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Analysis of academy school performance in GCSEs 2013

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Analysis of Academy School Performance in GCSEs 2013
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Executive summary

Academy schools are schools that are independent of direct accountability to local authorities, being directly funded by and accountable to central government. The academy school programme began under the Labour government in the early 2000s, replacing poorly performing inner city secondary schools with an academy, but the programme has increased more rapidly since 2010 when all schools have been able to apply to become academies. In 2014, academies make up more than half of all secondary schools in England.

The analysis presented in this report investigates how performance in national examinations in academies compares to performance in similar non-academies, to attempt to find out whether performance was better than it might have been otherwise.

Analysis shows that progress between Key Stage 2 and Key Stage 4 outcomes, such as capped point score and percentage achieving 5+ A*-C grades including English and maths, is higher after 2 years in sponsored academies compared to similar non-academy schools. This is consistent with the findings of similar studies, such as Department for Education (2012a), Machin and Vernoit (2011) and National Audit Office (2010). Some of this difference could be interpreted as mean reversion (from a starting point of low progress made, some recovery towards the average might be expected anyway) rather than an academy impact, though this has been largely addressed by restricting the comparator schools to be those that are most similar to sponsored academies.

Pupil progress in sponsored academies compared to similar non-academies is not significantly different over time when the outcome is measured as GCSE points, excluding equivalent qualifications such as BTECs. This suggests that sponsored academies either entered pupils for more non-GCSE qualifications, so increasing the chance of equivalents contributing to pupils' top eight qualifications, or entered pupils for the same proportion of non-GCSEs as non-academy schools, but got better results in these qualifications. Analysis also shows more emphasis on equivalent qualifications relative to GCSEs in converter academies compared to non-academies, though to a lesser extent than in sponsored academies.

Analysis of 2013 exam results appears to show more progress amongst converter academies than all non-academy schools, especially among the very first converters, that became academies in 2009/10. These schools were all rated 'outstanding' by Ofsted at the time, so greater progress made in 2013 might be better explained by pre-existing differences rather than the impact of academy status.

A more robust longitudinal analysis shows no significant difference in attainment progress after two years between converter academies and similar non-academy schools, suggesting the school performance benefits are limited, at least in the short term. This could be interpreted as mean reversion counteracting a positive academy impact, though mean reversion has been partially addressed by excluding non-academy schools from the analysis that are not a good comparison with academy schools. A longer time frame may be needed to fully assess the relative performance of converter academies, but the data so far suggests academy status has made no difference to the progress made in converter academies, compared to similar non-academy schools over the same time period.

Introduction

Policy background

Academy schools are schools that are independent of direct accountability to local authorities, being directly funded by and accountable to the Secretary of State. Many are overseen by a sponsor, which manage a number of academy schools and delegate the management to a board of governors. Academies have the freedom to deviate from the National Curriculum and set their own admissions policies, though many obligations still apply, such as statutory testing, regular inspection by Ofsted, providing a broad and balanced curriculum including English, maths and science, and compliance with the school admissions code. Academies receive funding for services that local authorities provide to maintained schools, such as school improvement, audit and asset management, direct from central government through the education services grant (DfE, 2012b).

The academy school programme began under the Labour government in the early 2000s. The programme involved replacing poorly performing inner city secondary schools with an academy, with the aim that new management would increase school performance. The policy broadened later in the 2000s to replace poorly performing schools more generally. These early academies have since become known as 'sponsored' academies, to distinguish them from 'converter' academies.

Under the coalition government from 2010 the number of new academies increased more rapidly. Schools that held an 'outstanding' Ofsted rating (and later 'good' as well[1]) were given the opportunity to convert to academy status (so-called 'converter' academies) and gain the associated freedoms from accountability to local authorities. Alongside this, the number of new sponsored academies increased as the transition to academy status became the standard recommendation following a judgement of inadequate school performance.

Table 1.1 shows the number of sponsored and converter academy schools that became academies in each academic year. It includes all non-academy schools and academy schools that we were able to match one-to-one to a predecessor school and to the 2013 key stage 4 performance data. A number of primary schools have converted to become academies in recent years, but the table, and the analysis in this report, only includes secondary schools. The number of academies has risen rapidly since 2010 and more than half of secondary schools are now academies. This rise is largely driven by the number of converter academies, which make up 73% of secondary academies.

1 At the time of writing, an assessment of 'performing well' based on a number of criteria is used if a school is applying to convert as a stand-alone academy. Any school can apply to become an academy as part of a chain and then different criteria apply to the group of schools as a whole. For more details, see: https://www.gov.uk/become-an-academy-information-for-schools.

Table 1.1 Number of schools by type and academic year of opening

	Never an academy	Sponsored academies	Converter academies
Never an academy	1362		
Opened during 2001/02		3	0
Opened during 2002/03		9	0
Opened during 2003/04		5	0
Opened during 2004/05		10	0
Opened during 2005/06		19	0
Opened during 2006/07		25	0
Opened during 2007/08		49	0
Opened during 2008/09		68	0
Opened during 2009/10		66	22
Opened during 2010/11		45	657
Opened during 2011/12		59	365
Opened during 2012/13		76	158
Opened during 2013/14		13	9
Total	1362	447	1211

Mainstream (not including special schools) secondary schools that are in the 2013 key stage 4 performance tables, and academies that have a one-to-one match to a predecessor school

Source: NFER analysis of Department for Education 2013 performance data and Department for Education list of open academies November 2013.

Analysis of outcomes in academies

The analysis presented in the following chapters investigates how well academy schools perform in national exams and compares that performance with non-academies. We attempt to find out whether becoming an academy has led the attainment progress of pupils to be better than it might have been otherwise. We explore what association there is between pupil progress in secondary schools and academy status, and assess the extent to which observed differences can be attributed to the performance impact of academy status on schools. Performance here is measured as pupils' results in national examinations. There may be other impacts of academy status, such as on school ethos, teachers, or pupil aspirations and attitudes, but we do not consider them in this report.

As explained further in chapter 2, there are challenges to interpreting the observed differences between academies and non-academies as the impact of academy status. The analysis in this report aims to reduce the factors that confound the interpretation as far as possible. Chapter 3 presents analysis of the attainment progress made by pupils in academy schools in 2013 and compares it to the progress made in all non-academy schools. While this analysis takes some account of the characteristics of pupils, it takes little account of the context of the schools when they became academies. A longitudinal analysis is presented in chapter 4, which assesses attainment progress over time. It takes a more robust approach to analysing the central research question because, by excluding non-academy schools that are not a good comparison with academy schools, it overcomes some of the challenges of identifying the impact of academy status. Chapter 5 summarises the key findings of the analysis.

Methodology

Measuring school performance

One way of understanding whether academy status has had a positive impact on raising attainment in secondary schools is by carrying out quantitative analysis of school GCSE results. This report replaces and extends an earlier NFER report (Rutt and Styles, 2013), which looked at the performance of academy schools compared to the performance of non-academy schools.

School performance is measured throughout as the progress in attainment made between exams at the end of primary school (Key Stage 2) and exams at the end of secondary school (Key Stage 4). The statistical modelling can be interpreted in terms of the average progress made between Key Stage 2 and Key Stage 4 because prior attainment is accounted for in all the statistical models by including average Key Stage 2 score as an explanatory variable.

Three outcome variables were used in the analysis:

- average capped Key Stage 4 points score (including equivalents)
- the percentage of pupils who attained 5 or more A* to C grades (including equivalents), two of which were English and maths
- average capped GCSE points score (excluding equivalents).

For the point scores, each pupil's set of grades counted towards the school average, but capped means that only the best eight grades for each pupil were counted in the measure. Capping the point score takes account of pupils being entered for different numbers of exams; it ensures that 8 GCSE A grades counts for more than 10 GCSE B grades, which it wouldn't otherwise.

The first two measures above include all Key Stage 4 qualifications, including GCSE qualifications and equivalents such as BTEC's and NVQ's. The last of the measures above just includes:

- full GCSEs
- short course GCSEs
- double award GCSEs
- vocational GCSEs (single and double award)
- accredited Cambridge International Certificates and their legacy iGCSEs
- accredited Edexcel Certificates and their legacy iGCSEs.

Attributing impact of academy status

A number of challenges mean that statistical analysis measuring the difference in progress made by pupils in academies and non-academies is not necessarily able to determine the impact that academy status has had on average school performance. There are many ways that academy schools and non-academy schools are different, so comparing the average outcomes in each will capture those differences as well as the impact academy status has had on attainment progress.

The 2013 school performance data measures some of the underlying differences of pupil composition, such as the prior attainment of pupils and other characteristics such as gender and free school meals (FSM). A statistical regression model allows the effect of these factors on outcomes to be controlled for separately and the effect of academy status better isolated. However, some factors cannot be controlled for in this type of statistical modelling, so comparing outcomes in academies with non-academies will not necessarily uncover the impact of academy status. For example:

mean reversion – converting to sponsored academy status typically comes as a result of poor performance, typically measured by GCSE outcomes. Some recovery after a particularly bad set of results would be expected anyway, an effect known as 'reverting to the mean'. Similarly, early converter academies had an outstanding or good Ofsted rating, and high pupil progress is a factor Ofsted takes into account in its rating. Therefore, we might expect some deterioration in pupil progress over time in converter academies compared to the average

selection bias – some schools choose to convert to academy status, while some others opt not to despite having the opportunity. Those schools that change are likely to be systematically different to those that do not because there are likely to be underlying differences between the two groups. We might expect that those choosing to change are those most likely to benefit from the change. Any attempt to overcome selection bias in analysing the impact of academy status requires a more sophisticated approach than that presented here. For example, see Machin and Vernoit (2011).

appropriate time horizon – the impact should be measured over the time horizon that academy status would be expected to have an effect on school performance. The absence of a measured impact in the short run does not mean that there is no impact over a longer time frame.

