The economic benefits of joining, establishing or growing a multi-academy trust

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Executive Summary

Multi-academy trusts are playing an increasingly important role in schools in England. The expansion of the academies programme since 2010 means that there are now over 6,000 academies, free schools, UTCs and studios and the majority of academies now join multi-academy trusts.

There are potentially many educational benefits to joining-up in this way, such as sharing specialist teachers or facilities. But it is also an opportunity to make efficiency savings through sharing back office functions and realising economies of scale. The purpose of this report is to investigate the extent to which multi-academy trusts are achieving these benefits, and where there are opportunities to go further. Therefore, it is not just a reflection of what is currently happening, but an opportunity for multi-academy trusts to improve decision making and ultimately achieve more.

The report examines trends in academy expenditure on teaching staff; back office costs; catering; other staff costs; energy; learning resources; ICT learning resources; bought in professional services; and other expenditure. The report examines spending data published by the Department for Education, and matches it to data on academy status, MAT size, the length of time an academy has been operating within a MAT, and the MAT's regional coverage, to draw conclusions about the relationship between joining a MAT (of various sizes) and securing economies of scale.

The report includes not only the results of this statistical analysis, but also provides contextual information based on discussions with academy business managers and MAT finance directors or equivalent. These discussions are not intended to offer the basis for rigorous and robust qualitative evidence, they do however provide some contextual information and examples that help to supplement the data analysis. Together, this research design has sought to uncover what, if any, savings are made by academies joining multi-academy trusts, how they are made, and what factors can determine the securing of economies of scale.

With more schools set to covert to academy status in the near future, and the number (as well as size) of MATs likely to expand, research into how to reduce back office and administrative costs is particularly timely.

The key findings of the report are as follows:

Comparing MATs with single-academy trusts (SATs) and local authorities (LAs)

- Generally speaking, local authority schools spend slightly more per pupil on running expenses than both SATs and MATs. Different phases of schooling have different running costs, and the primary and secondary split in MATs is different from SATs and different from local authorities. Nevertheless, per pupil costs differ at both primary and secondary levels. At primary level, local authority schools spend, on average, £1,261 per pupil, while MAT schools spend £1,255. At secondary level, the difference is slightly bigger. Local authority schools spend £1,539 per pupil, while MAT schools spend £1,490.
- Through our conversations with multi-academy trusts, we discovered examples of regional and trust level tendering of some services. One trust now has just one laptop provider across the entire network of academies, which resulted in savings of around 20 per cent on ICT costs.

- Spending differences on running expenses may be a result of some schools simply having more to spend in general. However, when it comes to spending on teaching staff, primary schools in MATs tend to spend more than local authority schools. At primary level, local authority schools spend £2,179 per pupil on teaching staff, £23 less than the £2,202 spend by MAT schools. At secondary level the two groups of schools spend comparable amounts.

Comparing expenditure by schools in SATs and MATs on specific items, the data reveals the following trends:

- MAT schools spend £70 more at primary level, and £130 more at secondary level than SAT schools on teaching staff;
- MAT schools spend £44 more at primary level and £27 more at secondary level on supply staff;
- MAT schools spend £152 more on education support staff at primary level, and £97 more at secondary level than academies in SATs; and
- SAT academies tend to spend slightly more on back office costs at primary level (£27) than MAT academies, though they are similar at secondary level.

Does the size of MAT matter?

- There are very few 'large' MATs comprised of more than 10 academies. Medium sized MATs (of around 6-10 academies) tend to spend slightly less on back office costs than smaller MATs (5 or fewer), though this correlation is weak. This echoed what MATs told us, that standardising various practices (such as staffing contracts), or tendering certain services (such as cleaning) across schools, noticeably reduced marginal costs once clusters of schools reached a 'critical mass' of around 3-6 academies.
- However, among small and medium sized MATs, there is significant variation in the amount spent per pupil on back office costs. This variation in back office spending between MATs of identical sizes suggests that there is potential to bring costs down further, representing a significant opportunity to explore and share best practices.
- Altogether, we find some evidence that economies of scale exist when schools group together. However, the fact that there is evidence that spending on teaching tends to be lower among larger MATs suggests that they are not yielding back office savings that are then re-directed into teaching.
- When it comes to economies of scale increasing over time, the evidence is mixed. Spending on back office costs tends to be marginally lower among academies who have been in MATs the longest. But, again, this is also the case for academies' spending on teaching staff. In another area we might expect to see savings, catering, there is also no evidence that academies that have been in a MAT for longest spend less per pupil. However, we do find through case studies that there are instances where a degree of coordination has taken place within a MAT on services such as catering, where one school might carry out catering services for other nearby schools in the MAT.

Geographical trends

- The effect of geography is significant in determining the extent to which MATs enjoy economies of scale and savings. Schools in MATs that are more geographically dispersed tend to spend more per pupil on back office costs. This effect is separate, and in addition to, the effect of the MAT's size, so that even when controlling for how many academies there are in the MAT, the more spread out it is geographically, the more they will spend on back office costs.
- We also find evidence that within MATs, regional 'clusters' of schools can tender certain services together in order to bring costs down. Examples of this, shared with us through our discussions with various MATs, include regional tendering of such services as cleaning.
- Through our discussions with multi-academy trusts, we find that the use of technology can greatly help to bring about further efficiency savings, helping trusts to overcome barriers such as geography. Examples of this include making greater use of Skype and video conferencing to reduce travel costs, and intranet and cloud computing to share standardised materials and best practice.

Implications for policy

- Regional clustering of academies within MATs present significant opportunities for trusts to make savings through the greater use of regional tendering. The number of schools in a MAT does not, in of itself, bring costs down, but when a 'cluster' reaches a 'critical mass' of around half a dozen schools, efficiency savings become noticeable.
- Such clustering of academies also allows schools to coordinate services between them, such as catering, with one school preparing meals for fellow academies nearby.
- A continuous process of standardising throughout multi-academy trusts, through coordinating HR and finance functions into one office, or providing shared templates for contracts or teaching materials, can also help reduce costs.
- Greater use of technology can also help trusts to standardise certain materials through the use of intranet services and cloud computing, for instance.
- Using technology such as video conferencing can also help overcome geographic barriers to bring costs down, as well as save time.

Introduction

The academies programme represents one of the most significant reforms to the English education system in recent decades. Academies were introduced in 2002, designed initially to raise education standards in areas of relatively low performance. The idea was that outcomes would be improved by changing governance arrangements and increasing freedoms for headteachers. By May 2010, when Labour left office, there were 203 academies in England, most of which had replaced poor performing local authority schools. There had also begun to emerge multi-academy trusts (MATs), as some sponsors took on several schools. By August 2010, seven sponsors sponsored six or more academies.

Since 2010, the academies programme has expanded significantly. The Coalition Government's Academies Act 2010 enabled all schools to apply for academy status, with priority given to 'outstanding' schools, then later allowing 'good with outstanding features' schools to convert. Any schools could later be allowed to convert, if partnered with a high-performing school or trust. Low-performing schools were still required to convert to academies.

There are now 6,334 open academies, free schools, university technical colleges, and studio schools.[1] Over two-thirds of all academies are operating within a multi-academy trust. The vast majority of these MATs had only a handful of schools, with only a small minority operating with ten or more academies within its trust. Many MATs have only one school at present, in preparation for future expansion.

A key argument put forward by proponents of schools joining or establishing multi-academy trusts (MATs) is the financial savings made through economies of scale.[2] [3] By centralising 'back office' services, the argument goes, substantial savings can be made in terms of both economies of scale and efficiency, potentially freeing up financial resources for teaching. The purpose of this analysis is to discover whether there are patterns of savings to an academy's costs after joining or establishing a MAT. This report uses statistical analysis to compare trends in academy expenditure overall and on back office and teaching staff specifically. In addition to statistical analysis, this study reports the main issues raised during discussions with head teachers, academy business managers, and MAT finance directors on this issue. These issues will concern how savings are made, over what length of time, and whether these savings are re-invested into teaching staff.

Structure of this Report

This report assesses potential evidence of economies of scale or efficiency savings resulting from schools joining or establishing multi-academy trusts (MATs). This predominantly involves analysis of MAT and academy level spending on various items based on the 2014/15 submitted financial returns. Throughout the report are a number of case studies that have been identified to help illustrate particular instances of potential savings being made by MATs. Part 1 considers the

[1] Department for Education, 'Open academies and academy projects in development – December 2016' and 'Free schools: open schools and successful applications'
[2] C Maylin, 'A summary guide to understanding multi-academy trusts', UHY Hacker Young Chartered Accountants, Available from: http://www.uhy-uk.com/wp-content/uploads/MAT-factsheet-Letchworth.pdf
[3] National College for Teaching & Leadership, 'Governance in multi-academy trusts', Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/458632/governance-in-multi-academy-trusts_Sept2015.pdf

differences in spending between schools that are in MATs, those in SATs, and schools that are maintained by local authorities. Part 2 looks at how the size of a MAT effects its spending, and whether larger MATs find it easier to secure economies of scale. Part 3 identifies trends in MAT schools' spending based on how long they have been part of a trust. Part 4 then examines the impact of how geographically spread out a MAT is, and the effect this might have on spending patterns. Part 5 concludes the report by assessing the overall statistical findings, tied in to analysis of the qualitative component of the research.

Caveats to analysis of expenditure data

Determining what, if any, savings are made by schools in multi-academy trusts presents a number of challenges in relation to the data that is available.

Data completeness

Academies are required to submit spending returns to the Department for Education each academic year. Annual spending breakdowns for academies and academy trusts exist between 2011/12 to 2014/15. However, the 2011/12 and 2012/13 returns have a large proportion of missing values compared to the 2014/15 data, making the project heavily reliant on the latter.

The second problem with this data availability is that returns may not cover a sufficient period of time to allow potential savings to show. For instance, if back office redundancies are made initially due to economies of scale, redundancy pay-outs would mean there would be no savings for the first few years. Given the lack of reliable and complete data pre-2013, this made the tracking of savings over time problematic. Nevertheless, the latest statistical release – 2014/15 – is more complete with few missing values or incomplete data.

Academy-level income and expenditure is submitted every year to the Department for Education. The expenditure of academies in MATs and SATs is broken down into 12 categories:

- Teaching staff
- Supply staff
- Education support staff
- Premises (including staff costs)
- Back office (including staff costs)
- Catering
- Other staff costs
- Energy
- Learning resources (not ICT equipment)
- ICT learning resources
- Education consultancy
- Other expenditures

Expenditure on these items is also provided on a per pupil basis, which provides the most relevant measure as this takes into account the fact that schools spend varying amounts according to their size. Using per pupil spending data allows this variation to be taken into account from the outset.

Data comparability between local authority schools and academies

Data for schools maintained by local authorities is collected via a different route, Consistent Financial Reporting, and on a financial rather than academic year basis.[4] In this analysis we have taken returns from the 2014-15 financial year for maintained schools and compared with returns for the 2014/15 academic year for academies.

Expenditure is broken down to similar levels though in slightly different categories. In some parts of our analysis we have grouped some together to cover all 'running expenses' and total teaching staff in order to make broader comparisons between academy trusts and local authority schools.

Comparability between local authorities, SATs and MATs

Neither school funding or propensity to be within a local authority, SAT or MAT is independent of school phase or other characteristics. The former reflects the compensatory nature of school funding and the latter reflects how the academies programme has expanded. This presents two challenges.

Firstly, the majority of secondary schools have now converted to academy status whereas a minority of primary schools have done so (though they still make up the majority of all academies). This means that local authorities have a disproportionately large number of primary schools whereas academy trusts, particularly SATs, have a disproportionately high number of secondary schools. Overall school funding and expenditure differs considerably by phase and therefore this will have an impact on results. For this reason, we have split analysis by phase.

