but this depends both on the distribution of disadvantaged pupils across schools and on how schools target spending amongst their student population.

Planned future research will extend this work by incorporating state spending on education in early childhood and post-age-16; this will enable us to more easily distinguish the individual characteristics of students who benefit from the spending.

Finally, we can examine how the ratio of secondary to primary expenditure varies within cohorts. Figure 6.5 shows this variation across LAs.<sup>34</sup> The oscillating trend is the result of the different point in successive cohorts' school careers that policy changes occur, as discussed earlier. The figure shows there is

Figure 6.5. Variation in ratio of total secondary to total primary school spending across local authorities, by year in which pupils took their GCSEs



Note: Years refer to when pupils took or are expected to take their GCSEs. Adjusted for inflation using the GDP deflator. Figures are not weighted by cohort size within each local authority. Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies' financial returns 2011–12 to 2013–14.

<sup>34</sup> We present this analysis at the LA level to show the long-term trends; however, the story is qualitatively similar at the school level in recent years.

also variation within cohorts: for children taking their GCSEs in 2013, about 10% of LAs spent more than 20% more over children's secondary school phase than over the primary phase, whilst 10% spent less than 8% more. However, this variation has reduced substantially since the early 1990s. In general, it appears the (unintended) variation in the secondary/primary expenditure ratio between cohorts is significantly more important than the variation between LAs, especially recently. In 2013, 90% of LAs had a secondary/primary funding ratio below what was the 10<sup>th</sup> percentile in 2009, which demonstrates just how much the secondary/primary ratio has varied across cohorts, even those relatively close in age.

### **6.3 Summary and conclusions**

In this chapter, we have produced the first estimates of the total level of school spending pupils receive over all their years in schools. This amounted to about £57,000 for pupils who took their GCSEs in Summer 2015. Measuring spending in this way produces new insights into the way resources available to different generations have been changing over time and has a number of implications for policy and future research.

First, total cumulative spending adjusts much more slowly to changes in school spending than does annual spending per pupil. Policy changes made now will thus take a long time to feed through to the actual experience of different cohorts. Second, differences in spending per pupil cumulate over time and lead to large differences in the total spending experienced by different pupils according to the school they attended. When, as now, 10% of pupils receive less than £49,000 in cumulative spending and 10% of pupils receive over £67,000, it is important to be confident that such variation within cohorts is intentional. Third, changes in the growth rate of school spending can produce unintended consequences for the relative amounts of resources pupils experience in different parts of the school system. Although this latter point might not necessarily lead to different actions by policymakers, it is important to be aware of the consequences of changes in policy. Finally, in future research, we shall seek to consider cumulative spending across all stages of education, which is likely to further illustrate how changes in policy and participation have changed the total amount of spending different cohorts have received, as well as the variation within cohorts.

## 7. Conclusion

There have been substantial changes to the school funding system in England over the last 30 years. More are also planned with the government proposing to replace all 152 local authority school funding formulae with one single national funding formula applied across all state-funded schools in England. The transition process will start in 2017–18 and the national funding formula is expected to be in place by 2019–20 (though the transition seems highly likely to extend well beyond this).

Growth in the national level of per-pupil spending on schooling has varied over time: rising per-pupil expenditure over the 1980s; freezes over the 1990s; fast growth during the 2000s; and a slowdown since 2010. Policy priorities have also shifted funding, with the creation of specific grants targeted at the most deprived schools in the 2000s, a trend continued with the introduction of the Pupil Premium from 2011 onwards. At the same time, demographics have also changed, particularly the number of school-age children, which fell over much of the 2000s and is now rising again at a rapid pace.

These institutional, policy and demographic shifts have produced substantial changes in the level and distribution of spending per pupil across areas and schools. Some of these have been intended: the targeting of greater resources at more deprived areas and schools has been a policy priority of successive governments. As a result, the shape of the state has changed greatly, with higher levels of redistributive or compensatory spending taking the form of public spending on schooling. To the extent that school spending can be used to narrow gaps in education attainment and skills, this could be a more efficient way of reducing later-life inequalities. But this is a very big 'if'. Most research to date has also found only a modest link between resources and attainment.