Performance of academies in 2013

Key findings

Analysis of the attainment progress made by pupils in 2013 between Key Stage 2 and Key Stage 4 in sponsored and converter academies compared with all non-academy schools seems to indicate that:

pupils in sponsored academies that have been open for at least two years made more progress between Key Stage 2 and Key Stage 4 including equivalents in 2013 than pupils in all non-academy schools, but made less relative progress between Key Stage 2 and Key Stage 4 excluding equivalents

pupils in converter academies that have been open for at least two years made more progress (when equivalent qualifications were included and when they were excluded) between Key Stage 2 and Key Stage 4 in 2013 than pupils in all non-academy schools. However, this comparison may be capturing underlying differences rather than the impact of academy status.

The analysis of relative performance in 2013 presented in chapter 3 shows results that are consistent with a positive impact of academy status, but are also consistent with other explanations. The longitudinal analysis presented in chapter 4 takes a more robust approach to analysing the differences between academies and non-academy schools.

Introduction

The analysis presented in chapter 3 looks at the three different measures of progress in attainment made by all schools in England in the 2013 GCSEs and identifies whether academy schools performed above or below the national average. The analysis accounts for differences between schools in terms of their gender balance, proportion eligible for free school meals (FSM), English as an additional language (EAL) and special educational needs (SEN). However, it is analysis that includes all secondary schools in England: the analysis in chapter 4 makes a more robust comparison by excluding non-academy schools that have characteristics that mean they do not make a good comparison group.

The difference between academies and non-academies is measured separately for sponsored and converter academies. A further analysis looks at the performance of different cohorts of academies (by academic year of becoming an academy) compared to non-academies to see whether pupils in schools that have been academies for longer make greater progress. In the school performance tables published by the Department for Education, a school is first counted as an academy in the following year's performance tables. For example, a school that changed to academy status on 1st September 2011 counts as having become an academy in academic year 2010/11, and its results as an academy first appear in the performance tables in 2012.

Matching the 2013 Key Stage 4 school performance data and the November 2013 list of open academies produced a dataset with 3,020 secondary schools, including 447 sponsored academies and 1,211 converter academies.

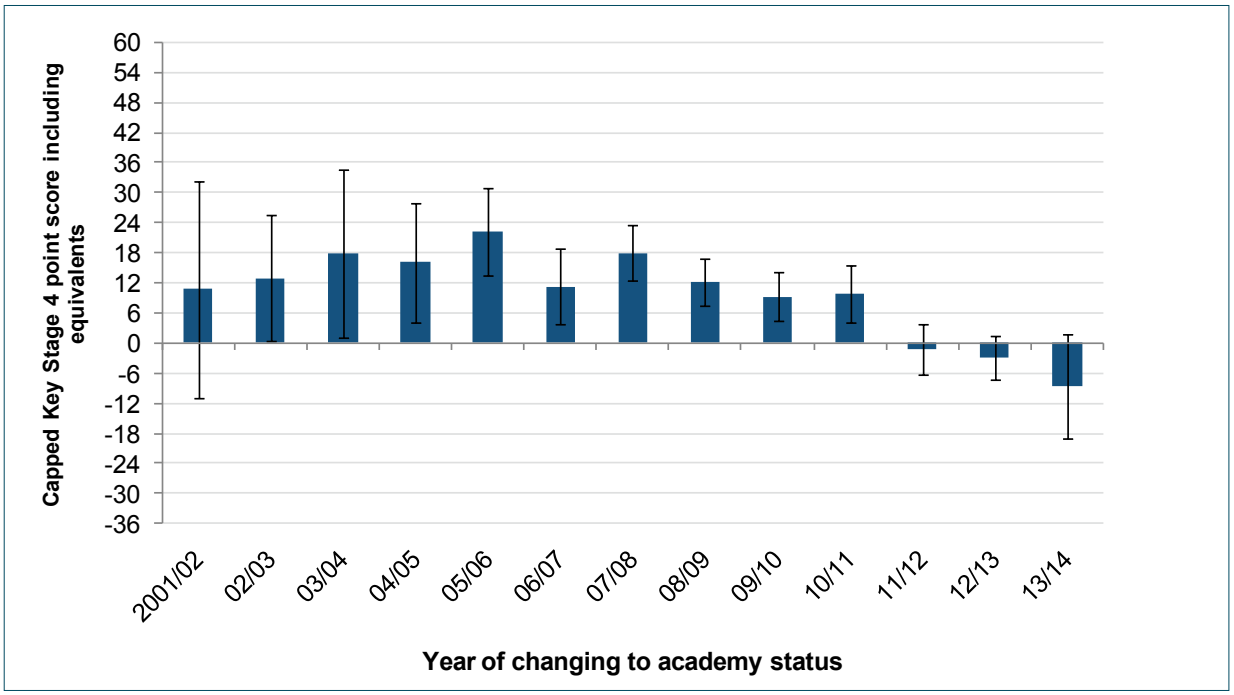
Analysis of sponsored academies

Analysis of attainment progress between Key Stage 2 (KS2) and capped Key Stage 4 points shows that, on average, pupils in sponsored academies made more progress than pupils in all non-academies (see Table A1.1). The average difference between sponsored academies and non-academies was about ten points, which is the equivalent of one and a half GCSE grades per pupil, and was statistically significant. It is worth noting that the average difference masks a wide variation in the attainment progress made by pupils both in sponsored academies and in non-academies.

There was variation in the difference in progress made in 2013 among sponsored academies that opened at different times; this is shown in Figure 3.1 (see also Table A1.2).

Key to the figures
The blue bars show the difference in progress made between Key Stage 2 and Key Stage 4 in 2013, for a cohort of sponsored academies compared with the average for all non-academies. The black line shows the 95% confidence interval of that estimate; if the black line covers the horizontal axis at zero, then the average score for that cohort of sponsored academies is not statistically significantly different from the average among non-academies.

Figure 3.1 Average progress between Key Stage 2 and capped Key Stage 4 point score, 2013: difference between non-academy schools and sponsored academies, by year of opening



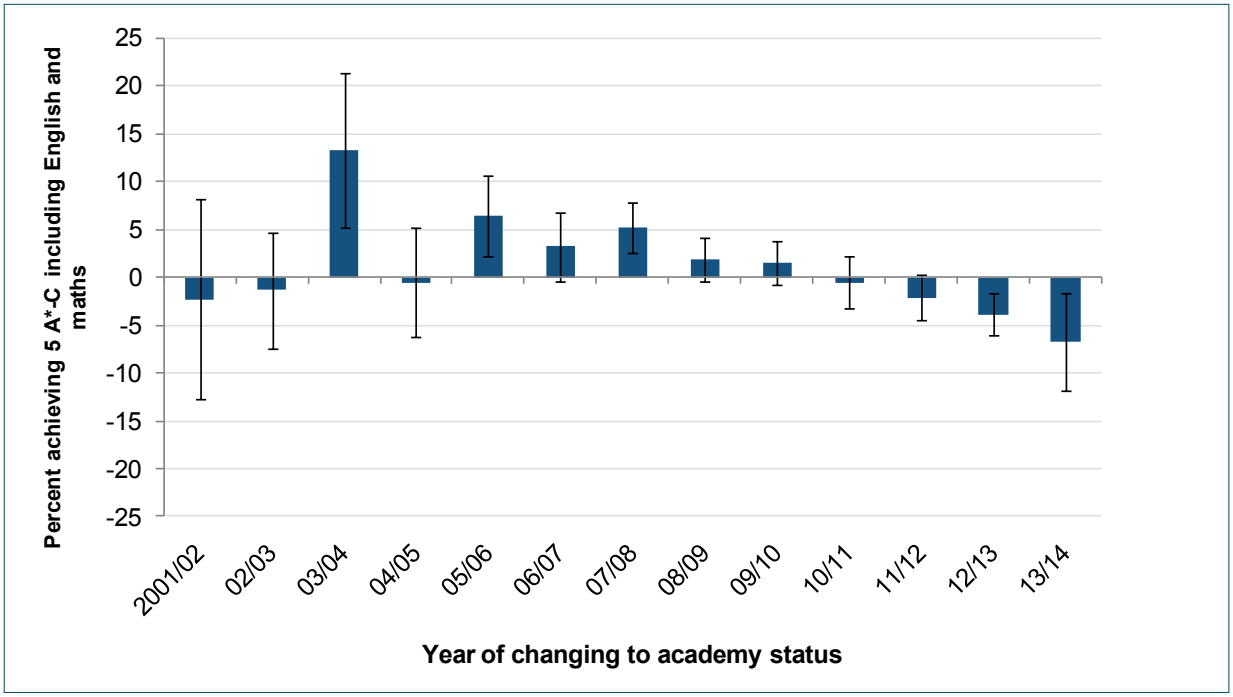
One GCSE grade per pupil is the equivalent of 6 points. Full model results in Table A1.2.
Source: NFER analysis of Department for Education data

Figure 3.1 shows the difference in progress made between KS2 and capped KS4 point score in 2013 between all non-academies and sponsored academies by year of opening. The average progress between KS2 and capped Key Stage 4 point score of sponsored academies was significantly higher than non-academies among the schools that became academies between 2002/03 and 2010/11. There is no significant difference between 2011/12 sponsored academies and non-academies, but it is perhaps unsurprising as those schools have been academies for little over a year. The difference between sponsored academies and non-academies is greatest for those that have been academies for a number of years, which might indicate that academy status has a positive impact but takes some time to have an effect on pupil progress.[2] However, it is also consistent with mean reversion.

The 2012/13 and 2013/14 cohorts were listed in the 2013 performance tables under the predecessor school, and did not count as academies, but are shown here for comparison. It is unsurprising that these are relatively low performing, as sponsored academy status is targeted at low performing schools.

Analysis using the progress between KS2 and the percentage of pupils achieving 5+ A*-C grades including English and maths shows somewhat similar results. Pupils in sponsored academies made more progress on average than pupils in non-academies by 1.4 percentage points.