Secondly, schools that were previously low performing have generally not been allowed to convert unless with an academy sponsor or other MAT arrangement. Low performing schools are more likely to have above average levels of disadvantage than other schools and have more pupils with low prior attainment. This means that they are more likely to be funded at a higher level and have higher levels of expenditure overall (and potentially different patterns of expenditure).

This picture is by no means uniform, a lot of schools with low levels of disadvantage have also gone down the MAT route and 'converter' academies (generally previously high performing schools) make up the majority of schools in multi-academy trusts. Therefore, we have not attempted to isolate these effects within this report but provide this note as a caveat to the analysis.

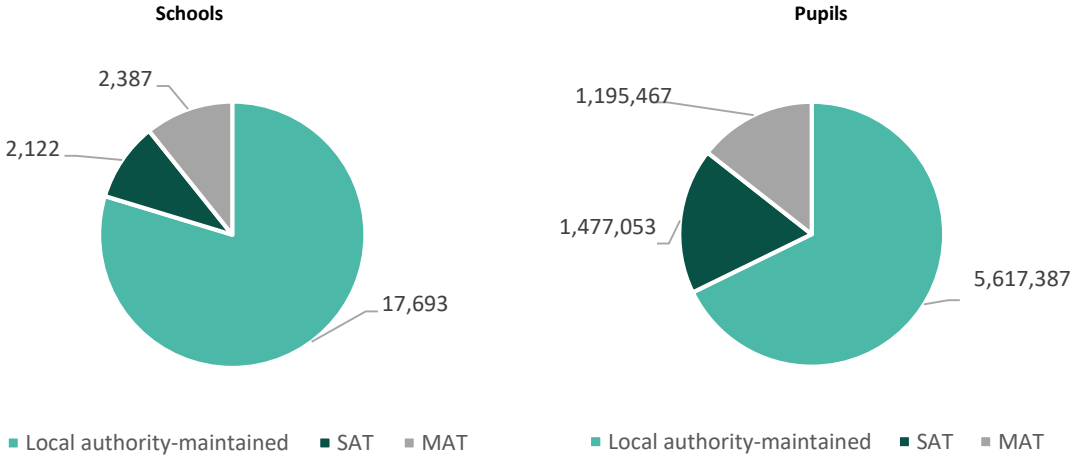
[4] Department for Education 'Consistent financial reporting framework'

Part 1: Academies in single-academy trusts, multi-academy trusts, and local authority maintained Schools

This section lays out the broad spending differences between schools run by local authorities, academies within single-academy trusts (SATs), and academies within multi-academy trusts (MATs).

As the analysis of this report relies on the latest available expenditure data, 2014/15, the numbers of schools and academies in England are slightly lagged. 22,202 schools (and 8,289,907 pupils) are analysed in this report, the vast majority of which are maintained by local authorities.[5] This figure has been shrinking as a proportion due to the expansion of the academies programme since 2010, with an increasing number of schools converting to academy status. Nevertheless, local authority maintained schools remain the largest proportion of schools, followed by schools in MATs. There are more pupils in SAT academies than in MAT academies, despite there being slightly more MAT academies in England.

Figure 1.1: Number of Schools and Pupils in Analysis (2014/15)



To ascertain what, if any, savings are made when an academy is part of a MAT, we can compare how much each school spends, per pupil, on various items, and whether there are substantial differences between schools in MATs and those run by local authorities.

In order to make broad comparisons between local authority schools and MAT/SAT schools, we grouped spending figures on various items that represent 'running expenses'.[6] The average per

[5] This is the total number of schools and academies that, through the Consistent Financial Reporting, submitted returns in 2014-15 (the latest year for which data is available).

[6] Per pupil spending for local authority-maintained schools only reported as broad categories, rather than particular items. As such, the 'running expenses' for SAT and MATs had to be calculated by hand and were not reported in DfE data releases. Running expenses include: Building maintenance and improvement (E12), Grounds maintenance and improvement (E13), Cleaning and caretaking (E14), Water and sewage (E15), Energy (E16), Rates (E17), Other occupation costs (E18), Learning resources (E19), ICT Learning resources (E20), Examination fees (E21), Administrative supplies (E22), Other insurance premiums (E23), Special facilities (E24), Catering supplies (E25), Agency supply teaching staff (E26), Bought-in professional services – curriculum (E27), Bought-in professional services – other (E28), Loan interest (E29), Community focused extended school staff (E31), Community focused extended school costs (E32).
Spending on local authority-maintained schools:
Department for Education (2015), 'Main Tables: SR48/2015', Available: https://www.gov.uk/government/statistics/schools-education-and-childrens-services-spending-2014-to-2015
Spending among SAT and MAT academies:
Department for Education (2016), 'Main tables: SFR27/2016', Available: https://www.gov.uk/government/statistics/income-and-expenditure-in-academies-in-england-2014-to-2015

school running expenses spending was calculated for academies by summing the per pupil spend on each individual item that together represented 'running expenses'.

Running Expenses

Among state-funded primary and secondary level schools, per pupil spending on running expenses is generally lower among SATs and MATs than among local authority-maintained schools. At primary level, per pupil spending on running expenses is £1,261 among local authority schools, compared to £1,183 among SAT schools and £1,255 among MAT schools. At secondary level, per pupil spending on running expenses is £1,539 among local authority schools, compared to £1,442 among SAT schools and £1,490 among MAT schools.

Figure 1.2: Per Pupil Spending on Running Expenses by School Status, 2014/15 (Primary Schools, £)[7]

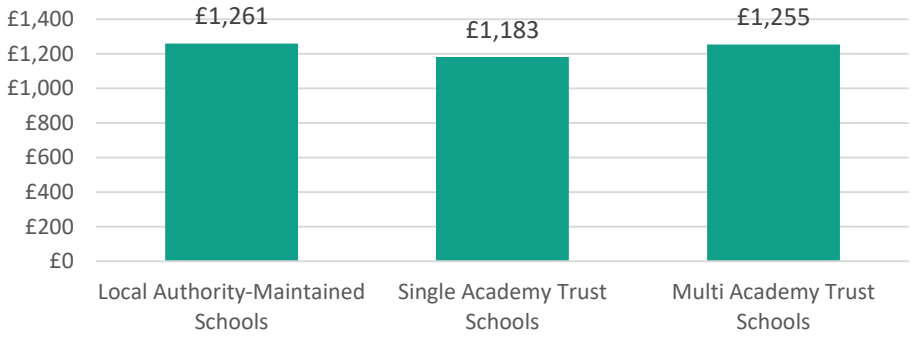
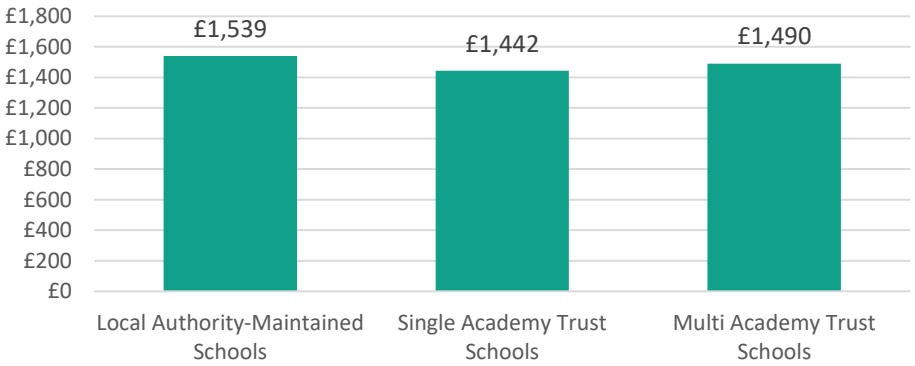


Figure 1.3: Per Pupil Spending on Running Expenses by School Status, 2014/15 (Secondary Schools, £)[8]



Running expenses, per pupil, are slightly lower among SAT and MAT academies at both primary and secondary levels. But why would this be the case? One MAT told us that by tendering certain services across the whole MAT, significant savings can be made. In this case, trust-wide tendering of

[7] Per Pupil Running Expenses figures for academies calculated as follows. Raw spending for all items that represent 'Running Expenses' (according to the Consistent Financial Reporting Survey of LA-maintained schools) added up for each academy. This figure is then divided by the number of Full Time pupils in every academy, according to the Income and Expenditure in Academies in England 2014/15. This process was carried out across all schools, and then repeated across all State-Funded Primary academies, and then across all State-Funded Secondary academies. This was carried out for 'Raw Data SATs' and 'Raw Data MAT Academies'.

[8] Per Pupil Running Expenses figures for academies calculated as follows. Raw spending for all items that represent 'Running Expenses' (according to the Consistent Financial Reporting Survey of LA-maintained schools) added up for each academy. This figure is then divided by the number of Full Time pupils in every academy, according to the Income and Expenditure in Academies in England 2014/15. This process was carried out across all schools, and then repeated across all State-Funded Primary academies, and then across all State-Funded Secondary academies. This was carried out for 'Raw Data SATs' and 'Raw Data MAT Academies'.

internet and ICT, e.g. having just one laptop supplier across all of their schools, allowed them to make around 20 per cent savings across the entire trust.

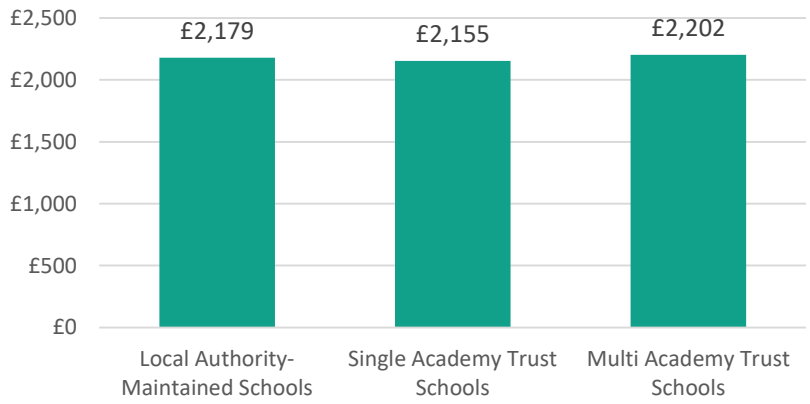
This is consistent with what another small MAT, which centralised its back office, HR, and finance functions, saying that "in many ways, it is like offering the same service as the local authority… individual schools have less work as all ordering and invoicing is currently under one office".

Another small MAT echoed this, saying that centralising their finance, HR, invoices and payroll had helped reduce costs substantially. This common approach helps reduce costs across the MAT. Another, larger, MAT echoed these sentiments, stating that standardising across the MAT helped bring costs down significantly. This trust, for example, makes use of standardised templates for contracts across their network.

Teaching Staff

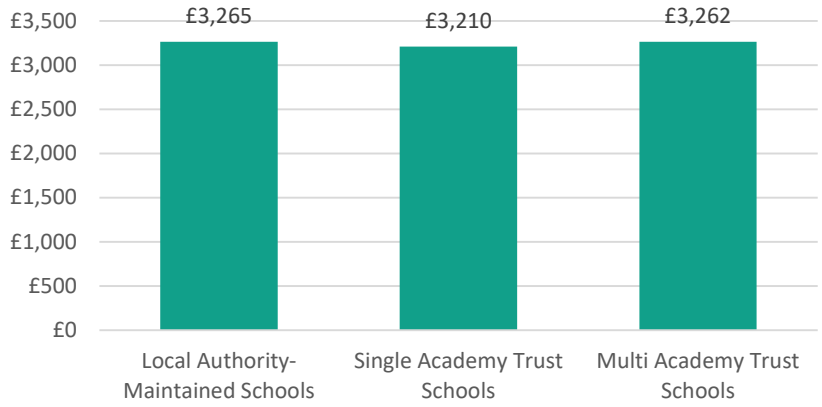
Among primary schools, schools in MATs tend to spend more per pupil on teaching staff than LA schools who in turn spend slightly more than schools in SATs (Figure 1.4). Among secondary schools, schools in MATs and local authority schools spend a similar amount to each other, both higher than expenditure in SATs.