Interestingly, although differences in spending per pupil across areas are one stated motivation behind planned reforms to the school funding system, variation in spending per pupil across areas was actually much larger in the past than it is today. One important factor driving past variation in spending per pupil across areas was the lack of responsiveness to demographics, particularly pupil numbers. Some of this has been corrected by reforms to the school funding system and variation in spending per pupil across areas is now strongly linked to area characteristics. Proposed reforms to the school funding system (indeed, just having a proper system) should embed this further into the school funding system and ensure that funding per pupil responds to changes in the make-up of schools and local areas over time.

There are other more important factors driving differences in spending per pupil across schools. First, much of the increased variation in spending per pupil across schools over the 2000s has been driven by increased variation *within* local authorities. Second, and connectedly, there are also substantial differences in the priority attached to different factors in each local authority's funding formula. For

example, we have documented large differences in the level of spending per pupil on primary and secondary pupils. Although the difference between them is also smaller than it once was, it is clearly still an important source of variation. This implies that large changes in spending per pupil will occur when local authority formulae begin to be replaced with a single, national funding formula from 2019–20 onwards.

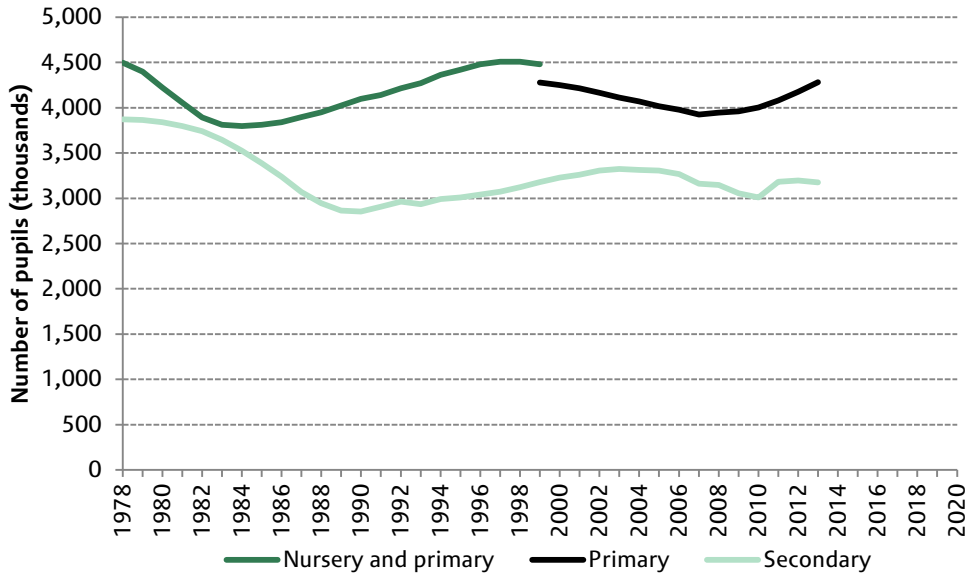
We have also shown the value of measuring the total level of spending that pupils experience over all their years in school. No pupil experiences the current school funding system in any given year across all stages, but each pupil experiences 12 different ones as they progress through primary and secondary school. This new way of looking at the resources experienced by different cohorts produces a number of key insights for policymakers. First, the total level of spending experienced by different cohorts changes at a much slower pace than does annual spending. Although unsurprising, this is an important conclusion as one can be tempted to associate educational outcomes with contemporaneous measures of spending per pupil. In fact, it is spending over a much longer horizon that matters for outcomes and this changes at a very slow rate. Second, changes in the growth rate of spending per pupil can create unintended changes in resources across generations. For instance, the ratio between total spending received in secondary and primary school has oscillated to a large degree over the last 15 years as spending growth first accelerated over the 2000s and then slowed down after 2010. Third, differences in spending per pupil across areas and schools can produce large differences in the amount of spending received by different individuals within a cohort (e.g. amongst pupils taking their GCSEs in 2013, 1 in 10 pupils received over £67,000 over their time in school and 1 in 10 received less than £49,000). Such differences can be justified by a school funding system that targets resources differentially, but they do underline the importance of having a school funding system that faithfully reflects policymakers' priorities.