Figure 3.2 Average progress between Key Stage 2 and percentage achieving 5+ A*-C including English and maths, 2013: difference between non-academy schools and sponsored academies, by year of opening



Full model results in Table A1.2.
Source: NFER analysis of Department for Education data

As shown in Figure 3.2, pupils in schools that became sponsored academies in 2003/04, 2005/06 and 2007/08 are making significantly more progress in 2013 compared with pupils at non-academies. However, there is no significant difference between non-academy schools

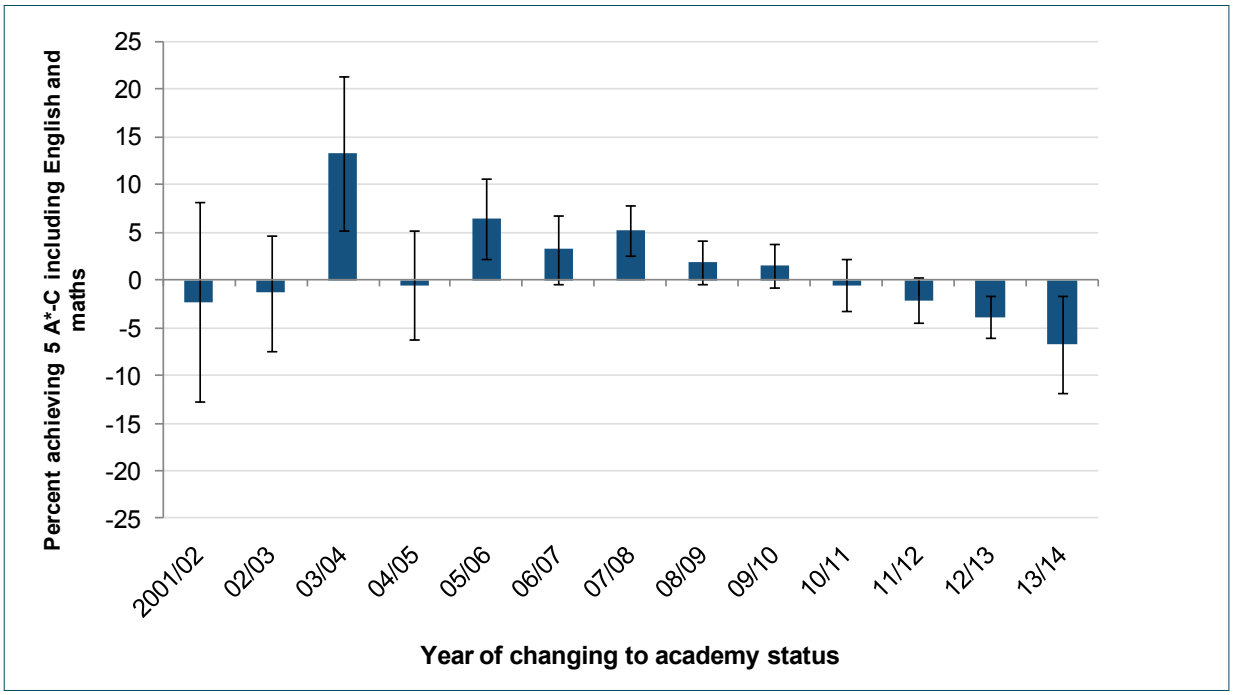
2 The confidence intervals for early sponsored academies are wider than later cohorts: the precision is low because the number of schools is also low (see Table 1.1).

and sponsored academies that became academies in other years. This pattern is consistent with an academy impact that takes a few years to take hold, but is also consistent with mean reversion. The percentage of pupils that achieved 5+ A*-C including English and maths is seen as the headline measure of school performance, so very poor performance in one year strongly influences the decision to recommend that a school become a sponsored academy status. Some recovery following very poor school performance might be expected anyway, so it is unclear how much of the trend is an academy effect. Sponsored academies that became academies in 2012/13 and 2013/14 performed significantly below non-academies in 2013, but this is unsurprising as discussed above.

Analysis of progress between KS2 and capped Key Stage 4 points excluding equivalent qualifications shows the average point score in sponsored academies is significantly below non-academies by around 2 GCSE grades per pupil. This is in contrast to the analysis of capped Key Stage 4 points including equivalents. This suggests that sponsored academies either entered pupils for more non-GCSE qualifications, so increasing the chance of equivalents contributing to pupils' top eight qualifications, or entered pupils for the same proportion of non-GCSEs as non-academy schools, but got better results in these qualifications, or a mixture of the two.

Figure 3.3 shows the average progress between Key Stage 2 and GCSE points in 2013 of sponsored academies compared to all non-academies by year of opening. While average progress made by pupils in the five sponsored academies that opened in 2003/04 is significantly above non-academies, the average progress made by pupils in sponsored academies that opened in recent years (between 2007/08 and 2011/12) is significantly below non-academies.

Figure 3.3 Average progress between Key Stage 2 and capped Key Stage 4 point score (GCSE only), 2013: difference between non-academy schools and sponsored academies, by year of opening



One GCSE grade per pupil is the equivalent of 6 points. Full model results in Table A1.2.
Source: NFER analysis of Department for Education data

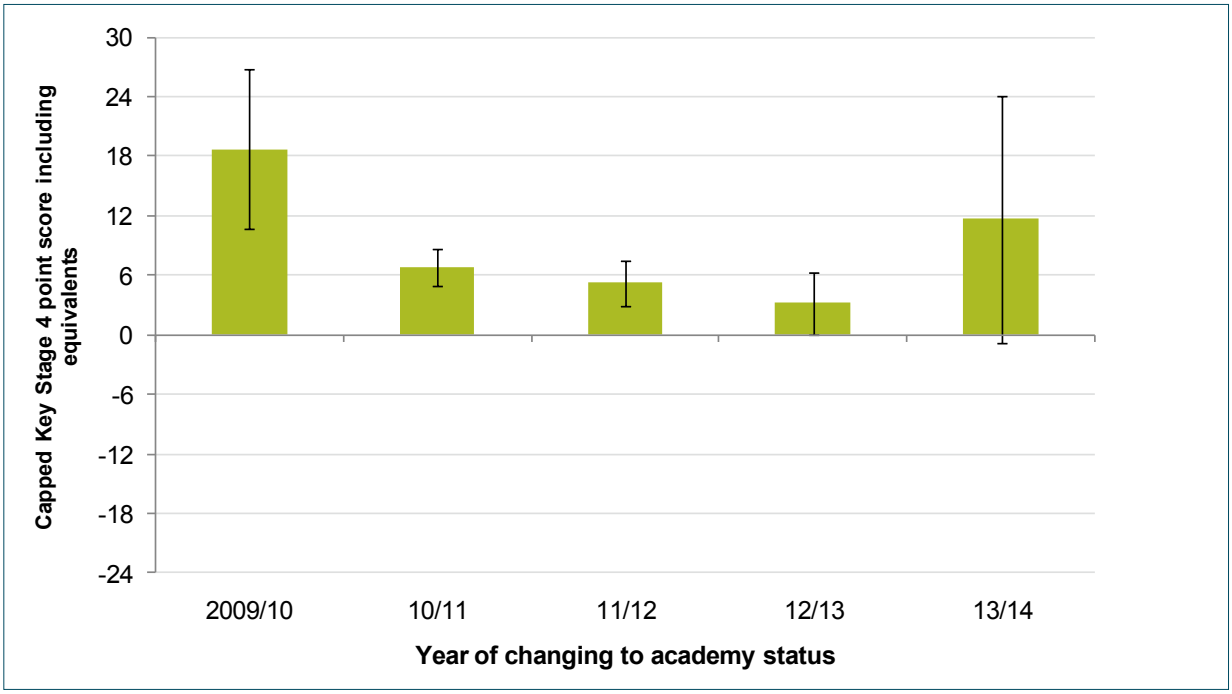
Analysis of converter academies

Analysis of attainment progress between Key Stage 2 (KS2) and capped Key Stage 4 points shows that, on average, pupils in converter academies made more progress than pupils in all non-academies (see Table A1.1). The average difference between converter academies and non-academies was about six points, which is the equivalent of one GCSE grade per pupil, and was statistically significant.

Figure 3.4 shows the variation in progress by year of becoming an academy. The green bars show the differences in progress made between KS2 and capped point score for a cohort of converter academies, compared with the average for all non-academies. The black line shows the 95% confidence interval of that estimate.

The difference between converter academies and non-academies was statistically significant among all the cohorts of academies except for 2013/14. The largest difference in progress between converter academies and non-academies is the 2009/10 cohort that became academies very early, which is consistent with an academy impact taking some years to materialise. However, the first converter academies (rated 'outstanding' at the time by Ofsted) were those with high underlying pupil progress to begin with, so this may be measuring pre-existing differences rather than the impact of academy status itself.

Figure 3.4 Average progress between Key Stage 2 and capped Key Stage 4 point score, 2013: difference between non-academy schools and converter academies, by year of opening

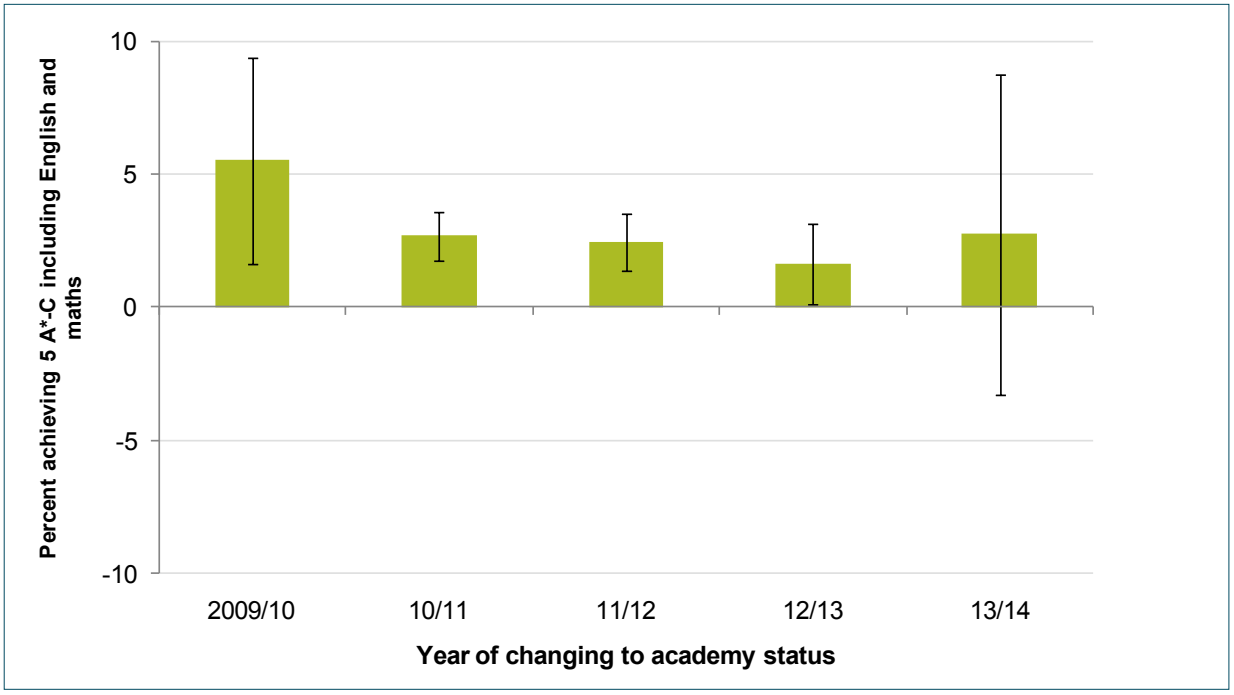


One GCSE grade per pupil is the equivalent of 6 points. Full model results in Table A1.2.
Source: NFER analysis of Department for Education data

Analysis using the progress between KS2 and the percentage of pupils achieving 5+ A*-C grades including English and maths shows similar results. Pupils in converter academies made more progress on average than pupils in non-academies by 2.6 percentage points.