Figure 1.4: Per Pupil Spending on Total Teaching Staff by School Status, 2014/15 (Primary Schools, £)[9]



[9] Per Pupil Running Expenses figures for academies calculated as follows. Raw spending for all items that represent 'Running Expenses' (according to the Consistent Financial Reporting Survey of LA-maintained schools) added up for each academy. This figure is then divided by the number of Full Time pupils in every academy, according to the Income and Expenditure in Academies in England 2014/15. This process was carried out across all schools, and then repeated across all State-Funded Primary academies, and then across all State-Funded Secondary academies. This was carried out for 'Raw Data SATs' and 'Raw Data MAT Academies'.

Figure 1.5: Per Pupil Spending on Total Teaching Staff by School Status, 2014/15 (Secondary Schools, £)[10]



Altogether, comparing per pupil spending on broad categories of 'running expenses' and 'total teaching staff' in local authority-maintained schools to SAT and MAT academies, several patterns become clear. Firstly, per pupil spending on running expenses is slightly lower in SATs and MATs at both primary and secondary levels than in local authority schools.

However, this is not necessarily translating into increased expenditure on teaching staff. In primary schools in multi-academy trusts, per pupil expenditure on teaching staff is higher than that in local authority maintained schools. However, in secondary schools in multi-academy trusts, expenditure on running costs is £49 per pupil lower than in local authority schools yet expenditure on teaching staff is broadly the same.

Comparing single and multi-academy trusts

Having analysed spending in the broad categories of 'running expenses' and 'total teaching staff' in order to make general comparisons with local authority-maintained schools, we can now turn to comparing SAT academies and MAT academies' spending on more specific individual items. If being part of a MAT is associated with efficiencies, we might expect spending on administrative, back office, and running costs for instance, to be lower among MAT academies than among SAT academies. Using per pupil spending figures from the Department for Education, we compare the average per pupil spending among SAT academies and among MAT academies.

Across all academies, both SAT and MAT schools, expenditure is heavily skewed towards staffing costs. Teaching staff, followed by education support staff, represent the largest items of expenditure for academies. This is then followed by back office spending.

Comparing the mean per pupil spend of SAT academies and MAT academies, we can see that the broad spending patterns between SAT and MAT schools are similar. There are marginal differences, however, that seem to indicate some efficiencies among MATs. Generally speaking, academies in MATs spend slightly more per pupil on teaching staff than those in SATs. Similarly, MAT academies spend more per pupil on education support staff.

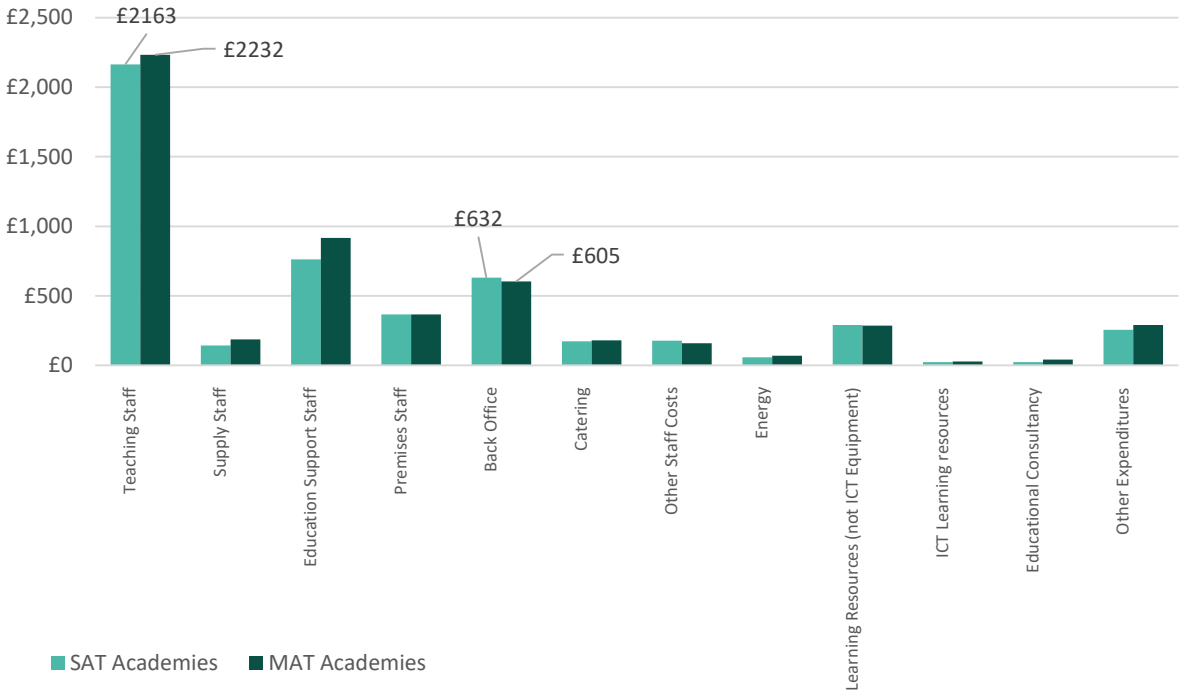
Along with catering, these are the only areas in which MAT academies, on average, spend more per pupil than SAT academies. **Meanwhile, SAT academies spend more on back office, premises staff,**

[10] Ibid

and other staffing costs. This is preliminary evidence that MATs, by saving money on back office functions and administrative costs, seem to be able to spend more on teaching staff.

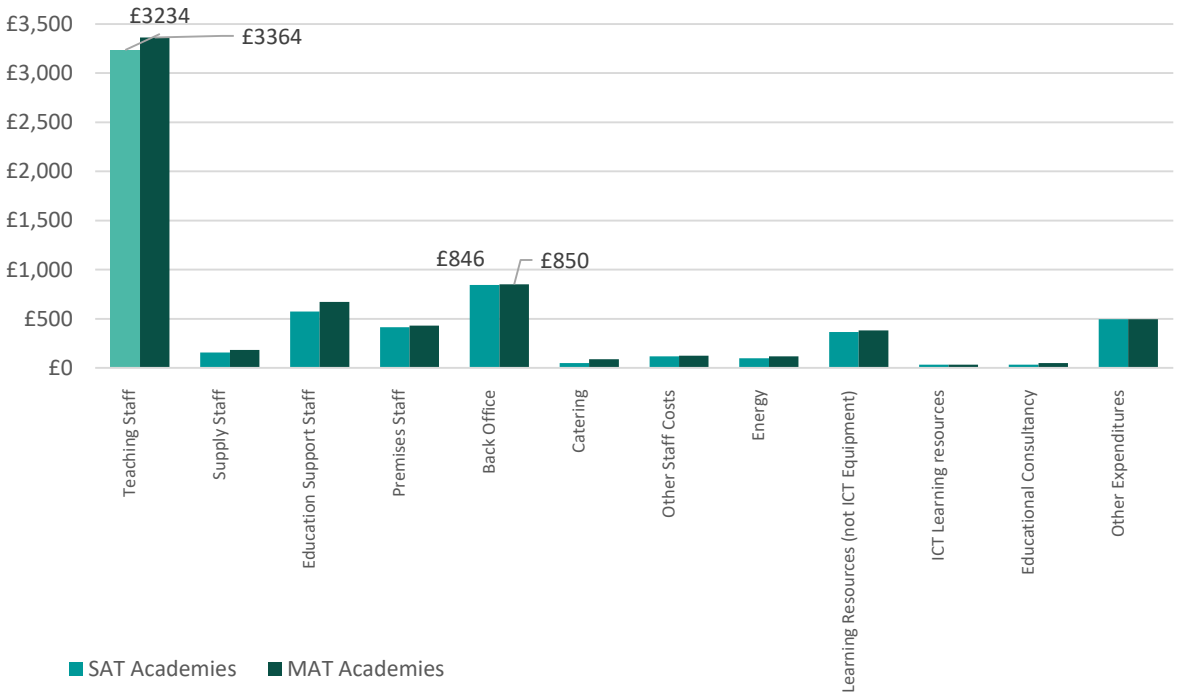
This pattern of per pupil spending among SAT and MAT academies holds consistently at both primary and secondary level. As the two figures below show, at both primary and secondary level, MAT academies, on average, spend more per pupil on teaching staff than SAT academies. The pattern among all schools that back office spending is slightly higher among SAT academies holds more so at primary level than at secondary level. However, the difference is relatively minor, indicating that the difference in spending patterns between SAT and MAT academies does not vary by level of schooling.

Figure 1.6: Breakdown of Expenditure, 2014/15 (per pupil, £), Primary Level[11]



[11] Department for Education (2016), 'Main tables: SFR27/2016', Available: https://www.gov.uk/government/statistics/income-and-expenditure-in-academies-in-england-2014-to-2015

Figure 1.7: Breakdown of Expenditure, 2014/15 (per pupil, £), Secondary Level[12]

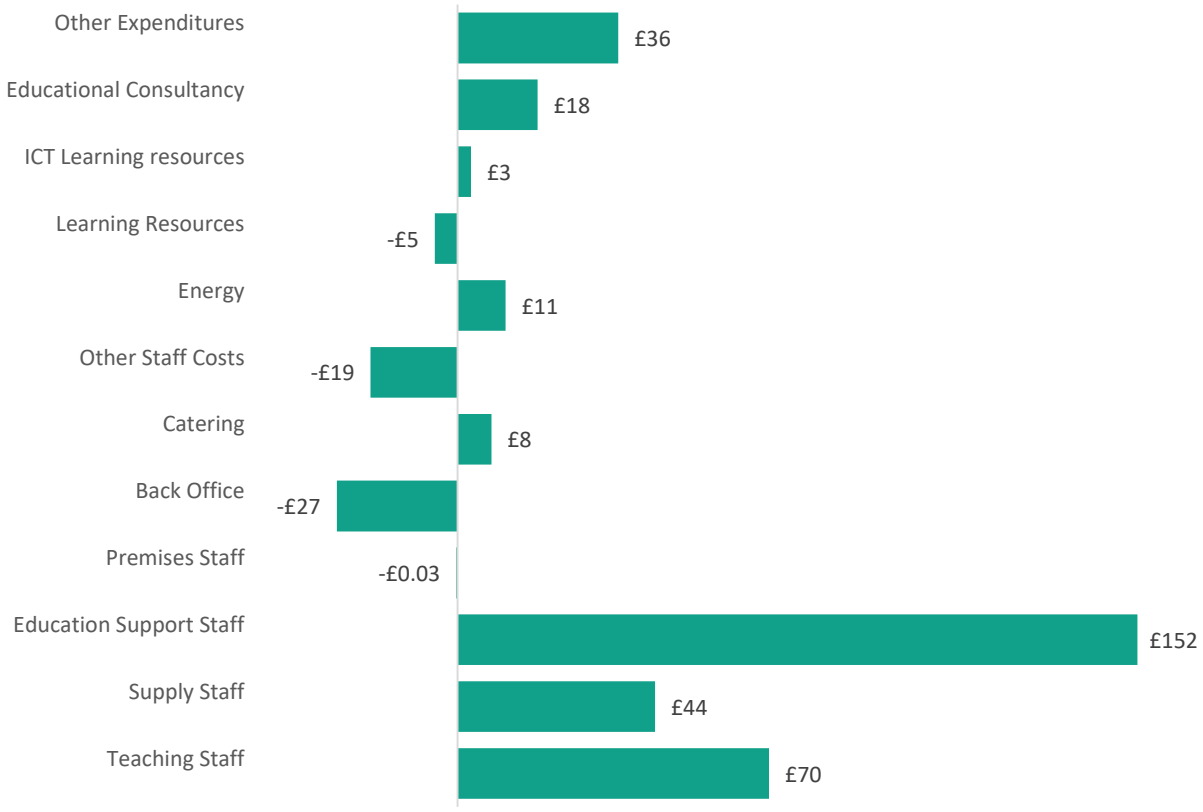


The comparison of spending data between MATs and SATs appears to show evidence of efficiency savings being enjoyed by academies in multi-academy trusts. Items of expenditure that might be subject to economies of scale within larger trusts, such as back office and administrative costs, do appear to be less costly for MATs. Subsequently, there is also evidence that spending on teaching staff is higher among MATs.