Finally, we believe our analysis suggests a number of issues that we will attempt to address in future research. First, we will seek to estimate the total amount of spending different cohorts have received over all phases of education, how this reflects participation decisions and how these affect the extent to which spending is targeted at more deprived students. Second, we will seek to link educational outcomes to some of the changes we have observed in school spending, particularly in terms of the total spending received by individuals within different cohorts and some of the unintended changes in these totals.



# Appendix

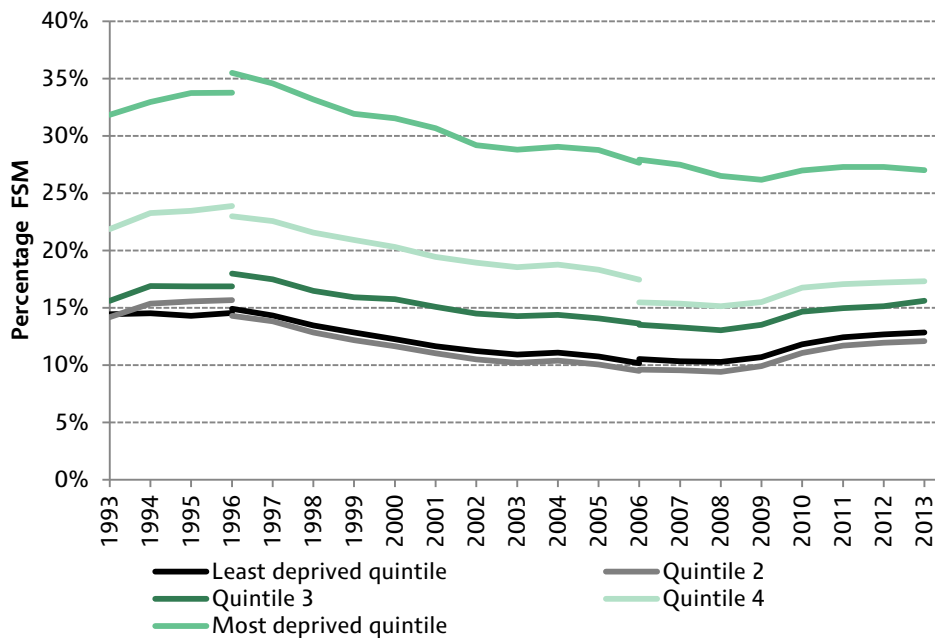
Figure A.1. Primary and secondary pupil numbers



Note: Years refer to financial years (e.g. 1978 = 1978–79).

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies’ financial returns 2011–12 to 2013–14.