As shown in Figure 3.5, the largest difference in progress between converter academies and non-academies is the 2009/10 cohort that became academies very early, which is consistent both with an academy impact taking some time to take hold, and of measuring underlying differences rather than the impact of academy status itself.

Figure 3.5 Average progress between Key Stage 2 and percentage achieving 5+ A*-C including English and maths, 2013: difference between non-academy and converter academies, by year of opening

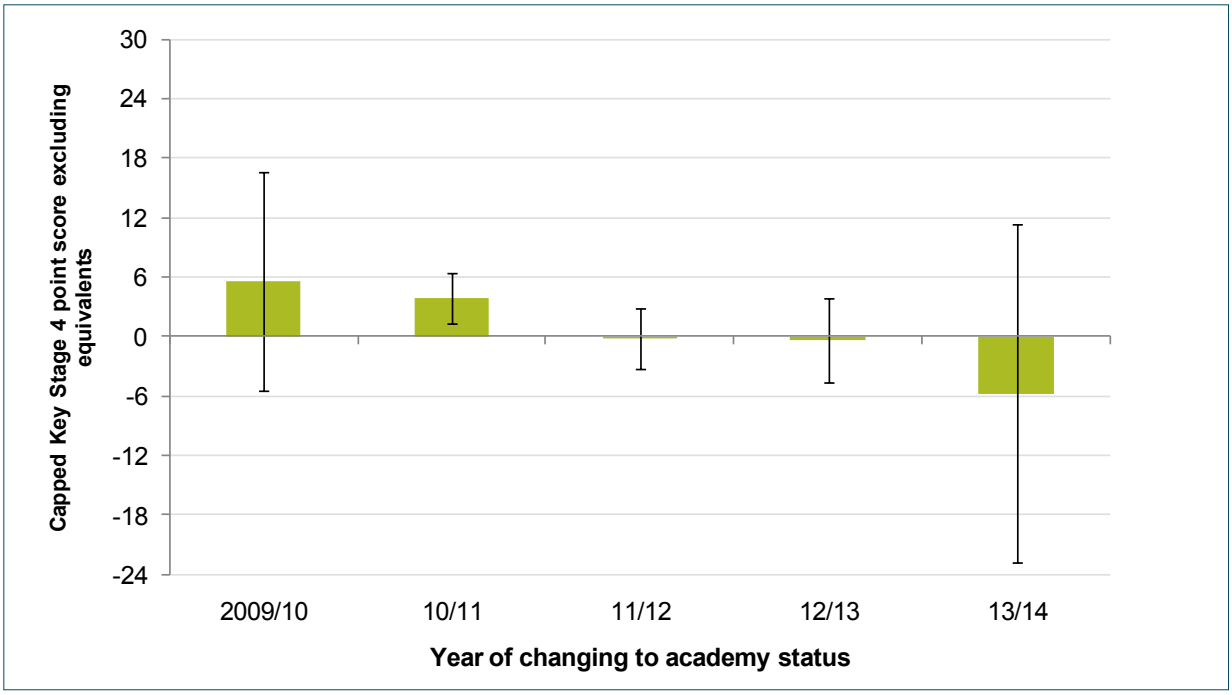


Full model results in Table A1.2.
Source: NFER analysis of Department for Education data

Analysis shows that progress between KS2 and average capped GCSE points in converter academies is higher on average than in non-academies by around half a GCSE grade per pupil, and is statistically significant. However, this is less than the average difference in progress between KS2 and capped Key Stage 4 points including equivalent qualifications, suggesting a similar differential approach to GCSE and equivalent qualifications in converter academies.

In contrast to Figures 3.4 and 3.5, Figure 3.6 shows that the progress made by pupils in 2009/10 converter academies between Key Stage 2 and capped GCSE points is not significantly different to the average among pupils in all non-academy schools.

Figure 3.6 Average progress between Key Stage 2 and capped Key Stage 4 point score (GCSE only), 2013: difference between non-academy schools and academy schools, by academy type and year of opening



One GCSE grade per pupil is the equivalent of 6 points. Full model results in Table A1.2.
Source: NFER analysis of Department for Education data

Longitudinal analysis

Key findings

Longitudinal analysis of the change in pupil progress over time in sponsored academies compared to a group of similar non-academy schools shows an increase in progress between Key Stage 2 and Key Stage 4 including equivalents. However, there is no significant difference between sponsored academies and similar non-academies in terms of the relative change in progress between Key Stage 2 and Key Stage 4 excluding equivalents. This suggests that pupils at sponsored academies take relatively more equivalent qualifications and fewer GCSE qualifications.

There is no significant difference in the change in pupil progress between converter academies and similar non-academy schools using any of the outcome measures. There is also some evidence of relatively more equivalent qualifications being sat by pupils in converter academies compared to similar non-academy schools.

Longitudinal analysis is a more robust way of analysing the differences between academies and non-academies because:

- non-academy schools with characteristics that mean they are not a good comparison are excluded; and
- the analysis accounts for the pre-existing characteristics of schools before they became academies, focussing instead on change over time.

Introduction

The longitudinal analysis of school performance presented in this chapter attempts to assess how the performance of academy schools has changed over time, compared to how those schools might have performed in the absence of academy status. It delves deeper into the question of how the performance of academies evolves over time after becoming an academy. Longitudinal analysis compares the difference in average progress made over time in academy schools and a group of non-academy schools that had similar characteristics at the time the schools became academies. It therefore takes better account of the compositional differences between academies and non-academies than the analysis in chapter 3 and can go some way to taking account of mean reversion. However, selection bias is still likely to be a challenge to interpreting any differences between academies and non-academies as the impact of academy status.

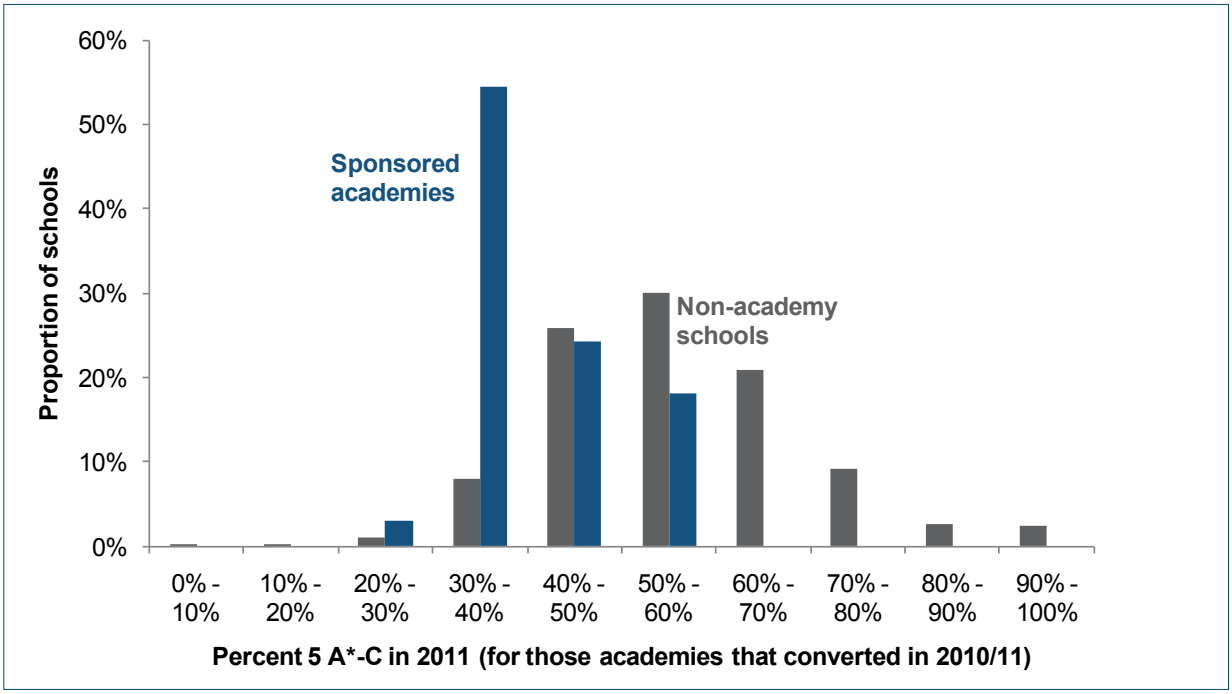
Comparing like with like

Figure 4.1 shows the very different distributions of percentage 5+ A*-C including English and maths for sponsored academies and non-academy schools. In the year that they become academies, the percentage getting 5+ GCSEs at A*-C in sponsored academies is well below the national average: 42% in sponsored academies and 57% in non-academies. Indeed, no sponsored academy got above 60% 5+ GCSEs at A*-C, so it would not be a robust comparison to compare sponsored academies with non-academy schools that have a very high percentage. Figure 4.2 shows the different distributions for converter academies and non-academy schools. Converter academies are schools with a good or outstanding rating from Ofsted, so conversely tend to be higher performing in terms of GCSE results than the average.