The figure below presents the differences in spending on each item between MAT and SAT schools at primary level. The bars to the right hand side, represent areas on which MAT schools spend more, per pupil, than SAT schools. The graph shows that at primary level, MATs spend more in most areas including Teaching Staff, Supply Staff, Education Support Staff, Catering, Energy, ICT, and Educational Consultancy. MATs spend less on back office and other staff costs, however, as well as learning resources that are not ICT related.

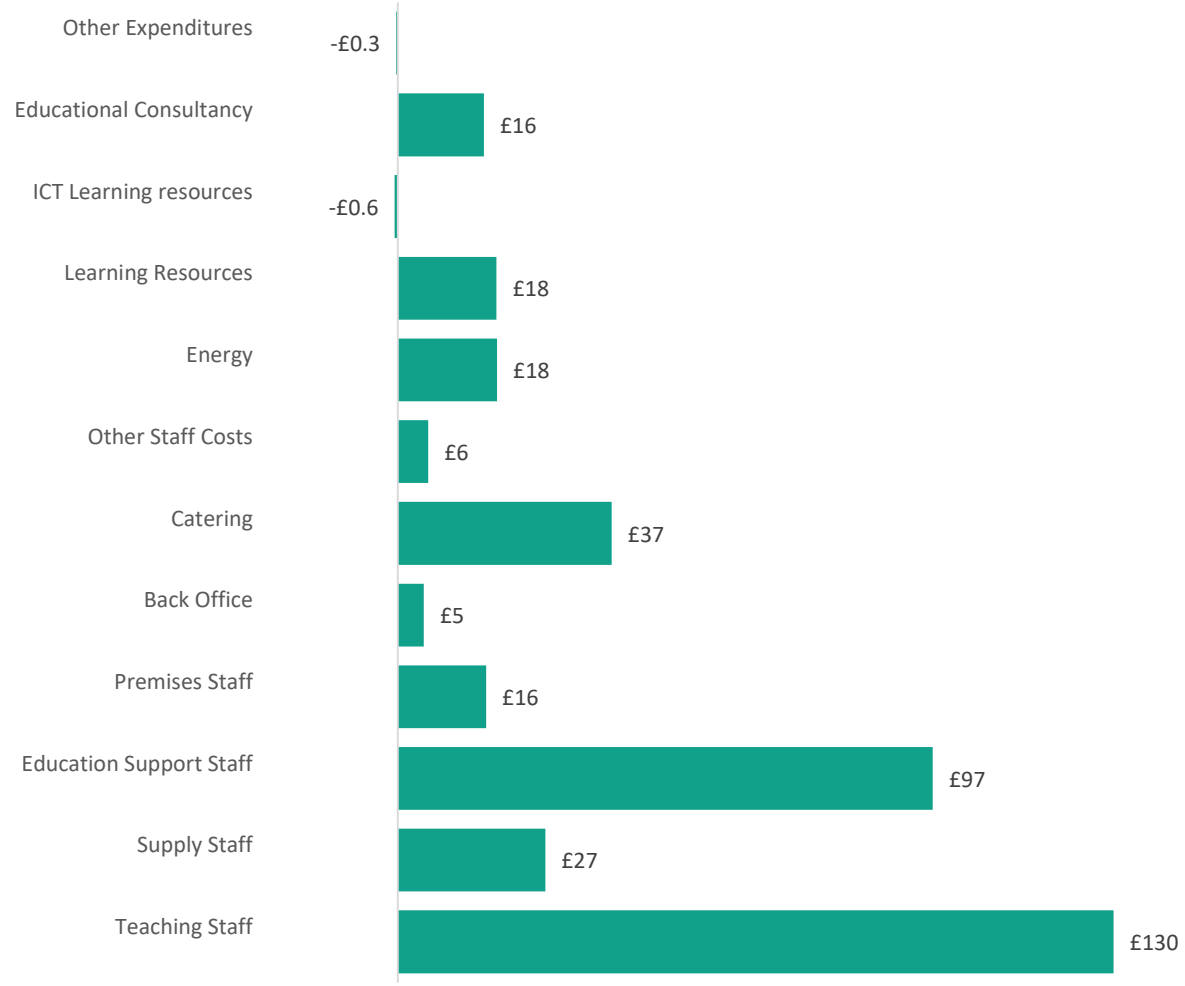
[12] Department for Education (2016), 'Main tables: SFR27/2016', Available: https://www.gov.uk/government/statistics/income-and-expenditure-in-academies-in-england-2014-to-2015

Figure 1.8: Difference between MAT and SAT Expenditure, 2014/15 (per pupil, £, MAT minus SAT), Primary Level[13]



[13] Department for Education (2016), 'Main tables: SFR27/2016', Available: https://www.gov.uk/government/statistics/income-and-expenditure-in-academies-in-england-2014-to-2015

Figure 1.9: Difference between MAT and SAT Expenditure, 2014/15 (per pupil, £, MAT minus SAT), Secondary Level[14]



At secondary level, MATs spend more per pupil on all items except ICT and other expenditure. However, while more is spent on back office and other staff costs (in contrast to primary level), the differences at secondary level are marginal compared to those at primary.

Overall, MAT schools tend to spend less on running expenses and back office costs, and more on teaching staff (per pupil). This suggests that on the whole, joining or establishing a multi-academy trust, compared to being within a single-academy trust, tends to result in efficiency savings on back office functions, particularly at primary level.

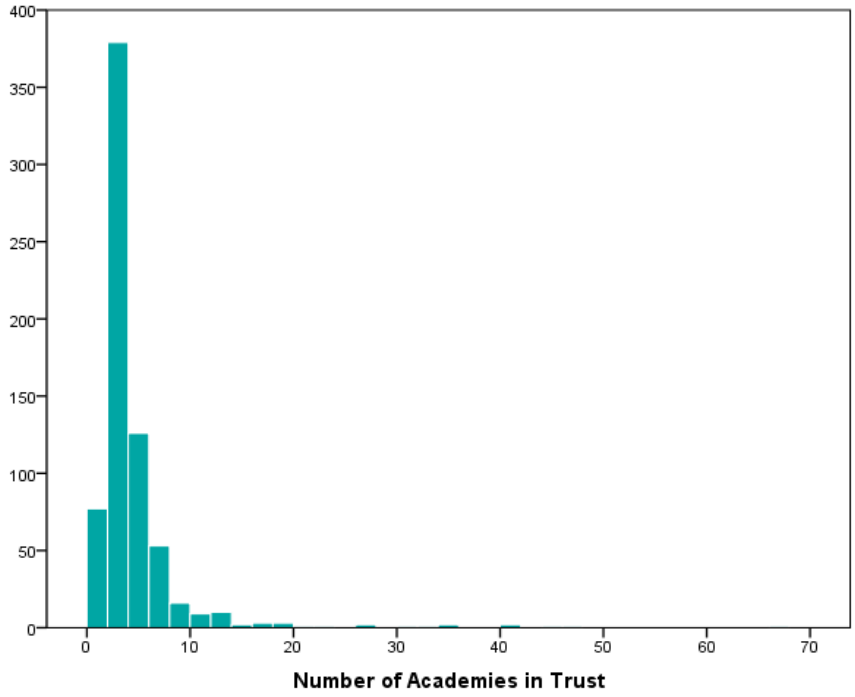
[14] Department for Education (2016), 'Main tables: SFR27/2016', Available: https://www.gov.uk/government/statistics/income-and-expenditure-in-academies-in-england-2014-to-2015

Part 2: Multi-academy trust size and savings

In this section we compare the per pupil expenditure of MATs based on the number of academies in each MAT. This reveals whether larger MATs tend to spend less on back office and more on teaching staff per pupil than smaller MATs. If larger MATs benefit more from economies of scale than smaller MATs, we might expect to see that spending would be lower among academies in larger MATs, and vice versa.

Of the 691 MATs in the 2014/2015 data, only 38 are formed of more than 10 academies, and only 12 have more than 20. The vast majority of MATs have only a handful of academies (Figure 2.1).

Figure 2.1: MAT Size, number of multi-academy trusts by number of schools within the trust 2014/15

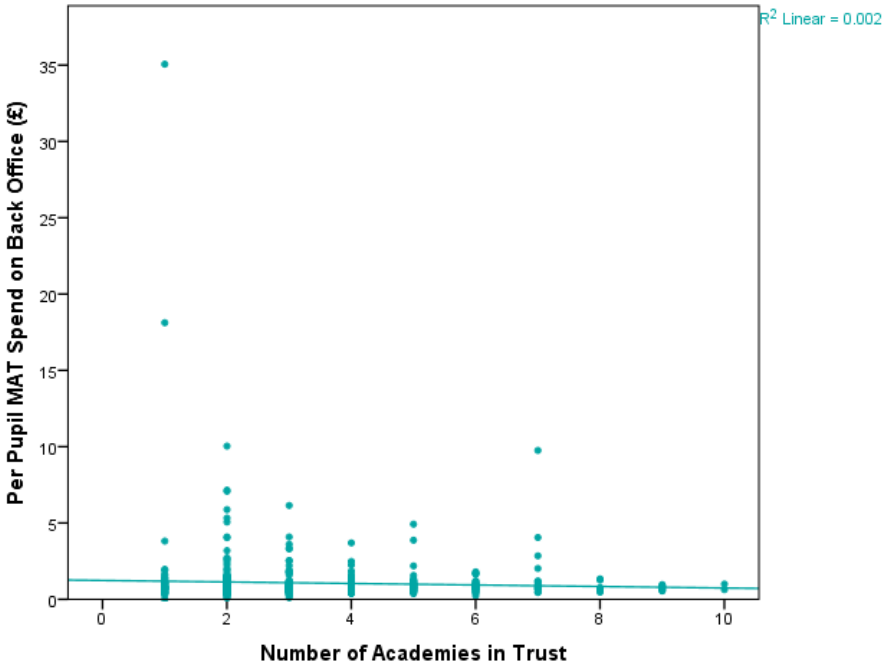


A comparison across all MAT sizes is problematic. For instance, the effect of one additional academy is different for a MAT with two existing academies as opposed to one with forty. This is because the proportion increase of one additional academy is much larger for small MATs than for large MATs. Therefore, we can exclude the spending of the large MATs to explore whether efficiencies appear to be made during the initial expansion of MAT size between small (<6) and medium (6-10). If, as we expect, expansion from 2 academies to 10 leads to efficiency savings, then per pupil spending on back office would be lower as the number of academies in the MAT increases.

The data reveals that there is a very weak negative correlation between number of academies in a MAT, and per pupil spend on back office costs (Figure 2.2). In other words, MATs formed of 10 academies do not spend significantly less on back office functions than MATs comprised of two, though there is a slight drop off across size of MAT.