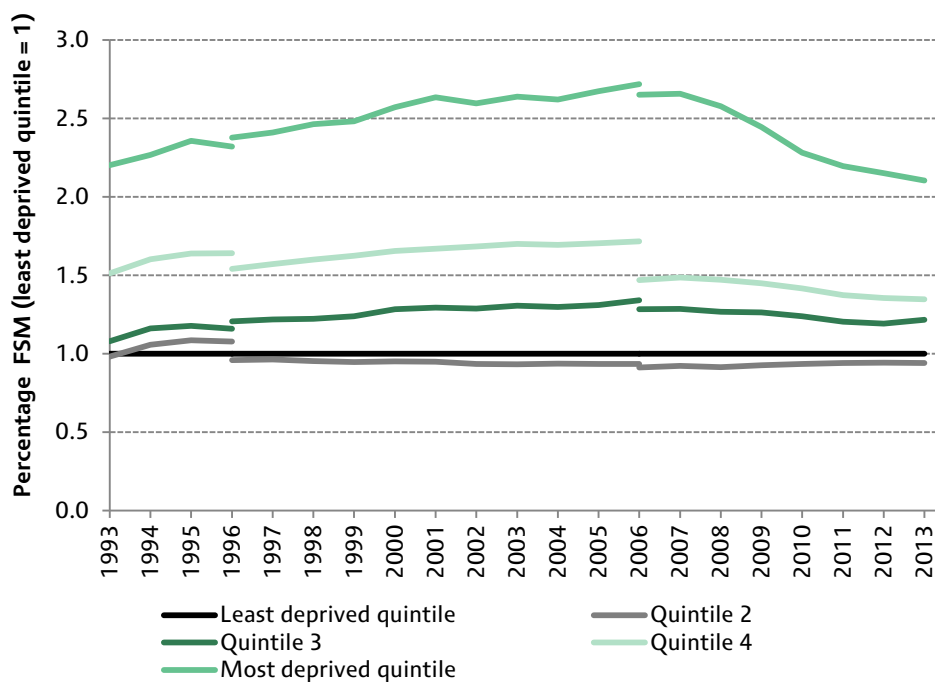
Figure A.2. Percentage eligible for free school meals by quintile of social housing



Note: Years refer to financial years (e.g. 1993 = 1993–94). Expenditures adjusted for inflation using the GDP deflator.

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies’ financial returns 2011–12 to 2013–14; LEASIS 1993–2009; Department for Education, ‘Pupils, schools and their characteristics January 2010–2013’.

Figure A.3. Percentage eligible for free school meals by quintile of social housing: ratios (relative to least deprived quintile)



Note: Years refer to financial years (e.g. 1993 = 1993–94). Expenditures adjusted for inflation using the GDP deflator.

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies’ financial returns 2011–12 to 2013–14; LEASIS 1993–2009; Department for Education, ‘Pupils, schools and their characteristics January 2010–2013’.

Figure A.4a. Primary school funding by quintile of social housing, without inner London