Schools that are not good for making comparisons with, i.e. academies that are not similar in their underlying characteristics to non-academy schools and non-academy schools that are not similar in their underlying characteristics to academies, are excluded from the longitudinal analysis (known as 'imposing common support').

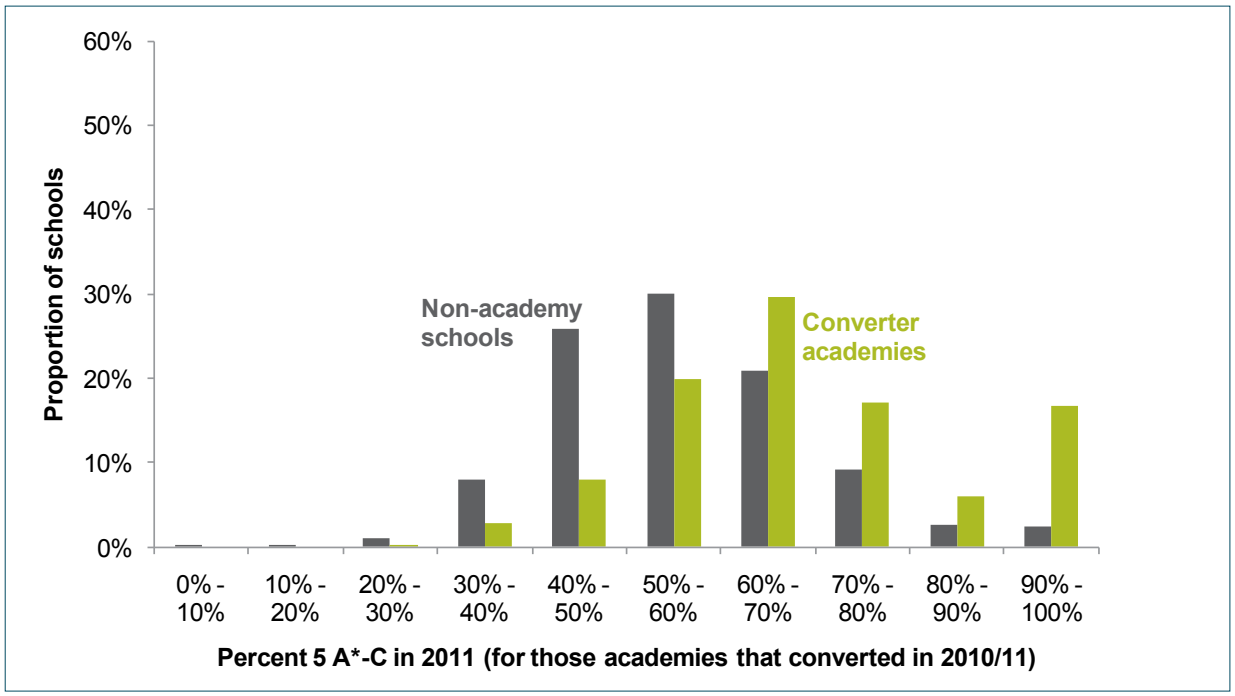
For example, the 2010/11 cohort of sponsored academies have an average capped point score in 2011 of 318 points, whereas all non-academy schools have an average of 339 points, an average difference of 21 points (or three and a half GCSE grades per pupil). By excluding non-academy schools that have high average point scores, imposing common support reduces the difference from 21 points to 9 points, making the two groups more comparable. The average characteristics before and after imposing common support are shown in Tables A1.3 and A1.4.

Figure 4.1 Distribution of percentage achieving 5+ A*-C including English and maths in 2011 among 2010/11 sponsored academies and all non-academy schools



Source: NFER analysis of Department for Education data

Figure 4.2 Distribution of percentage achieving 5+ A*-C including English and maths in 2011 among 2010/11 converter academies and all non-academy schools



Source: NFER analysis of Department for Education data

Longitudinal analysis of sponsored academies

The longitudinal analysis of sponsored academies shows that the progress made by pupils between KS2 and KS4 in sponsored academies has increased over time compared to similar non-academy schools.

Key to the figures

Figures 4.3–4.5 show the relative progress of sponsored academies that opened in 2010/11 and 2011/12, compared to a group of similar non-academies over the same time period using the three outcome measures.[3] The figures have been adjusted so that the progress made by pupils in similar non-academies over time is the line at zero; the coloured lines show the differential change in outcomes for academies. The black vertical lines show the 95% confidence interval.

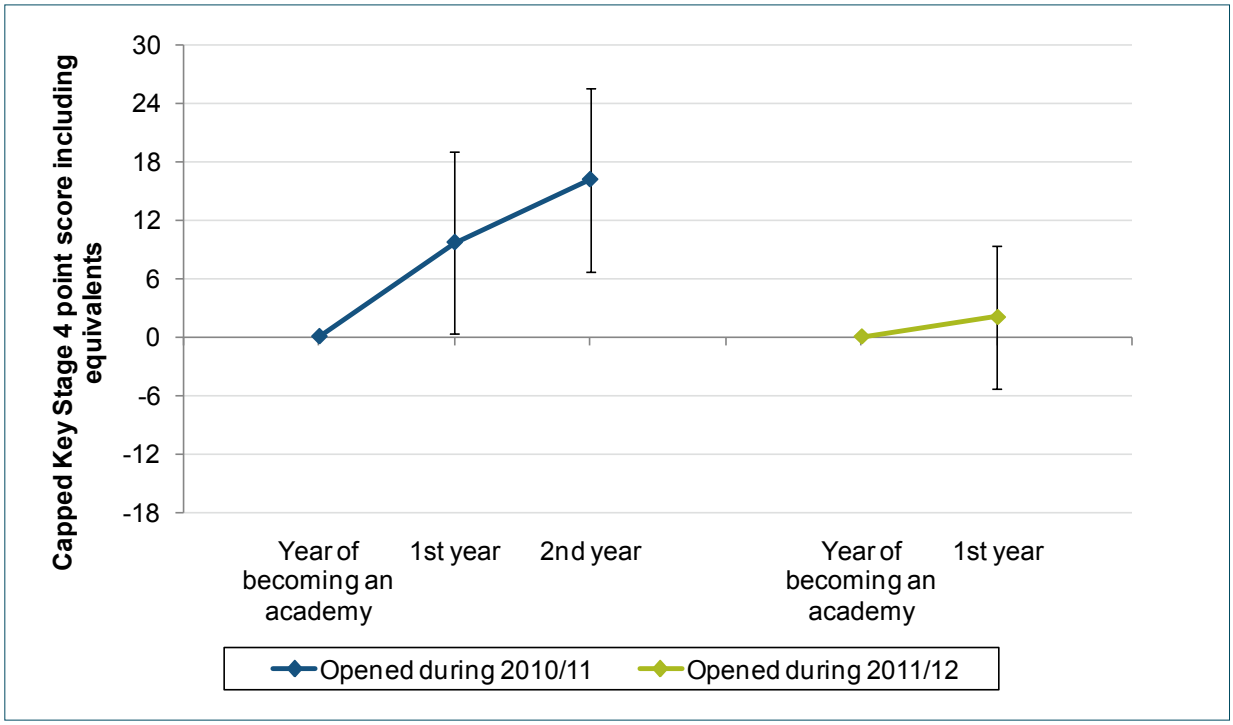
After 2 years of being open, the 2010/11 cohort of sponsored academies were significantly above similar non-academies in terms of progress between KS2 and capped Key Stage 4 point score and percentage 5+ A*-C including English and maths, by two and a half GCSE grades and 5 percentage points respectively. However, there was no significant difference in terms of progress between KS2 and capped GCSE points excluding equivalents. This is consistent with the finding from chapter 3 that there appears to be a differential approach to GCSE and equivalent qualifications in academy schools compared with non-academies.

3 A key source of data for the longitudinal analysis was the school performance tables. Detailed cohort-average data on pupil characteristics required to run the multilevel models was only available in this data from 2011 onwards, so the analysis focuses on the 2010/11 and 2011/12 cohorts of academies. Longitudinal analysis of earlier cohorts of sponsored academies have been analysed previously, for example see National Audit Office (2010); Machin and Vernoit (2011).

Some of this difference could be interpreted as mean reversion (from a starting point of low progress made, some recovery towards the average might be expected anyway) rather than an academy impact, though this has been largely addressed by restricting the comparator schools to be those that are most similar to sponsored academies.

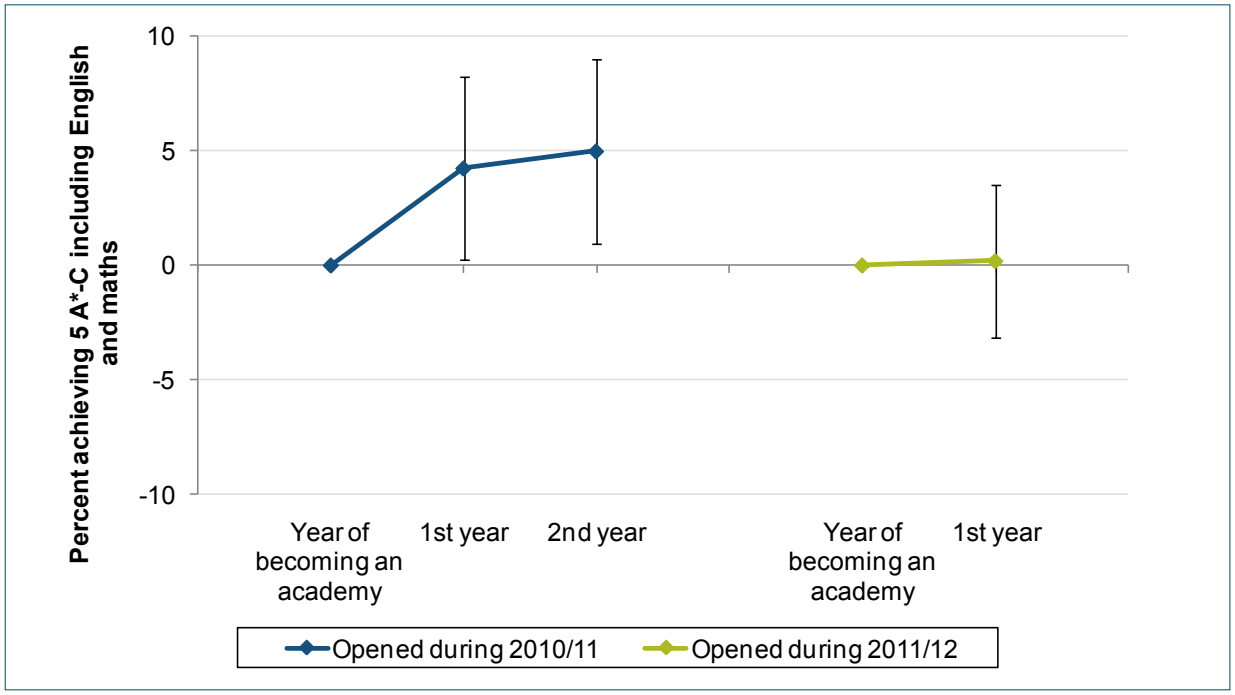
There is little observed difference in attainment progress between the 2011/12 cohort of sponsored academies and similar non-academies over the same time period, but it is likely that one year is too short a time frame to make a good assessment.