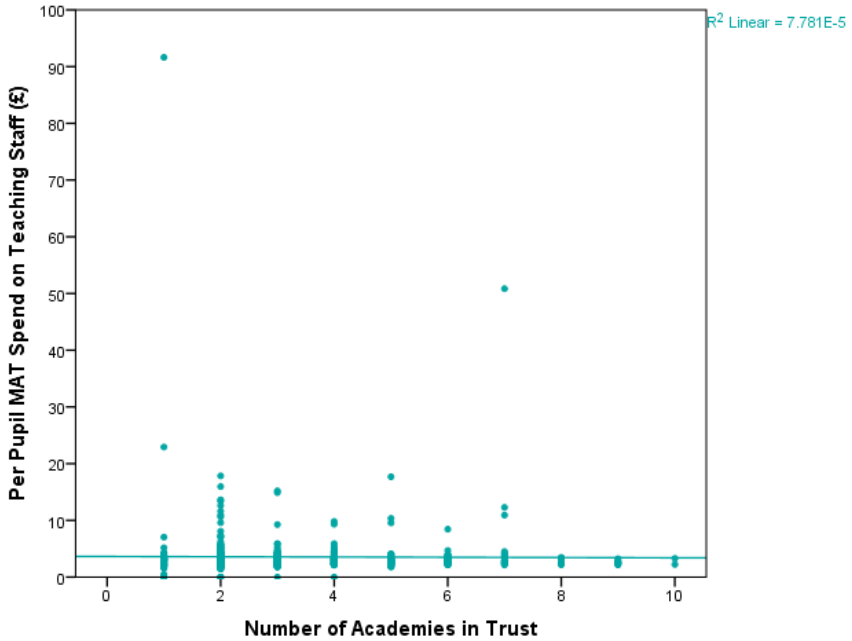
What is more striking is the variation that exists between MATs of the same size. It suggests that there is a lack of conformity in how academies are securing (or not) economies of scale. This suggests that there is an opportunity to explore where, and why, some MATs spend so little (per pupil) on back office costs, while some MATs of similar size spend significantly more.

Figure 2.2: Per Pupil Spending (£) on Back Office and MAT Size Among 'small and medium' MATs



However, there is no sign that the savings that appear to be made in back office costs among medium-sized MATs are being spent on teaching staff. A negative correlation between number of academies in a MAT and per pupil spending on teaching staff shows that MATs comprised of 10 academies spend slightly less on teaching staff, as well as on back office costs.

Figure 2.3: Per Pupil Spending (£) on Teaching Staff and MAT Size Among 'Small-Medium' MATs



Overall, there appear to be some efficiencies made among MATs comprised of around 8-10 academies, though not a substantial amount and the variation within these groups is more significant.

We turn now to large MATs, i.e. those with 11 academies or more, ranging up to the largest MAT chains in England with around 70 academies. If economies of scale exist, we would expect the trend that per pupil spending is lower as MAT size increases to hold for large MATs as well as small and mid-sized MATs. The data reveals, again, that a (weak) negative correlation between MAT size and MAT spending holds among MATs formed of more than 10 academies.

Figure 2.4: Per Pupil Spending (£) on Back Office and MAT Size Among 'Large' MATs

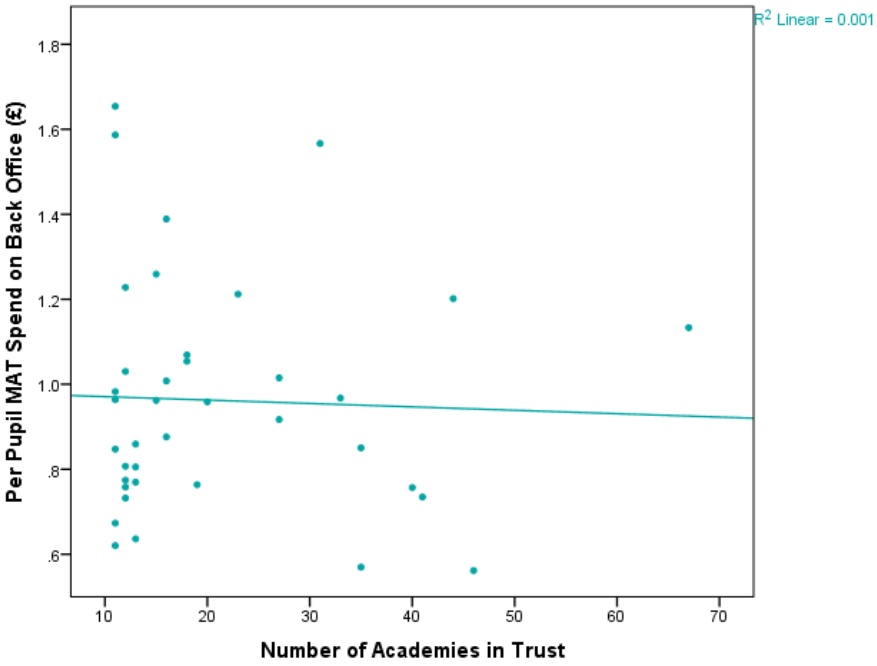
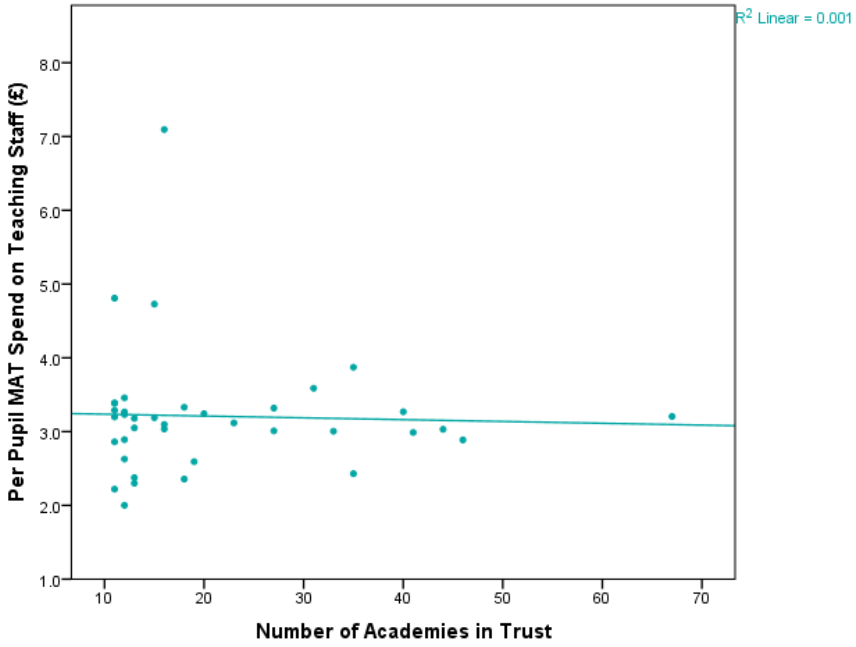


Figure 2.5: Per Pupil Spending (£) on Teaching Staff and MAT Size Among 'Large' MATs



Among large multi-academy trusts, there is a (very weak) negative correlation between the number of academies in the trust, and the spending per pupil on both back office costs and teaching staff. In

contrast to small and medium-sized MATs, among large MATs, there is very little variation in back office costs among MATs of similar size. As the graphs above show, the variation between the highest spending and lowest spending large MATs is very small (around £1 in back office costs, and £5 in teaching staff spending).

Altogether, there seems to be a pattern that MAT academies spend less per pupil on back office costs (and more on teaching staff) than local authorities and SAT academies. The number of academies in the MAT, up to around the 7-10 size, also negatively correlates with total spending (per pupil) on back office costs. This suggests that not only do MATs generally spend less on back office running costs than SATs, but that when more than a handful of academies join together in a MAT, further savings are made. One large MAT told us that these savings become significant once the trust has reached a 'critical mass' of schools (a minimum of around 3-6 schools). The data tends to confirm this trend, but the savings are relatively small across all MATs in the country. Furthermore, there is little evidence that these savings are spent on teaching staff.

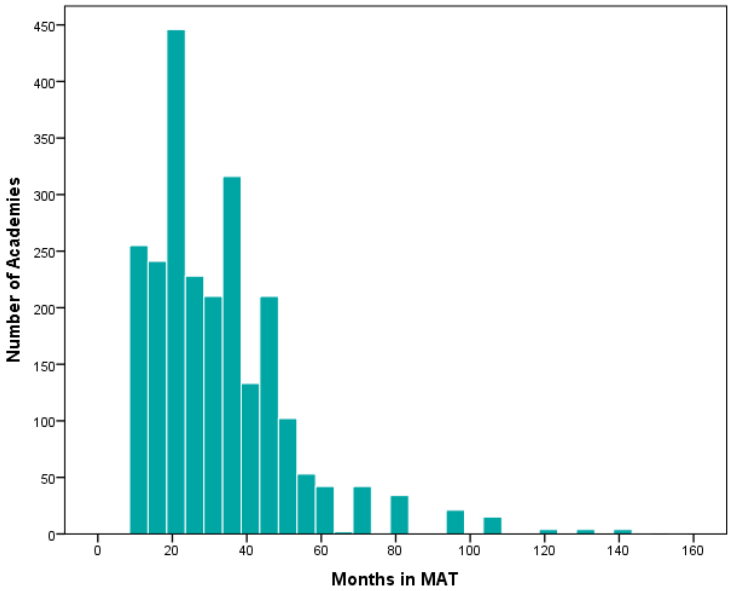
Part 3: Multi-academy trust spending over time

There is an argument that savings are more likely to be found over time. In other words, the process of standardising practices and coordinating back office functions takes a little time, and its effects are not immediate. Assessing the spending patterns of MAT schools over time is particularly difficult as spending data released by the Department for Education has missing values prior to 2014.

As such, we adopt a slightly different strategy here. To establish the longitudinal effect of being part of an MAT, we assess whether academies that have been part of MATs for longer tend to have different spending patterns than those who have joined MATs more recently. This would mean analysing only the 2014/15 spending data, but breaking it down according to how long an academy has been part of the MAT.

We would expect that efficiency savings and economies of scale are unlikely to be made straight away, but rather that they would build over time. Due to the lack of complete data prior to 2014/15, we can breakdown the spending of all academies in 2015 by the number of months each has been in a multi-academy trust. The chart below shows the number of academies that have been part of a multi-academy trust for various lengths of time. As would be expected given the expansion of the academies programme, most have been part of a MAT for less than 4 years.

Figure 3.1: Academies and Length of Time in MAT, 2014/15



Back office spending

There is little correlation between the number of months an academy has been part of a MAT and the amount spent per pupil on back office costs (Figure 3.2 and Figure 3.3). Broadly, the figures above demonstrate that many academies face an initial cost in back office spending after joining or establishing a MAT. This is perhaps unavoidable due to initial administrative functions and costs that result from joining a new organisation and/or becoming an academy. Most academies tend to spend between £500 and £1,000 per pupil on back office costs at both primary and secondary level. This spending is marginally lower among academies who have been part of MATs for longer, suggesting that this initial jump in costs is temporary, and spending tends to fall. This was highlighted by one small MAT who noted that back office costs in their trust had reduced over time.

There is however, significant variation in the extent of these initial back office costs. While some schools report minimal back office costs upon joining a MAT, some report costs upwards of £2,000 per pupil. However, there is far less variation in per pupil back office spending among academies that have been part of MATs for longer. This might indicate that some process of standardisation and assimilation of back office spending occurs the longer an academy has been part of a MAT.