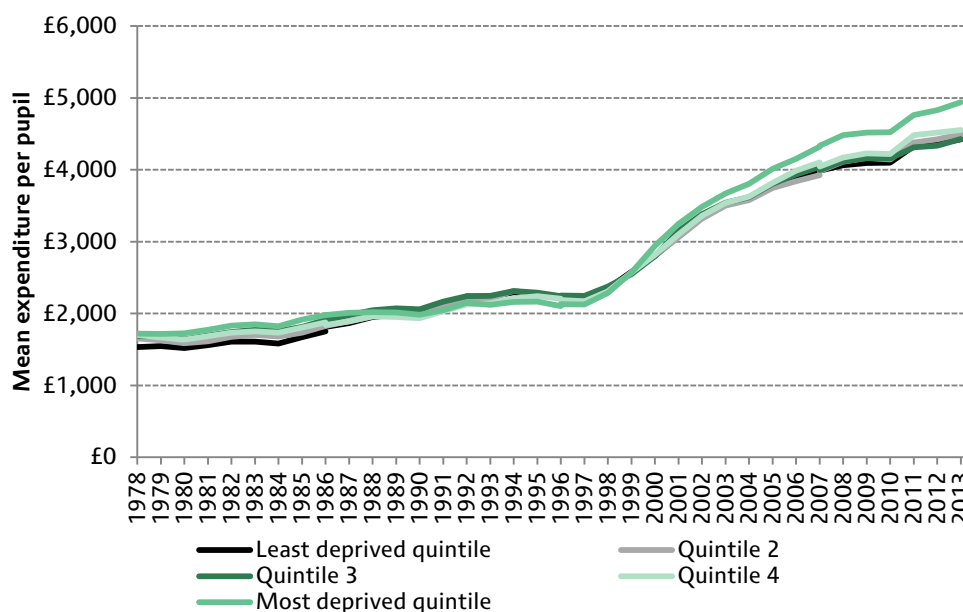
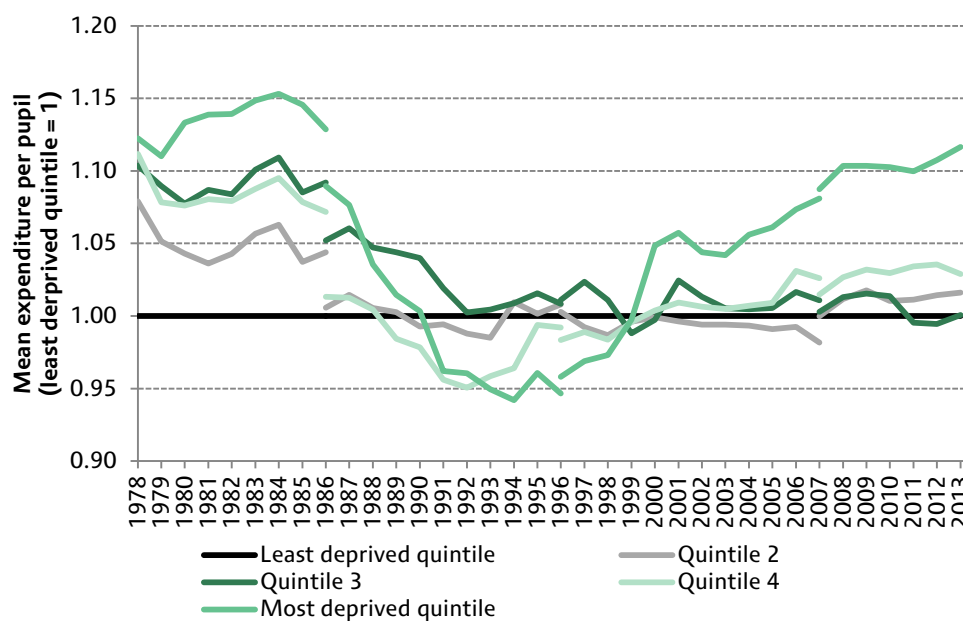


Figure A.4b. Primary school funding by quintile of social housing: ratios, without inner London (relative to least deprived quintile)



Note: Years refer to financial years (e.g. 1978 = 1978–79). Expenditures adjusted for inflation using the GDP deflator.

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies' financial returns 2011–12 to 2013–14; Census 1981, 1991, 2001 and 2011.

Figure A.5a. Secondary school funding by quintile of social housing, without inner London