Figure 4.3 Progress between Key Stage 2 and capped Key Stage 4 point score: average difference between sponsored academies and similar non-academy schools over time, by year of opening



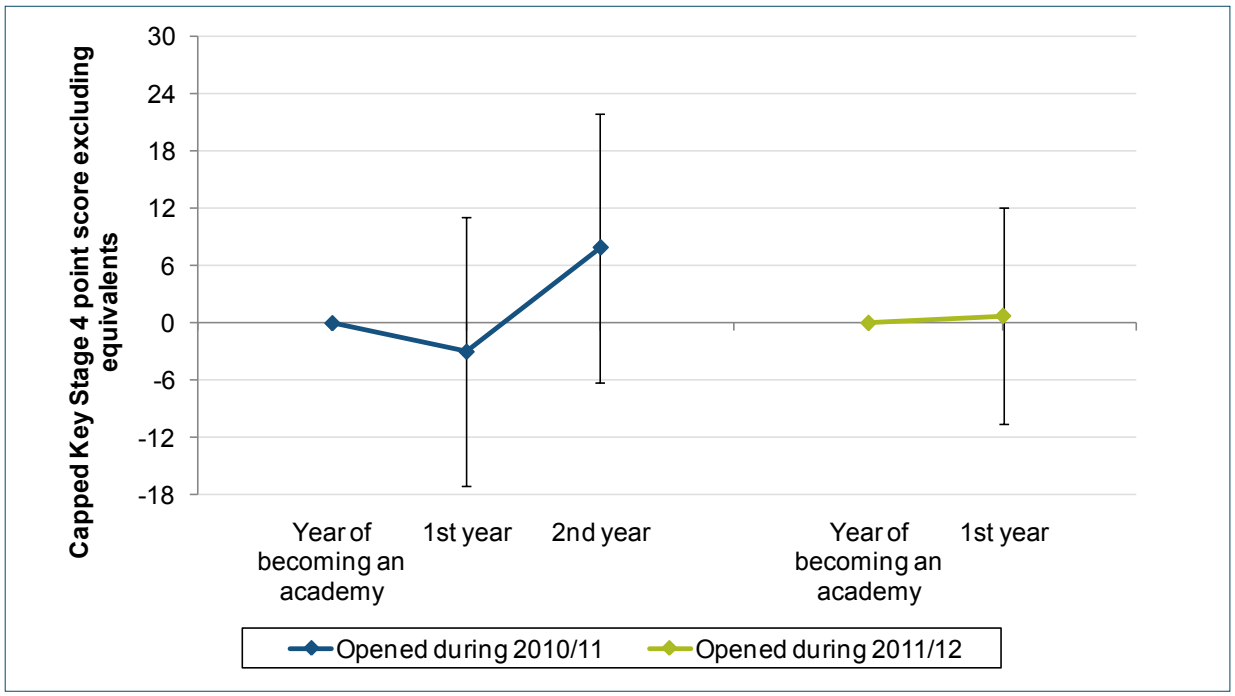
Full model results in Tables A1.5 and A1.6.
Source: NFER analysis of Department for Education data

Figure 4.4 Progress between Key Stage 2 and percentage achieving 5+ A*-C including English and maths: average difference between sponsored academies and similar non-academy schools over time, by year of opening



Full model results in Tables A1.5 and A1.6.
Source: NFER analysis of Department for Education data

Figure 4.5 Progress between Key Stage 2 and capped Key Stage 4 point score (excluding equivalents): average difference between sponsored academies and similar non-academy schools over time, by year of opening



Full model results in tables A1.5 and A1.6.
Source: NFER analysis of Department for Education data

Longitudinal analysis of converter academies

The longitudinal analysis of converter academies shows that the relative progress made by pupils between KS2 and KS4 is not significantly different over time from the group of comparable non-academy schools.

Key to the figures

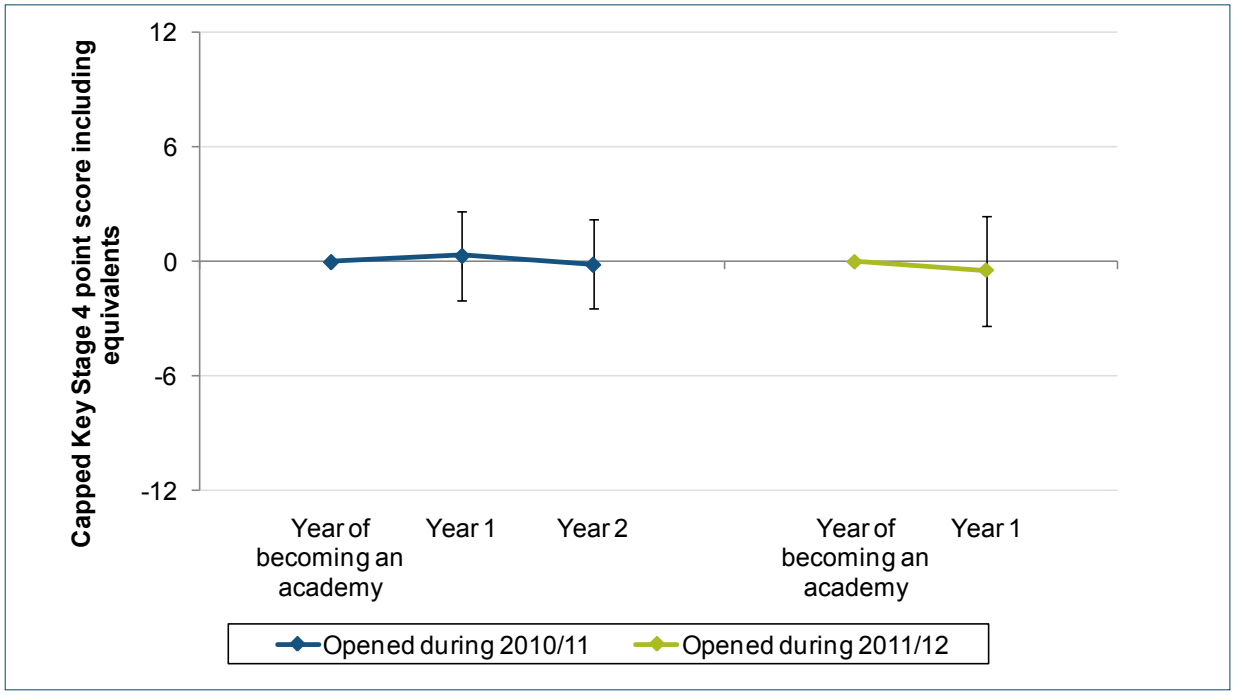
Figures 4.6–4.8 show the relative difference in pupil progress of converter academies that opened in 2010/11 and 2011/12 compared to a group of similar non-academies over the same time period using the three outcome measures. The figures have been adjusted so that progress made by pupils in similar non-academy schools over time is the line at zero. The black vertical lines show the 95% confidence interval.

The difference in progress in converter academies that opened in 2010/11 compared to similar non-academies is statistically insignificant in the first two years on all three outcome measures. This result contrasts with the analysis in chapter 3, which showed that converter academies performed above the average of all non-academies for two of the measures. The analysis in chapter 3 did not take account of the fact that converter academies have better underlying performance to begin with (as shown in Figure 4.2), whereas the longitudinal analysis does.

Assessing the relative progress made by pupils in converter academies after one or two years may be too short a time frame over which to assess the impact of academy status, but there does not appear to be the beginning of an upward trend. However, because the first cohorts of converter academies were above average in terms of pupil progress to begin with, some deterioration over time might be expected because of mean reversion. Therefore, the finding that there is no difference between converter academies and similar non-academies over time could be interpreted as a positive academy impact counteracting mean reversion.