Figure 3.2: Per Pupil Spending on Back Office and Months in MAT, Primary Schools

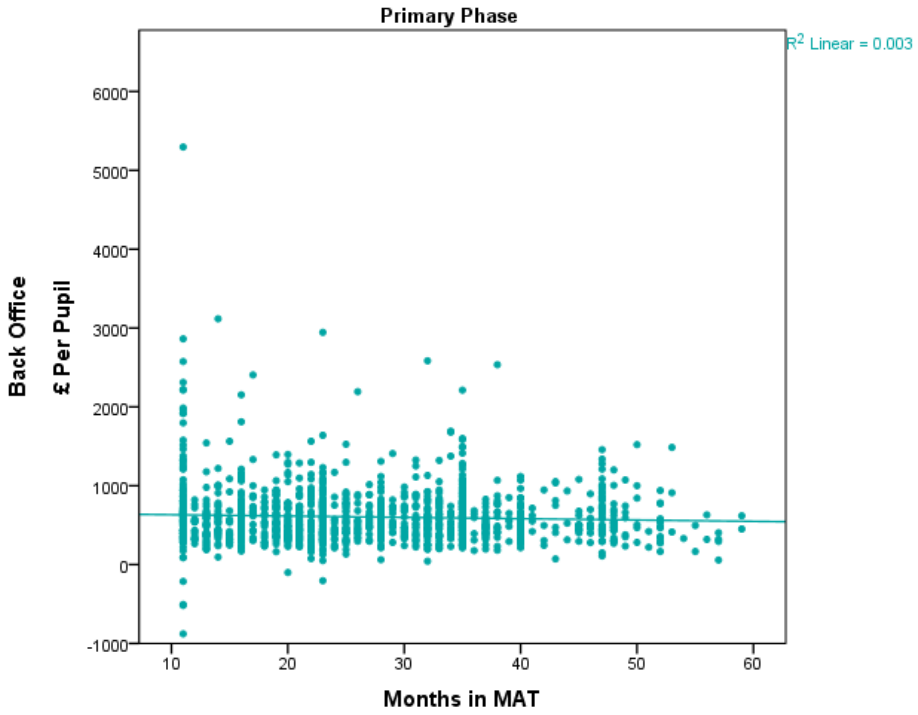
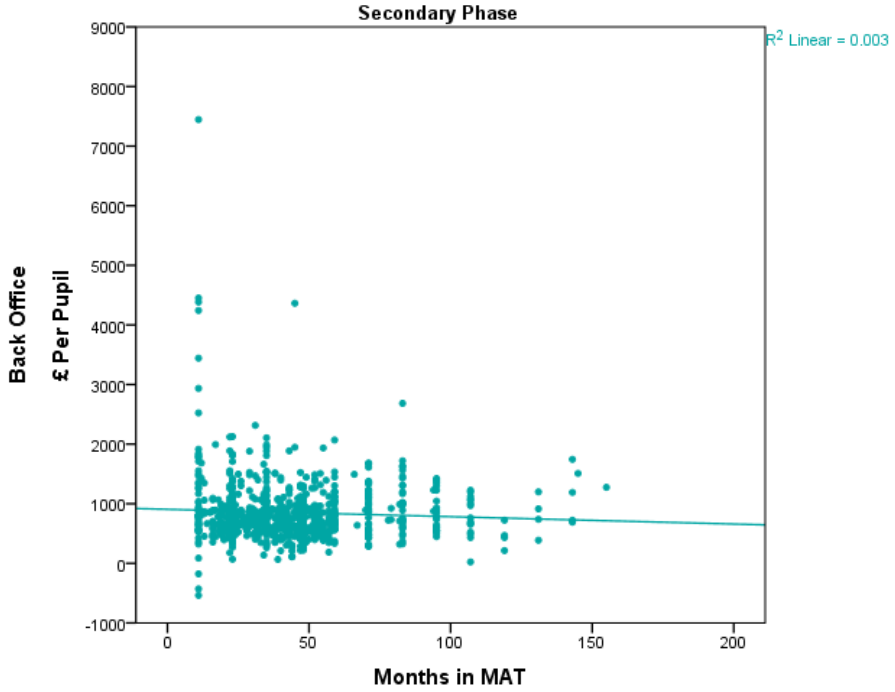


Figure 3.3: Per Pupil Spending on Back Office and Months in MAT, Secondary Schools



Teaching staff

There is a small effect in the spending on teaching staff. As the figures below show, there is a weak negative correlation between how long an academy has been in an MAT (again, measured in months), and the per pupil spending on teaching (and supply) staff at both primary and secondary level academies. At primary level, per pupil spending on total teaching staff is around £2,500, though again the variation in this figure is higher for new MAT joiners than for academies that have been part of a MAT for longer. This decline in variation the longer an academy has been part of a MAT is not as marked at secondary level, however, with most academies spending around £3,500 per pupil.

Figure 3.4: Per pupil spending on teaching staff and months in MAT, primary schools

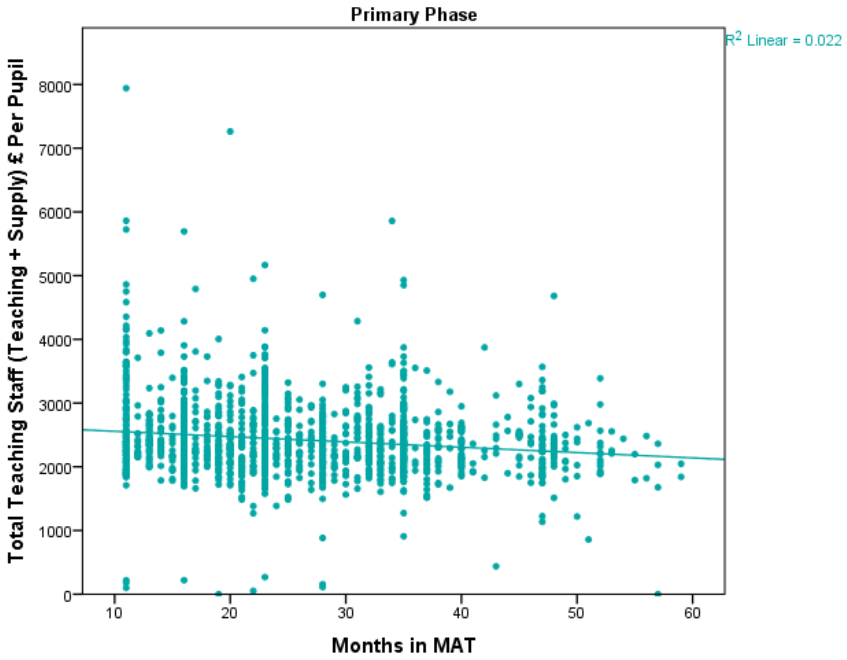
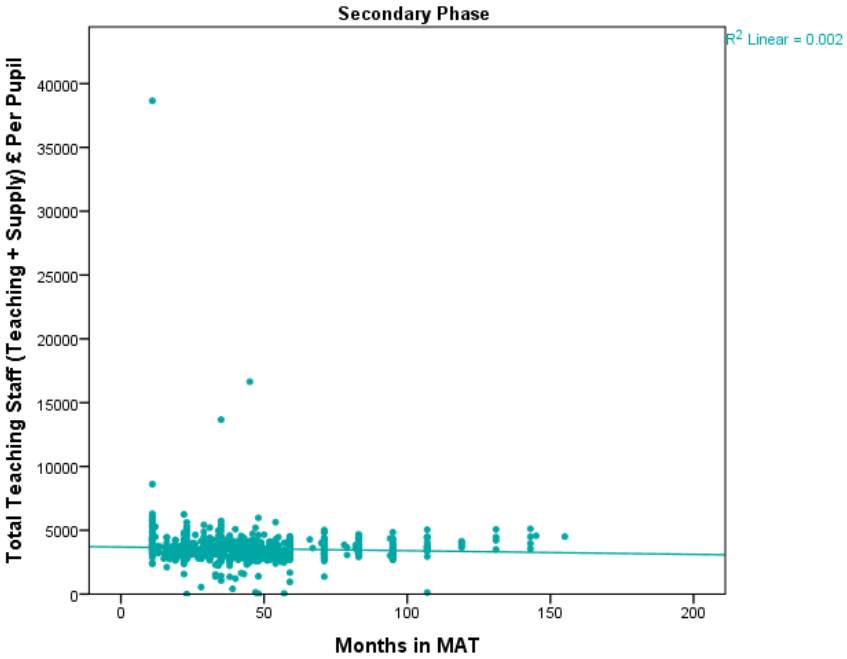


Figure 3.5: Per pupil spending on teaching staff and months in MAT, secondary schools



Catering

In other areas of spending such as catering, there is still no discernible correlation between time spent as part of a MAT, and per pupil spending, as the figures below show. Many academies actually register negative spending on catering, i.e. these academies gain an income from catering. This might suggest that some of the initial catering costs, upon joining or establishing a multi-academy trust, are borne by other academies in the trust, or vice versa.

Figure 3.6: Per pupil spending on catering and months in MAT, primary schools

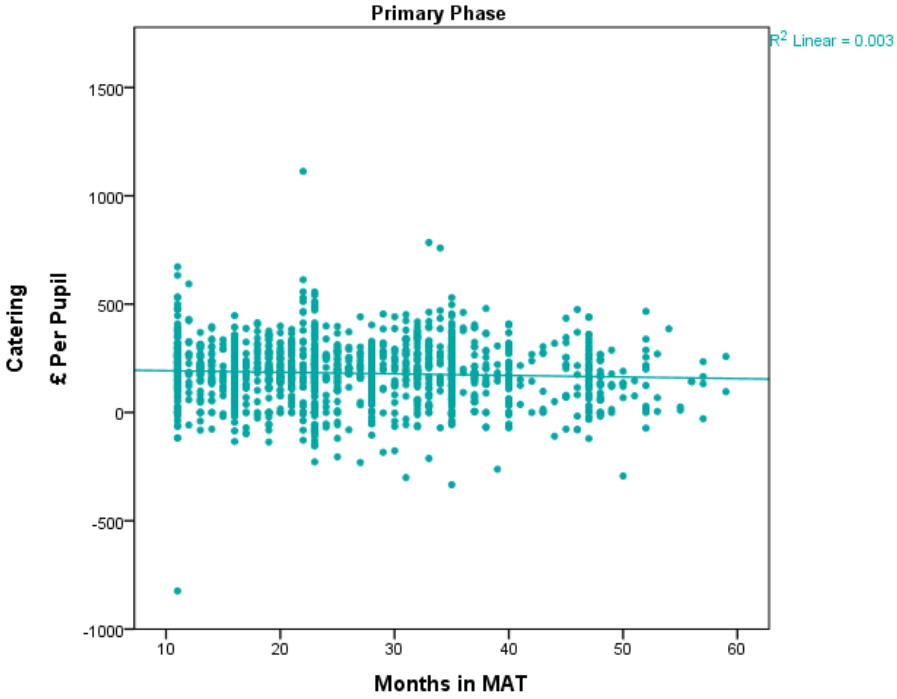
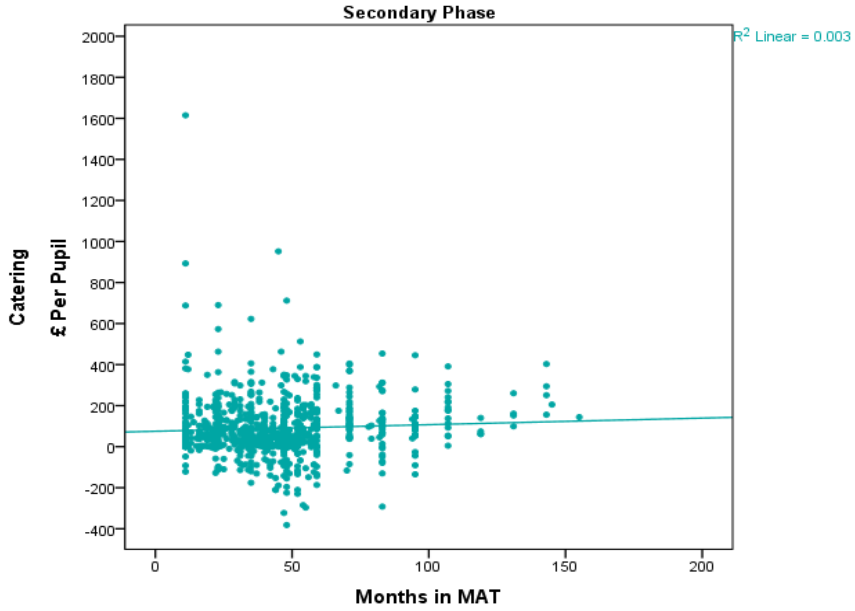