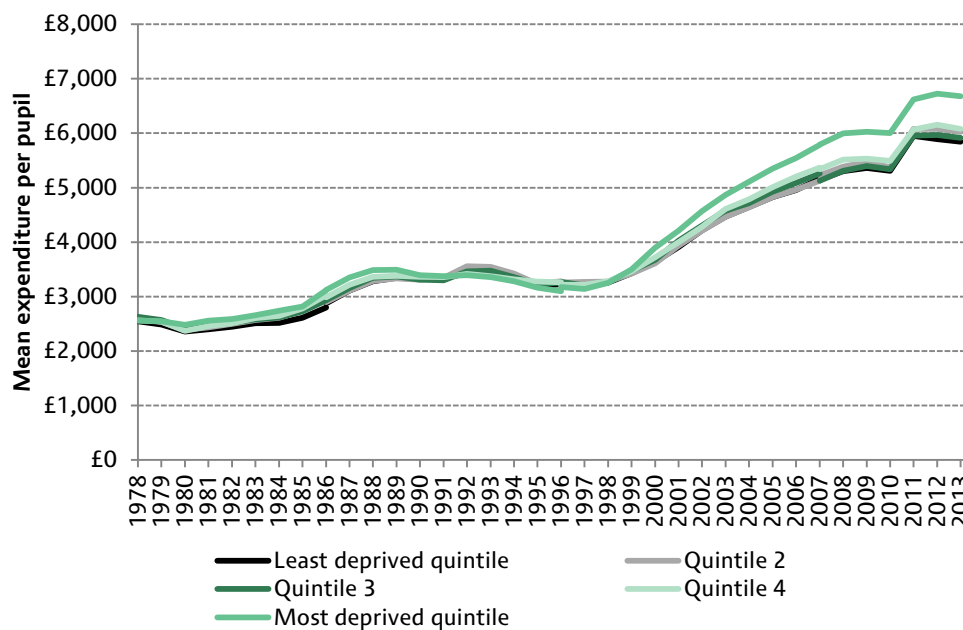
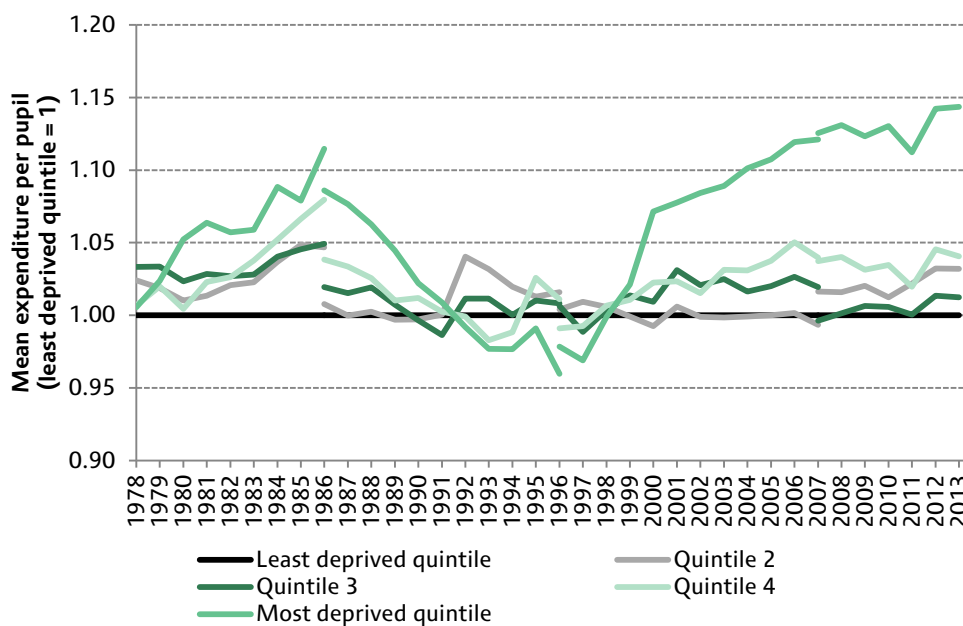


Figure A.5b. Secondary school funding by quintile of social housing: ratios, without inner London (relative to least deprived quintile)



Note: Years refer to financial years (e.g. 1978 = 1978–79). Expenditures adjusted for inflation using the GDP deflator.

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies’ financial returns 2011–12 to 2013–14; Census 1981, 1991, 2001 and 2011.