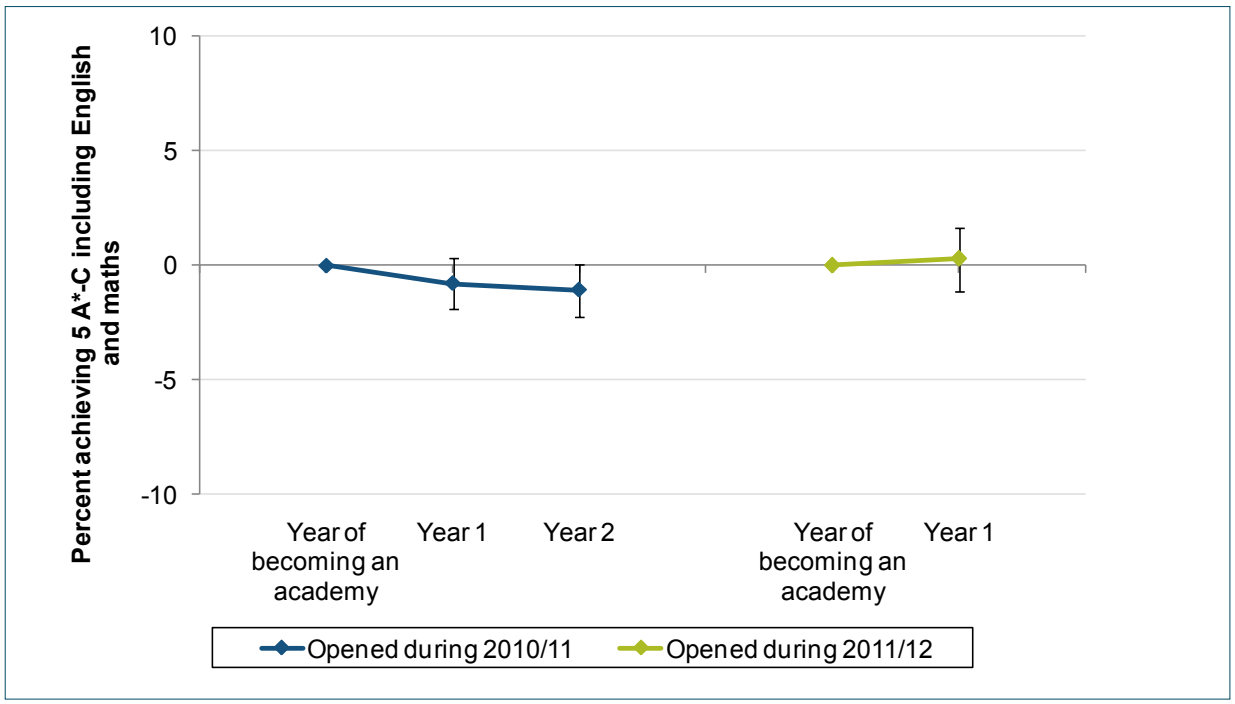
While the difference in pupil progress between KS2 and capped Key Stage 4 points including equivalents in converter academies compared to similar non-academy schools is negligible, there is half a GCSE grade less progress between KS2 and GCSE points excluding equivalents (though the difference is not statistically significant). The difference between the results of analyses that include equivalents and exclude equivalents is consistent with the findings in chapter 3 that converter academies tend to make relatively more progress when equivalent qualifications are included in the measure, suggesting the differential use of equivalent qualifications in academies. However, this gap due to equivalents is smaller in converter academies than in sponsored academies.

Figure 4.6 Progress between Key Stage 2 and capped Key Stage 4 point score: average difference between converter academies and similar non-academy schools over time, by year of opening



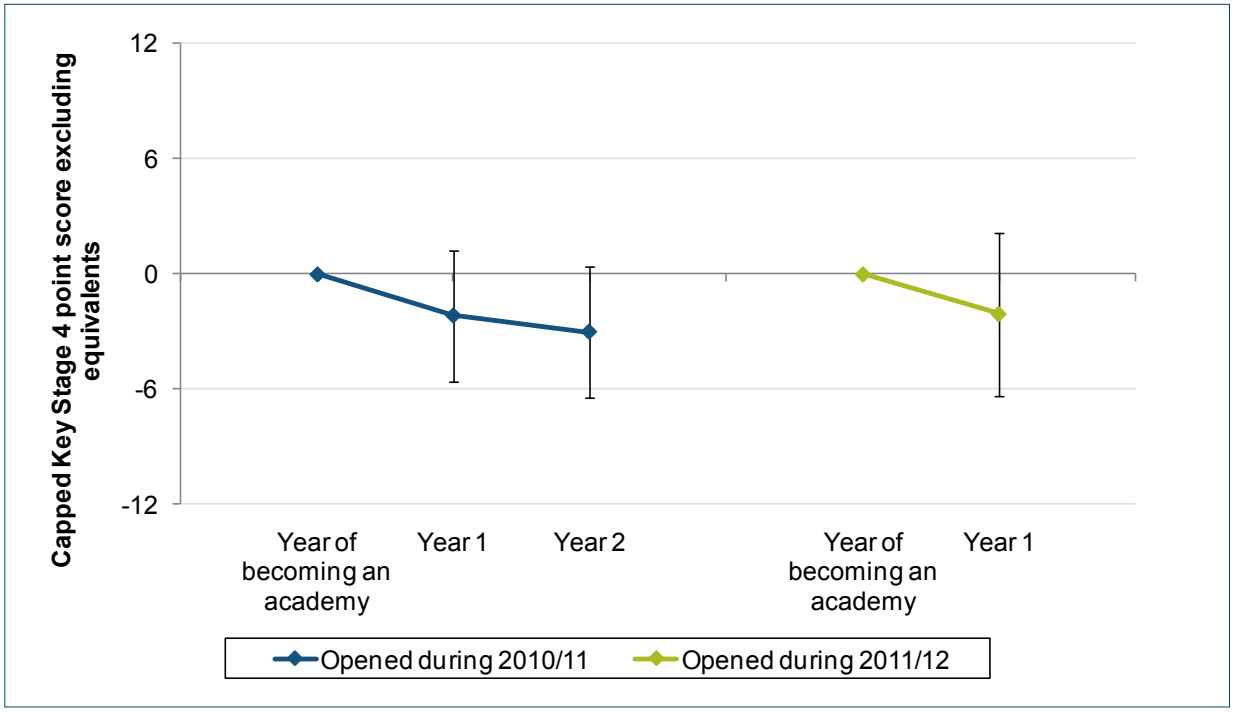
Full model results in Tables A1.7 and A1.8.
Source: NFER analysis of Department for Education data

Figure 4.7 Progress between Key Stage 2 and percentage achieving 5+ A*-C including English and maths: average difference between converter academies and similar non-academy schools, by year of opening



Full model results in Tables A1.7 and A1.8.
Source: NFER analysis of Department for Education data

Figure 4.8 Progress between Key Stage 2 and capped Key Stage 4 point score (GCSE only): average difference between converter academies and similar non-academy schools, by year of opening



Full model results in Tables A1.7 and A1.8.
Source: NFER analysis of Department for Education data

Conclusion

Analysis in this report shows that sponsored academies make relatively more improvement over time in pupil progress between Key Stage 2 and Key Stage 4 outcomes, such as capped points and percentage achieving 5+ A*-C grades, than similar non-academy schools. This is consistent with the findings of similar studies, such as Department for Education (2012a), Machin and Vernoit (2011) and National Audit Office (2010). Some of this difference could be interpreted as mean reversion (from a starting point of low progress made, some recovery towards the average might be expected anyway) rather than an academy impact, though this has been largely addressed by restricting the comparator schools to be those that are most similar to sponsored academies to begin with. The difference is not significant when the Key Stage 4 outcome is measured as GCSEs only, i.e. excluding equivalent qualifications such as BTECs. This suggests a differential use of equivalent qualifications in sponsored academies, compared with non-academy schools.

While an analysis of 2013 exam results appears to show more progress amongst converter academies than all non-academy schools, a more robust longitudinal analysis shows no significant difference in attainment progress over two years. This could be interpreted as mean reversion counteracting a positive academy impact, though mean reversion has been partially addressed by excluding non-academy schools from the analysis that are not a good comparison with academy schools. A longer time frame may be needed to fully assess the relative performance of converter academies, but the data so far seems to suggest academy status has made little difference to the progress made by pupils in converter academies compared to pupils in similar non-academy schools.

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Appendix A

Table A1.1 Regression model of school performance in 2013

	KS4 capped points (including equivalents)			KS4 capped points (GCSE only)			Percent 5+ A*-C including English and maths (%)		
	coeff.	st. error	sig.	coeff.	st. error	sig.	coeff.	st. error	sig.
Intercept	-62.4	(10.3)	*	-446.6	(14.0)	*	-154.1	(4.9)	*
Sponsored academy	9.9	(1.2)	*	-11.7	(1.6)	*	1.4	(0.6)	*
Converter academy	6.3	(0.8)	*	2.8	(1.1)	*	2.6	(0.4)	*
Key stage 2 average point score	14.3	(0.3)	*	26.3	(0.5)	*	7.6	(0.2)	*
Proportion eligible for free school meals (FSM)	-6.5	(3.4)		-116.7	(4.7)	*	-10.1	(1.7)	*
Proportion English as an additional language (EAL)	28.3	(2.2)	*	109.0	(3.0)	*	17.6	(1.1)	*
Proportion girls	14.2	(1.9)	*	25.8	(2.6)	*	5.7	(0.9)	*
Proportion SEN (Statement)	-26.9	(21.1)		160.9	(28.8)	*	9.1	(10.1)	
Proportion SEN (School Action or Action Plus)	12.5	(7.2)		-5.7	(9.8)		4.9	(3.4)	

Source: NFER analysis of Department for Education data

Table A1.2 Regression model of school performance in 2013, including cohort-specific academy effect