Figure 3.7: Per pupil spending on catering and months in MAT, secondary schools



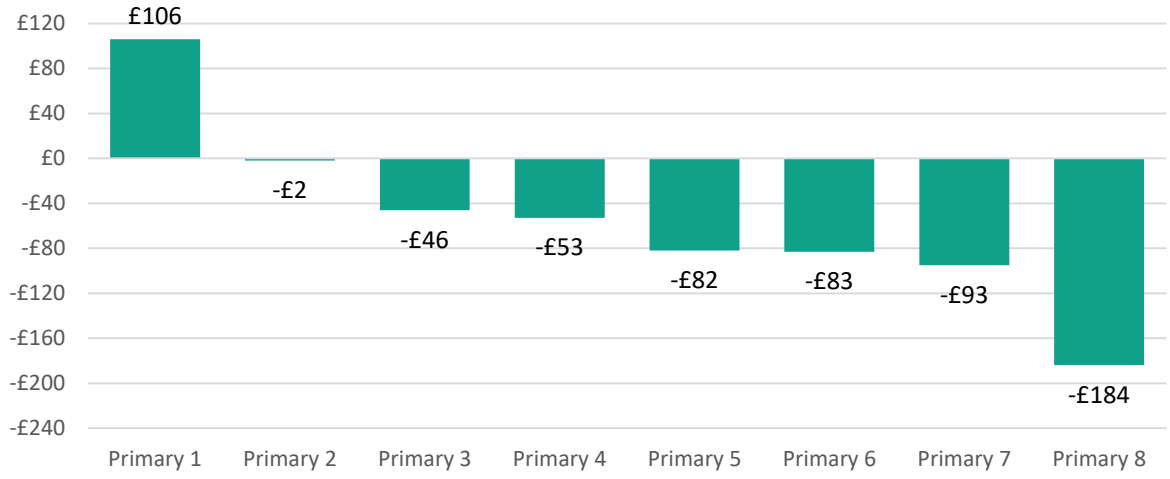
Case studies

Case study 1: Catering costs

One MAT in the North West of England, formed of 8 academies, provides a demonstration of MAT-level coordination of spending and functions. The figure below presents the per pupil spending on catering of the MAT's schools in 2014/15.

Of these 8 academies, 7 register a negative spend on catering costs (per pupil). In other words, 7 of the 8 schools within the MAT 'made a profit' in terms of catering. Meanwhile, one of the longest-serving schools in the MAT – Primary 1 – registered a positive spend of £106 per pupil in 2014/15. This might indicate a level of coordination in terms of spending among the 8 academies within this trust. The catering costs of the entire MAT appear to be absorbed by one of the 'original' schools in the MAT, rather than each school registering their respective catering spending separately. Primary 1 might be providing the catering for all of the other primary schools, and transporting the food to them in order to reduce total costs.

Figure 3.8: Per pupil spending on catering (£, 2014/15)

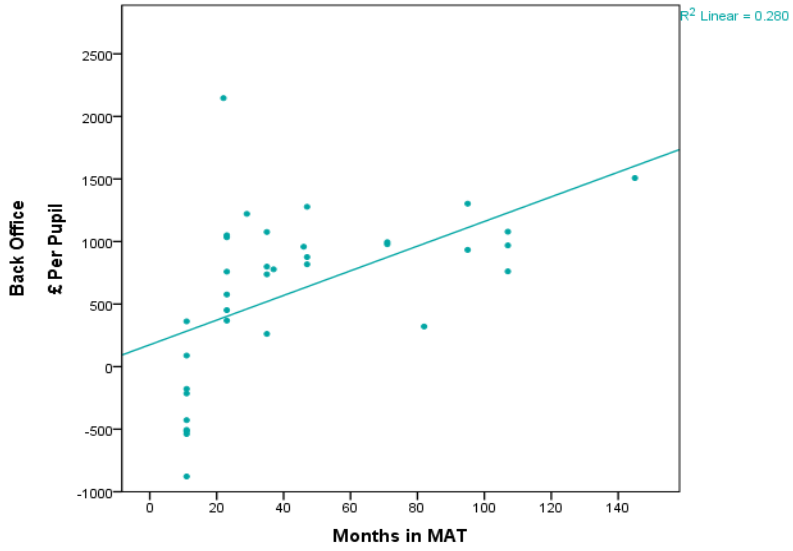


Case study 2: Large MAT and back office costs

There are also examples of some MATs absorbing the initial back office costs of new academies. One large MAT, comprised of over 30 academies, had a handful of new schools who spent a *negative* amount (per pupil) on back office costs (i.e. they registered 'income' from back office) in 2014/15. All of these academies had only officially been part of the trust for 11 months, making them the 'new joiners' to the trust. The figure below shows the per pupil spending in 2014/15 of each school in the trust and the length of time each has been part of the MAT. There is a clear correlation (R-squared of 0.28) between spend and length of time each had been within the trust. New-joiners (represented by the dots on the left hand side of the graph below) tend to register negative, or very low, levels of per pupil spending on back office costs.

This could indicate that when these new academies joined this MAT, their initial back office costs were borne by existing academies, or by the MAT as a whole and these costs were then registered to existing academies.

Figure 3.9: Per pupil spending on back office and months in MAT



Conclusion

Altogether, this analysis reveals that academies that have been part of a MAT for longer tend to spend slightly less on back office costs, but also less on teaching staff. The correlations, however, are very weak with most academies clustered tightly together.

Yet, an interesting pattern does emerge from the data that reveals a decline in the level of variation of per pupil spending as the length of time academies have been part of a MAT increases. In other words, among new MAT joiners, the amount spent on teaching or back office costs tend to vary significantly from £0 (or less) to very high amounts.

This is not the case among academies that have been part of MATs for longer periods of time. This could indicate a phenomenon that when academies first join, or establish, multi-academy trusts, the spending is initially born by one or two academies in the trust, rather than spread equally.

Alternatively, it could also indicate that new academies are registering the higher spending when they join existing MATs. Looking at two case studies, there does appear to be evidence that some degree of coordination takes place in terms of back office functions or catering, when new academies join existing MATs. However, it might be the case that rather than, or as well as, the length of time an academy has been within a MAT determining these spending patterns, the location of these academies might be having an effect.

Part 4: Geographic spread

The geography of each MAT can have a significant effect on the extent to which economies of scale can be secured. To measure the geographic spread of MATs, we can look at the geographic location of every academy and every MAT and use this information to calculate how geographically spread out the academies in each MAT are.

We do this by using the eastings and northings recorded for each school on Edubase.[15] These are simply measures of how far east or west, and north or south, in metres, each academy is. The average easting and average northing for all academies within a MAT then provides an 'average' location for that MAT.

The following example demonstrates this process. Longfield Academy Trust in Darlington, at the time of the 2014/15 spending data being submitted, was formed of three schools. The location of each of these schools is described by its easting/northing coordinates in the table below.

The mean of these are then calculated to find the 'central' location of the MAT, according to its easting/northing coordinates. It is worth noting that the MAT's 'central point' is not of any significance of itself – there is not necessarily an academy there – but is significant in so far as it provides a baseline the distance from which each academy in the MAT can be measured.

Figure 4.1: Example calculation of spread of schools within a multi-academy trust

	Easting	Northing	Distance from MAT's 'Central Location'
The Rydal Academy	429907	513751	2,404m
Longfield Academy of Sport	428937	517085	1,619m
Darlington School of Maths & Science	426190	515899	2,178m
MAT 'Central' Location	**428345**	**515578**	

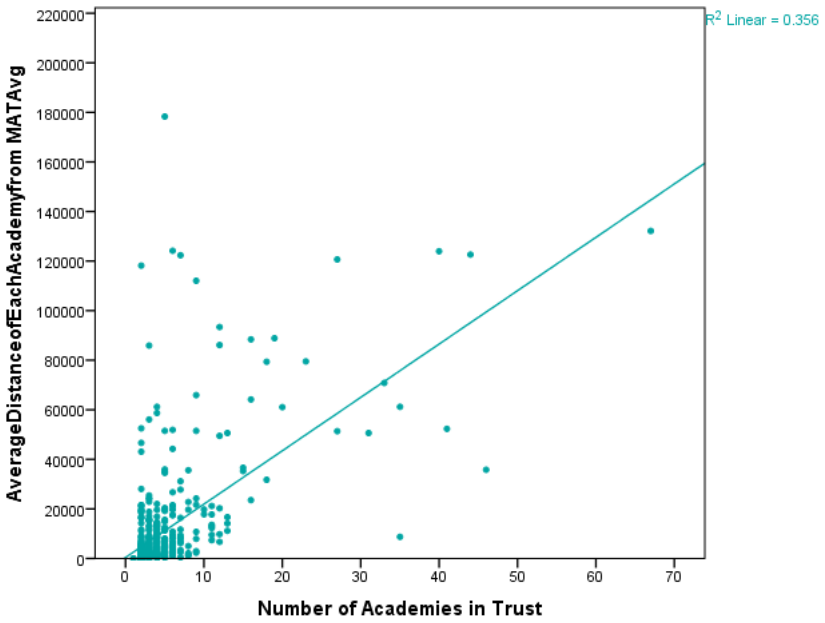
This is then repeated across all MATs that are comprised of 2 or more academies in the dataset. In other words, we calculated for each MAT the 'centre point' of each MAT, and the distance (in metres) of every academy from this 'central point'. With this, we could then see the average distance of each academy within a MAT from its central MAT location. This essentially tells us how far the typical academy within a MAT is from the central point of that MAT. This is a measure of how geographically 'spread out' each MAT is. MATs with average distance of its academies from the central location are more geographically spread out. In Longfield Academy Trust, for instance, the average academy is 2,967m (i.e. just under 3km) from the 'central' location of the whole MAT. This indicates that the academies in this MAT are within a reasonable travel time of each other.

Most MAT are formed of schools that are clustered together to a certain degree. The graph below shows that the majority of MATs are formed of schools that are, on average, less than 15km from the geographic 'central point' of the entire trust. However, larger MATs (i.e. MATs comprised of more academies) tend to have higher average academy distances from the central location. In other words, when a MAT has more academies, the average distance of each academy tends to be further

[15] Edubase is the Department for Education's register of all educational establishments.

away from the central location of that MAT. This is unsurprising, as a trust with more academies is more likely to be spread out (if there are more schools, there is more chance that these schools are located further away from the others). This is demonstrated by the correlation between the number of schools within a MAT and the average distance of each academy from the MAT's centre (see figures below).

Figure 4.2: Number of schools within a MAT and the average distance from the MAT's centre



As the figure shows, larger MATs tend to be less tightly clustered geographically, as measured by the average distances of each academy within a MAT from the MAT's central location. Therefore, in order to measure the effect of geographic clustering on spending, we need to control for the MAT's size. This is because any effect of geographic clustering needs to be separated from the effect that the size of the MAT is having.

In order to do this, we can run a linear regression model, which simply allows us to see the relationship of geographic dispersion of schools on back office spending, after controlling for the number of schools in the MAT. As such, spending on back office costs (per pupil, 2014/15) will be the dependent variable, and the average distances of each academy (in metres) within a MAT from the MAT's centre is the independent variable. Then, to control for MAT size, the number of academies in each MAT will be another independent variable.

We might expect that MATs that are more geographically dispersed would spend more per pupil on back office costs. This is because MATs that are more tightly clustered would be more likely to find it easier to share back office costs between the schools. Meanwhile, a MAT that is spread out geographically might find it harder to share such costs.

This analysis shows that the average distance of a MAT's academies from the 'Central' MAT Location has a positive and statistically significant effect on how much a MAT spends, per pupil, on back office costs. The effect is very small (of the order 0.5 pence per pupil, per km) though it is likely that it underestimates the effect for highly dispersed schools since the analysis will be dominated by schools that are clustered together.

This effect is present after controlling for the number of schools in the MAT. In other words, there is a separate effect of geographic dispersion of MATs in increasing per pupil back office spending in addition to the effect of the MAT's size.