Figure A.6a. Primary school funding by FSM quintile

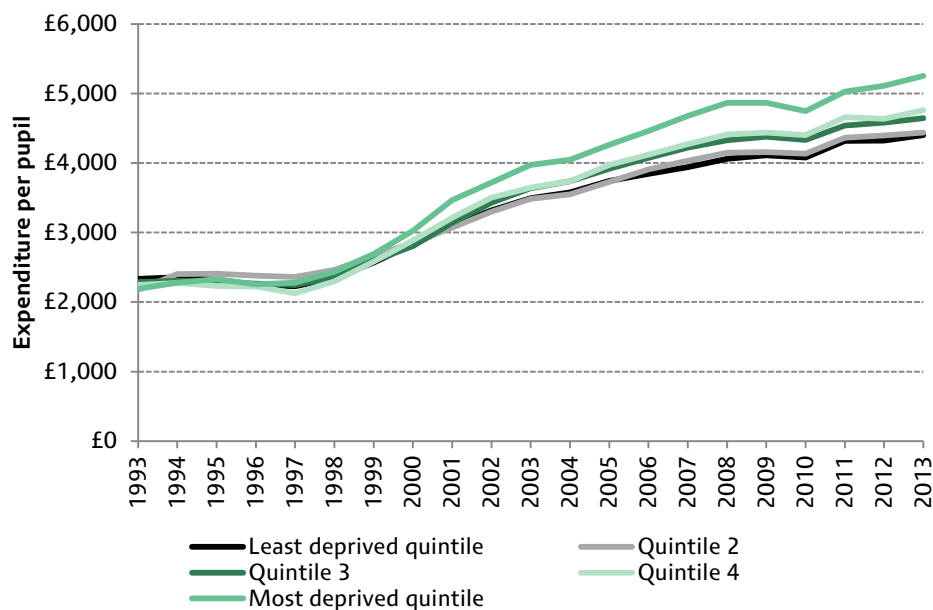
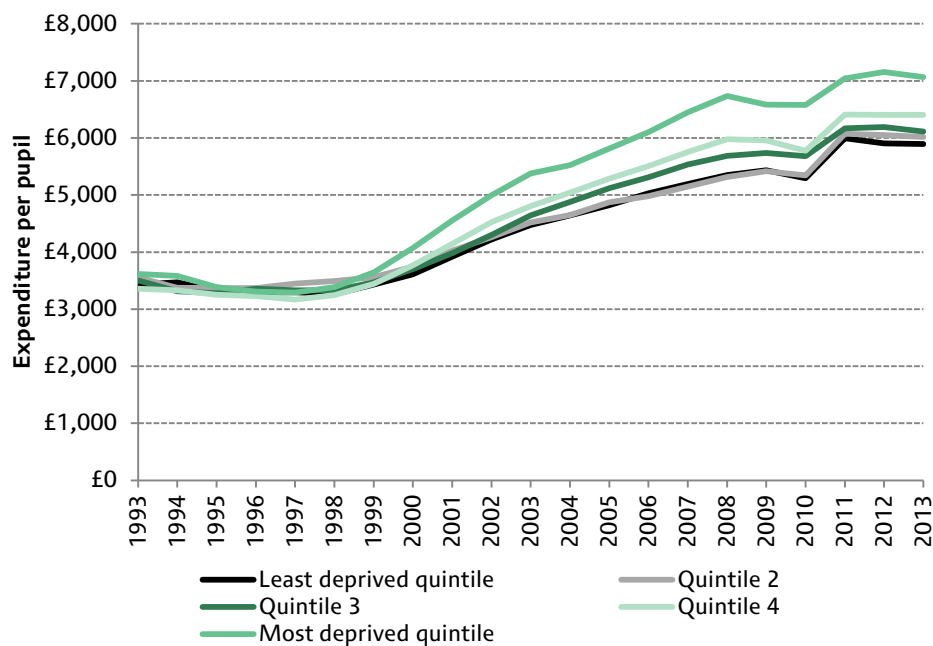


Figure A.6b. Secondary school funding by FSM quintile



Note: Years refer to financial years (e.g. 1978 = 1978–79). Expenditures adjusted for inflation using the GDP deflator.

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies' financial returns 2011–12 to 2013–14; LEASIS 1993–2009; Department for Education, 'Pupils, schools and their characteristics January 2010–2013'.