	KS4 capped points (including equivalents)			KS4 capped points (GCSE only)			Percent 5+ A*-C including English and maths (%)		
	coeff.	st. error	sig.	coeff.	st. error	sig.	coeff.	st. error	sig.
Intercept	-55.6	(10.3)	*	-429.4	(14.1)	*	-150.7	(5.0)	*
Key stage 2 average point score	14.0	(0.3)	*	25.8	(0.5)	*	7.5	(0.2)	*
Proportion eligible for free school meals (FSM)	-7.1	(3.4)	*	-118.2	(4.7)	*	-10.2	(1.6)	*
Proportion English as an additional language (EAL)	27.5	(2.2)	*	107.8	(3.0)	*	17.1	(1.1)	*
Proportion girls	14.4	(1.9)	*	26.1	(2.6)	*	5.8	(0.9)	*
Proportion SEN (Statement)	-30.8	(21.0)		151.7	(28.7)	*	6.9	(10.1)	
Proportion SEN (School Action or Action Plus)	10.8	(7.1)		-7.9	(9.7)		4.5	(3.4)	
Sponsored academy (opened in 2001/02)	10.7	(11.1)		9.0	(15.1)		-2.3	(5.3)	
Sponsored academy (opened in 2002/03)	13.0	(6.4)	*	10.0	(8.8)		-1.4	(3.1)	
Sponsored academy (opened in 2003/04)	17.9	(8.6)	*	34.4	(11.7)	*	13.3	(4.1)	*
Sponsored academy (opened in 2004/05)	16.1	(6.1)	*	-2.8	(8.3)		-0.5	(2.9)	
Sponsored academy (opened in 2005/06)	22.1	(4.4)	*	-7.7	(6.1)		6.4	(2.1)	*
Sponsored academy (opened in 2006/07)	11.3	(3.9)	*	-3.7	(5.3)		3.2	(1.9)	
Sponsored academy (opened in 2007/08)	18.0	(2.8)	*	-8.0	(3.8)	*	5.2	(1.3)	*
Sponsored academy (opened in 2008/09)	12.2	(2.4)	*	-13.8	(3.3)	*	1.8	(1.2)	
Sponsored academy (opened in 2009/10)	9.3	(2.4)	*	-18.7	(3.3)	*	1.5	(1.2)	
Sponsored academy (opened in 2010/11)	10.0	(2.9)	*	-12.3	(4.0)	*	-0.5	(1.4)	
Sponsored academy (opened in 2011/12)	-1.4	(2.6)		-24.8	(3.5)	*	-2.1	(1.2)	
Sponsored academy (opened in 2012/13)	-3.0	(2.3)		-14.3	(3.1)	*	-3.9	(1.1)	*
Sponsored academy (opened in 2013/14)	-8.6	(5.3)		-13.1	(7.3)		-6.8	(2.6)	*
Converter academy (opened in 2009/10)	18.7	(4.1)	*	5.3	(5.6)		5.5	(2.0)	*
Converter academy (opened in 2010/11)	6.9	(1.0)	*	3.8	(1.3)	*	2.7	(0.5)	*
Converter academy (opened in 2011/12)	5.2	(1.1)	*	-0.2	(1.6)		2.4	(0.5)	*
Converter academy (opened in 2012/13)	3.2	(1.6)	*	-0.4	(2.2)		1.6	(0.8)	*
Converter academy (opened in 2013/14)	11.7	(6.4)		-5.8	(8.7)		2.7	(3.1)	

Source: NFER analysis of Department for Education data

Table A1.3 Average characteristics in 2011 of sponsored academies that converted in 2010/11 and non-academy schools, before and after common support is imposed

	No common support			Impose common support		
	Academy	Non-academy	Difference	Academy	Non-academy	Difference
KS4 capped points (including equivalents)	318	339	-21	318	327	-9
Percent 5 A*-C including English and Maths	42%	57%	-15%	42%	50%	-8%
Key stage 2 average point score	26	28	-1	26	27	0
Proportion girls	49%	49%	-1%	49%	49%	-1%
Proportion eligible for free school meals (FSM)	19%	16%	3%	19%	16%	3%
Proportion English as an additional language (EAL)	7%	13%	-6%	7%	6%	1%
Proportion SEN (Statement)	2%	2%	0%	2%	2%	0%
Proportion SEN (School Action or Action Plus)	11%	10%	2%	11%	11%	1%
Number of schools	33	1331		33	699	

Differences may not exactly match due to rounding
Source: NFER analysis of Department for Education data

Table A1.4 Average characteristics in 2011 of converter academies that converted in 2010/11 and non-academy schools, before and after common support is imposed

	No common support			Impose common support		
	Academy	Non-academy	Difference	Academy	Non-academy	Difference
KS4 capped points (including equivalents)	362	339	23	362	340	22
Percent 5 A*-C including English and Maths	70%	57%	12%	70%	57%	12%
Key stage 2 average point score	29	28	1	29	28	1
Proportion girls	50%	49%	1%	50%	50%	0%
Proportion eligible for free school meals (FSM)	9%	16%	-7%	9%	15%	-6%
Proportion English as an additional language (EAL)	9%	13%	-5%	9%	12%	-4%
Proportion SEN (Statement)	2%	2%	0%	2%	2%	0%
Proportion SEN (School Action or Action Plus)	8%	10%	-2%	8%	10%	-2%
Number of schools	657	1331		655	1302	

Differences may not exactly match due to rounding
Source: NFER analysis of Department for Education data

Table A1.5 Longitudinal regression analysis of sponsored academies that converted in 2010/11 and non-academies

	KS4 capped points (including equivalents)			KS4 capped points (GCSE only)			Percent 5 A*-C including English and Maths (%)		
Intercept	127.4	(17.2)	*	-362.2	(25.7)	*	-91.0	(7.4)	*
Key stage 2 average point score	7.2	(0.6)	*	22.9	(0.9)	*	5.2	(0.3)	*
Proportion girls	17.6	(3.5)	*	32.8	(5.2)	*	3.6	(1.5)	*
Proportion eligible for free school meals (FSM)	-6.2	(4.1)		-148.8	(6.1)	*	-12.3	(1.8)	*
Proportion English as an additional language (EAL)	-1.7	(4.3)		86.3	(6.4)	*	9.4	(1.8)	*
Proportion SEN (Statement)	-127.7	(24.5)	*	165.8	(36.7)	*	-19.1	(10.5)	
Proportion SEN (School Action or Action Plus)	1.2	(7.1)		-31.4	(10.6)	*	-0.4	(3.0)	
1st year after conversion	5.9	(1.2)	*	10.7	(1.7)	*	2.4	(0.5)	*
2nd year after conversion	4.5	(1.2)	*	15.6	(1.8)	*	3.9	(0.5)	*
Academy	-5.1	(3.4)		-17.7	(5.1)	*	-5.3	(1.5)	*
Academy * 1st year after conversion	9.7	(4.8)	*	-3.0	(7.2)		4.3	(2.1)	*
Academy * 2nd year after conversion	16.1	(4.8)	*	7.9	(7.2)		5.0	(2.1)	*

Source: NFER analysis of Department for Education data

Table A1.6 Longitudinal regression analysis of sponsored academies that converted in 2011/112 and non-academies

	KS4 capped points (including equivalents)			KS4 capped points (GCSE only)			Percent 5 A*-C including English and Maths (%)		
Intercept	154.5	(20.5)	*	-406.9	(31.4)	*	-109.6	(9.2)	*
Key stage 2 average point score	6.6	(0.7)	*	25.0	(1.1)	*	6.0	(0.3)	*
Proportion girls	9.8	(3.7)	*	13.3	(5.6)	*	-0.1	(1.6)	
Proportion eligible for free school meals (FSM)	-5.8	(4.3)		-117.9	(6.5)	*	-5.6	(1.9)	*
Proportion English as an additional language (EAL)	9.9	(3.1)	*	106.8	(4.8)	*	12.4	(1.4)	*
Proportion SEN (Statement)	-140.3	(29.6)	*	198.5	(45.4)	*	11.3	(13.3)	
Proportion SEN (School Action or Action Plus)	-14.4	(8.9)		-37.9	(13.6)	*	-0.2	(4.0)	
1st year after conversion	-0.9	(1.0)		3.4	(1.6)	*	1.3	(0.5)	*
Academy	-6.8	(2.7)	*	-24.1	(4.1)	*	-2.7	(1.2)	*
Academy * 1st year after conversion	2.1	(3.8)		0.7	(5.8)		0.2	(1.7)	

Source: NFER analysis of Department for Education data

Table A1.7 Longitudinal regression analysis of converter academies that converted in 2010/11 and non-academies

	KS4 capped points (including equivalents)			KS4 capped points (GCSE only)			Percent 5 A*-C including English and Maths (%)		
Intercept	-79.0	(6.3)	*	-442.4	(9.1)	*	-160.2	(3.0)	*
Key stage 2 average point score	14.8	(0.2)	*	26.0	(0.3)	*	7.8	(0.1)	*
Proportion girls	12.7	(1.2)	*	24.9	(1.7)	*	4.4	(0.6)	*
Proportion eligible for free school meals (FSM)	5.2	(2.6)	*	-125.2	(3.8)	*	-7.5	(1.2)	*
Proportion English as an additional language (EAL)	26.4	(1.5)	*	104.4	(2.2)	*	15.8	(0.7)	*
Proportion SEN (Statement)	-27.2	(13.9)	*	165.3	(20.3)	*	15.9	(6.6)	*
Proportion SEN (School Action or Action Plus)	5.4	(4.6)		-35.5	(6.7)	*	-2.7	(2.2)	
1st year after conversion	2.1	(0.8)	*	8.9	(1.1)	*	0.7	(0.4)	
2nd year after conversion	-0.2	(0.8)		12.8	(1.1)	*	2.1	(0.4)	*
Academy	6.6	(0.9)	*	5.7	(1.3)	*	3.5	(0.4)	*
Academy * 1st year after conversion	0.3	(1.2)		-2.2	(1.7)		-0.8	(0.6)	
Academy * 2nd year after conversion	-0.1	(1.2)		-3.0	(1.8)		-1.1	(0.6)	

Source: NFER analysis of Department for Education data

Table A1.8 Longitudinal regression analysis of converter academies that converted in 2011/12 and non-academies

	KS4 capped points (including equivalents)			KS4 capped points (GCSE only)			Percent 5 A*-C including English and Maths (%)		
Intercept	-32.6	(9.9)	*	-444.4	(14.6)	*	-162.1	(4.8)	*
Key stage 2 average point score	13.2	(0.3)	*	26.2	(0.5)	*	7.8	(0.2)	*
Proportion girls	14.4	(1.7)	*	28.3	(2.5)	*	4.6	(0.8)	*
Proportion eligible for free school meals (FSM)	3.3	(3.1)		-125.2	(4.6)	*	-5.2	(1.5)	*
Proportion English as an additional language (EAL)	22.5	(1.9)	*	111.7	(2.8)	*	16.1	(0.9)	*
Proportion SEN (Statement)	-1.9	(18.0)		192.5	(26.5)	*	20.8	(8.7)	*
Proportion SEN (School Action or Action Plus)	-3.6	(6.2)		-20.7	(9.2)	*	-4.2	(3.0)	
1st year after conversion	-2.4	(0.7)	*	4.1	(1.0)	*	1.3	(0.3)	*
Academy status	5.6	(1.1)	*	1.4	(1.5)		2.1	(0.5)	*
Academy status * 1st year after conversion	-0.5	(1.5)		-2.1	(2.2)		0.3	(0.7)	

Source: NFER analysis of Department for Education data

Notes

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