In short, the geographic spread of a MAT appears to have an effect in increasing spending on back office costs.

A large MAT that we spoke to stressed the significant role geography has on bringing down running costs. This MAT, which is formed of several 'clusters' of schools around the country, said that being in a MAT allows relatively flexible tendering and procurement of services. For instance, within this trust, clusters of schools situated within the same city tender cleaning services at a regional level, which allows them to make significant savings.

Another MAT, echoed this, telling us that they had procured printing services, paper, and utilities all across their own MAT, as well as with other schools in the town. As a result of business managers coming together to negotiate with suppliers, they told us that they had reduced costs substantially, and was helped enormously by the close proximity between the schools. Though, this MAT added, this would be made easier for more dispersed MATs with the use of technology in communications, such as greater use of Skype. There are examples of other schools appearing to coordinate other areas of spending in similar ways.

Case studies

Case study 3: Mid-sized MAT and catering

One multi-academy trust in the East Midlands formed of 8 academies, is closely clustered together geographically. Of these 8 academies, 6 registered no spending on Catering and one registered just £8. Meanwhile, one school registered £55 on catering costs. Furthermore, the school registered £924 per pupil spending on back office costs, while the others registered between £289 and £696. This particular school is both the largest and longest-serving school within this MAT. It has more than 1,000 pupils on its books, compared to between 92 and 371 among the other schools in the MAT. It had also been part of the MAT for two years, while the other schools joined the MAT approximately a year later. The schools within this MAT are all less than 5km of the MAT's 'central location'.

The spending patterns within this MAT indicate some coordination of costs. Catering costs in particular are absorbed almost entirely by the largest and longest-serving school within the MAT. Of the combined per pupil spending across all of the schools of £63, £55 is registered to one school. It might be the case that spending is coordinated within the MAT such that this one school provides catering for the other schools in the trust. This could suggest that economies of scale are being sought by registering the majority of spending to one school rather than dividing it across all 8, thereby attempting to secure economies of scale.

Case Study 4: Small MAT and back office costs

One small MAT in the North East that we spoke to, formed of 3 schools, told us that they coordinated back office spending among their schools. The per pupil spending figures on back office costs are presented below.

Figure 4.3: Per pupil spending on back office in a small MAT in the north east

This particular MAT told us that while it appeared that School 3 was less efficient in their back office spending, in reality the figures were all very consistent. The back office functions within this MAT were carried out by School 3 on behalf of all of the schools within the MAT. They told us that this coordination of back office, HR, finance, and payroll had helped them reduce costs significantly.

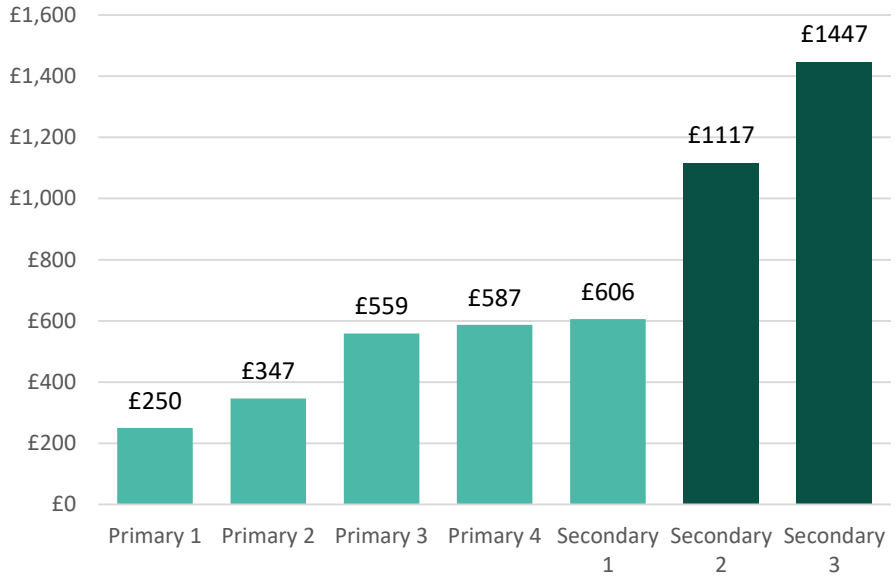
Case study 5: Mid-sized MAT and back office costs

Another MAT formed of 7 primary and secondary academies, however, has a slightly different geographic spread. The average distance of these 7 academies from the MAT's geographical centre point is 31142m – or just over 31 kilometres. However, this figure disguises the fact that not all of the academies are equally spaced from one another. In fact, 5 of the 7 academies are tightly clustered together in a city in Yorkshire. Meanwhile, there are two 'out-lying' academies, which are several hours away – from the main clusters of schools, as well as from each other.

Based on this geographic distribution, we might expect some convergence in spending among those academes situated close to one another compared to those further afield. The expenditure returns of the academies in this trust do reveal some variation in spending patterns between these academies.

Primaries 1, 2, 3, and 4, as well as Secondary 1 are all a few kilometres from one another. The figure below shows that they all spent relatively low amounts on back office costs. All 4 of the Primary schools spend less on back office costs than the average for all primary academies in MATs (£632 per pupil). Further, the one Secondary school that is also in the same city spends far less on back office costs than the average MAT secondary school (£850 per pupil). Meanwhile, the two secondary schools – Secondary 2 and Secondary 3 – that are located several hours away from the other schools, spend significantly above average on back office functions.

Figure 4.4: Per pupil spending on back office in a MAT with two isolated academies



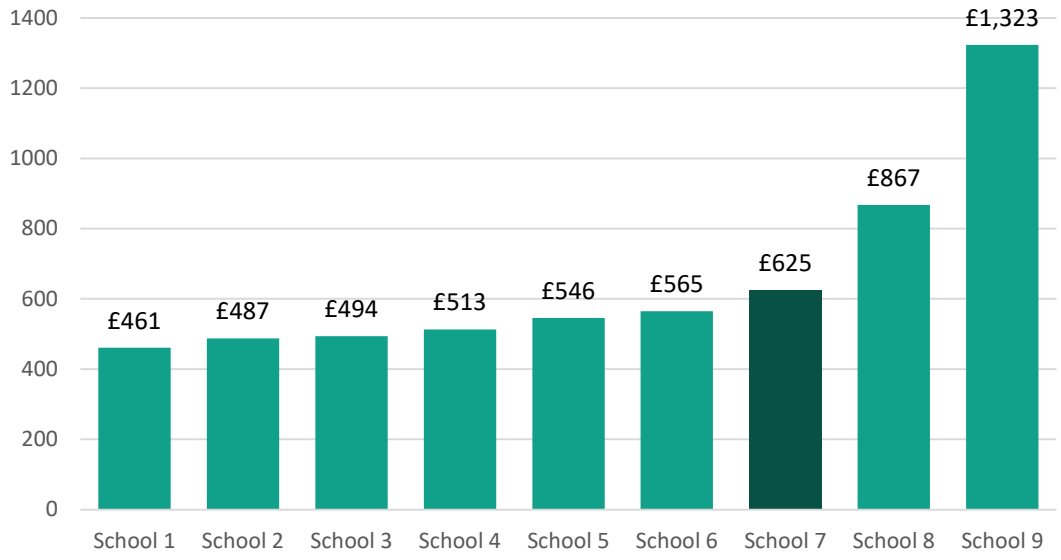
This suggests either the schools situated closely to one another are successfully sharing back office functions and thereby reducing their costs below average. Alternatively, it might be that the secondary schools that are situated far away from the others are performing some back office functions on behalf of all of the schools in the MAT. However, in this instance, their back office spending is still significantly higher than the average across all secondary MAT schools, which might suggest that there is opportunity here to overcome geographic barriers and further reduce costs through greater use of technology and coordination of back office functions.

These case studies provide examples of how some services are potentially coordinated at MAT-level. One large MAT we spoke to told us, however, that while some services are tendered, or procured, across the entire trust, greater use of technology might help them further overcome geographic barriers. This particular MAT makes use of intranet services in order to exchange information and best practice easily, quickly, and cheaply. The same trust is now looking into making greater use of video conferencing to reduce the cost of travel between head office and its schools, and from school-to-school. The Chief Financial Officer of this MAT also noted the fact that this practice would save its staff significant amounts of time in addition to costs. There might be further opportunity for technology to help reduce costs. One MAT told us that while procurement at regional or trust level results in savings, monitoring spending across the network of schools would also be beneficial. In this case, they noted that electricity spending in their schools could be monitored in order to determine where savings could be made in future. Another, much smaller, MAT told us that they had just begun to look into investing in technology that would allow them to monitor energy usage across their 3 schools, in order to make further savings.

Case study 6: overcoming geographic barriers

Another trust shows a different pattern given its geography. The MAT has schools spread across England. However, it has a 'satellite' school that is situated apart from the main clusters of schools. In this case, there are two clusters of schools – one in the East Midlands and one in the South West, with a lone 'satellite' school in East Anglia. However, unlike the previous case study, the spending of the 'satellite' school is broadly similar to that of the two clusters of schools (contrary to expectations given geographic dispersion).

Figure 4.5: Per pupil spending on back office in a MAT with clusters and one isolated school



The figure above shows per pupil spending on back office costs for schools in the trust. As the chart shows, School 7 registered slightly below-average (for a primary school) spending on back office functions, despite being geographically apart from the other schools, all of which are in one of the clusters in either the South West or East Midlands. This appears to show that this MAT is managing to overcome the geographic hurdle that having a 'satellite' school represents. This may be down to this particular MAT utilising technology in order to make savings across its network.

Altogether, there is substantial evidence that the regional proximity of schools to one another has a strong effect on securing economies of scale. By joint-tendering certain services, or sharing certain functions such as catering or back office, MATs that are formed of academies tightly clustered together tend to coordinate, and save money together.

Part 5: Conclusion

This report has revealed a number of interesting patterns with regards to the spending patterns of multi-academy trusts in England. The report compared the spending in MAT schools to those in single-academy trusts, as well as to local authority schools. It found that primary schools in particular benefit from being part of a multi rather than single-academy trust in terms of expenditure on back office functions.

The report then turned to determining the effect that a number of factors - that are often cited as determinants of securing economies of scale – have on per pupil spending patterns.

Our research found that larger MATs tend to spend less on back office functions than smaller MATs though the relationships are weak and the variation amongst MATs of the same size suggests there might be the opportunity for further savings. We also found evidence that over time academies tend to coordinate their spending more. Spending on teaching staff is also lower among schools that have been in MATs for longer, however, placing doubts on possible claims that back office savings are re-invested into teaching.

Evidence of the effect of the geographic dispersion of schools within a MAT tends to be the most consistent, of all the factors explored in this report. Based on discussions with MATs, and on our data, it is clear that the regional 'clustering' of academies would appear to make it easier to realise efficiency savings on various areas of spending. Furthermore, through our case studies, we find some evidence of multi-academy trusts coordinating back office functions and catering between their schools. Again, this is largely made possible due to these schools being situated close to one another.

We also find examples of multi-academy trusts making effective use of technology in order to help bring about efficiency savings. Standardising various HR or teaching materials, and making use of technology such as intranet services or video conferencing to overcome geographic barriers within MATs, can all help to reduce the running costs associated with a MAT.

Annex 1: Data Sources

Data for this report consisted of 2014/15 spending returns submitted to the Department for Education in 2016, and other data from Edubase.

LA and school expenditure: 2014 to 2015 financial year:
https://www.gov.uk/government/statistics/schools-education-and-childrens-services-spending-2014-to-2015

Income and expenditure in academies in England: 2014 to 2015:
https://www.gov.uk/government/statistics/income-and-expenditure-in-academies-in-england-2014-to-2015

Edubase: Edubase is the Department for Education's register of educational establishments in England and Wales.
http://www.education.gov.uk/edubase/home.xhtml