Figure A.7a. Primary school funding by quintile of unemployment rate

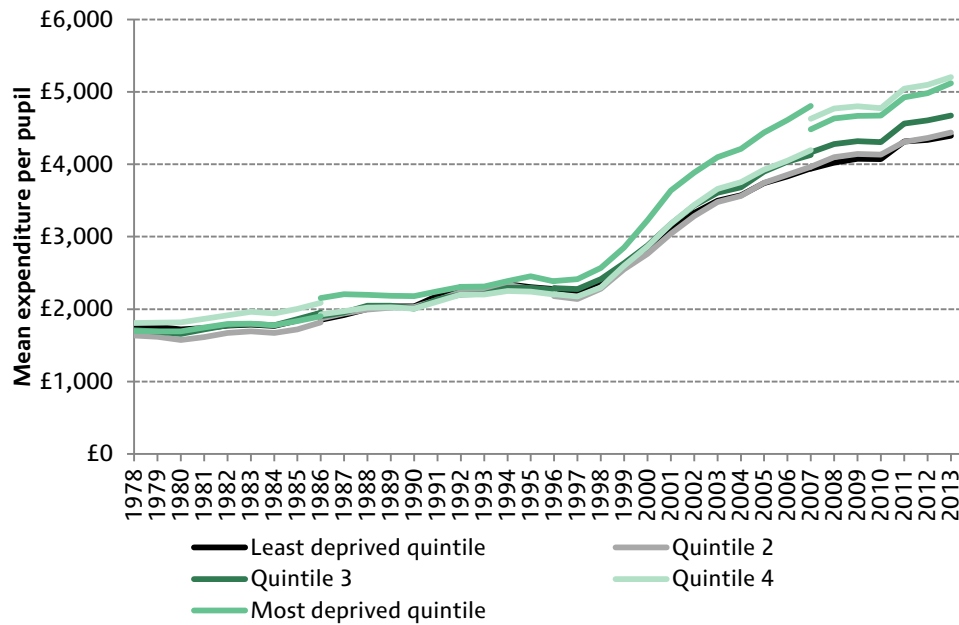
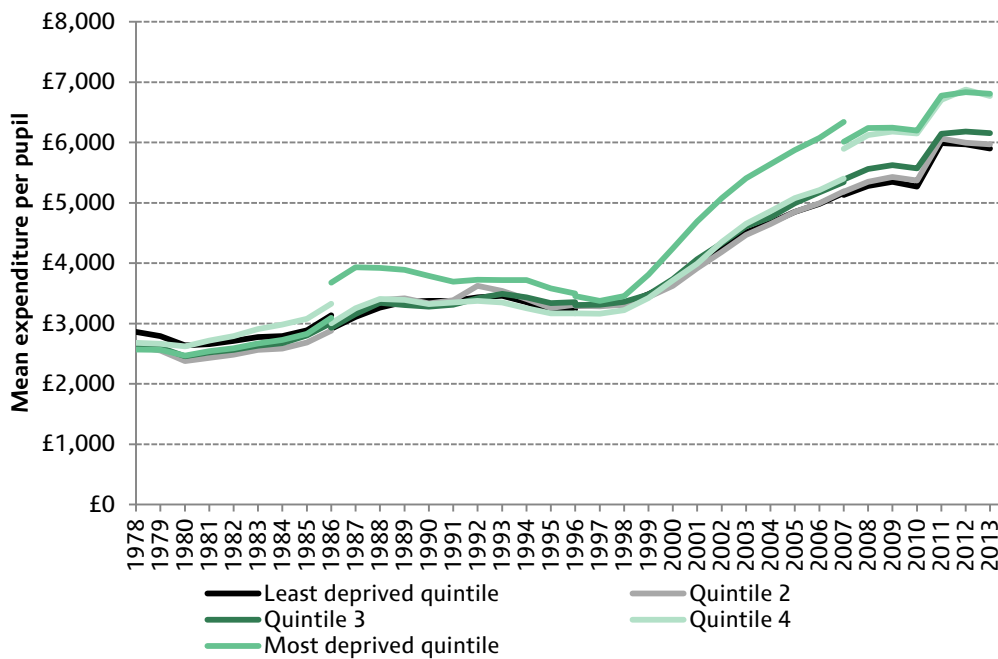


Figure A.7b. Secondary school funding by quintile of unemployment rate



Note: Years refer to financial years (e.g. 1978 = 1978–79). Expenditures adjusted for inflation using the GDP deflator.

Source: CIPFA data 1978–79 to 1999–2000; Section 52/251 data 1999–2000 to 2013–14; Academies’ financial returns 2011–12 to 2013–14; Census 1981, 1991, 2001 and 2011.

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