

The Organizational Economics of School Trusts

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Key research questions

- What factors determine MAT choice to decentralize key strategic decision making?
- Are schools in decentralized MATs more or less effective?

Context and framework

School autonomy and school networks

- Recent school reforms in many countries promote autonomy
 - Charter schools in the US and *Friskolor* in Sweden
 - Academy schools in England: close to 70% of secondary schools and more than 20% of primaries
- Growing autonomy matched by counterbalancing trend: rise of ‘school networks’ or ‘trusts’
 - Structures that bind schools together with varying degrees of centralization
 - England: Multi-Academy Trusts (MATs)
 - 700+ ‘true’ MATs including at least two schools, approx. 70% of academies
- Despite prevalence little is known about school trusts: assumed to be monolithic structures centralizing strategic decision making
 - Schools simply deliver teaching – **but is it true?**

School trusts as ‘businesses’

- In reality, trusts are unlikely to *all* be centralized structures
 - Decision making likely to be in the hands of the actor(s) bringing the biggest benefit to the organization
 - In the case of school trusts, this should be higher education standards
- In our research, we investigate these issues ‘wearing the lenses’ of organizational economics of firms
 - The choice of the MAT leaders to delegate decision making faces trade-offs
 - Key insights: information (dis-)advantages vs. ‘preference congruence’
- Our contribution: first paper to use the tools of organizational economics to study school trusts *as firms*
 - Leverage very unique data on procurement and delegation practices matched with pupil, school and MAT-level administrative records

Organizational economics – Key predictions

- ‘Good’ centralised decision making relies on trust leaders having abundant and relevant information on how to run their schools
 - But is it true? Or do head-teachers/‘school managers’ know better?
 - Decentralised decision making leverages superior ‘local information’ – but can local (school-level) leaders be trusted to have the same goals?
- First key insight from this literature: more ‘aligned preferences’ (objectives) increase likelihood of decentralised structures
 - If the trust leaders and the school leaders can agree on what is ‘good’, than delegation is more likely to occur...
- And does learning from the experience of other ‘players’ (other schools and other MATs) change these trade-offs?

Learning and trust structures – Key predictions

- The more trust leaders can learn about ‘best practices’ (what research calls ‘leading technologies’), the less they need to delegate

- Three key predictions:
 1. Trusts closer to the technological frontier tend to delegate
 - ✓ Does it follow that trusts with high performing schools delegate more because leaders of cutting-edge trusts can’t learn from others?

 2. Trusts working in heterogeneous environments delegate more
 - ✓ Does it follow that trust in more diverse settings delegate more because leaders can’t learn much from the experience of other very disparate trusts?

 3. Trusts that need to adapt ‘best practices’ to own productive needs delegate
 - ✓ Does it follow that younger trusts (more recently established) delegate more to experiment and find own ‘leading technologies’?

Background: the academy programme and MATs

Institutions – Academies in England

- Academies are state-funded schools that largely fall outside the control of the Local Authority (LA)
 - Marked freedom in terms of curriculum, length of day, personnel practices, ethos, budgeting, extra-curricular activities, etc.
- Introduced by Labour Gov't in 2002 as a small and targeted remedial intervention
 - *Failing schools* attached to an external (Gov't appointed) sponsored with the aim of pushing through change and improve standards
- Coalition Gov't of 2010 rapidly expanded and dramatically changed nature of the programme
 - 'Converter' academies are *well-performing schools* that become academies to gain autonomy from LA

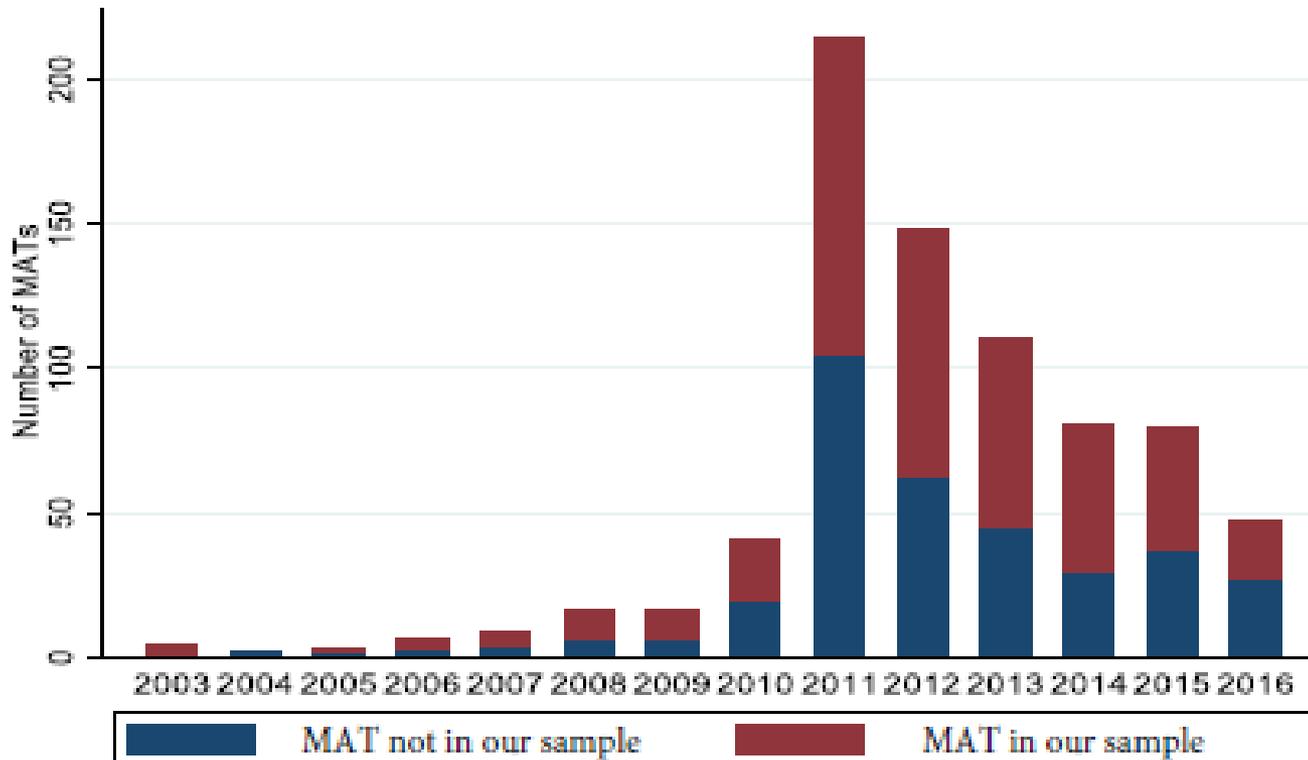
Institutions – Academies and MATs

- Originally only sponsored academies were part of MATs
 - Trust was supposed to ‘take on’ failing schools and turn them around
 - Trusts accountable for the performance of their schools
 - Overall, 200 early sponsored academies and handful of MATs

- Radical change from 2010 with Coalition Government: big push to academisation; swift increase in MATs numbers
 - Large numbers of secondary schools converted to academies
 - Primary were ‘pushed’ to become academies too
 - Many academies ‘incorporated’ as MATs from inception; some started off as stand-alone and then joined MATs
 - Current MATs include a mix of converters and sponsored, as well as primaries and secondaries

MAT rapid expansion

Figure 1: Number of MATs opening by year



Note: based on the academic year in which the first school of the MAT joins the organization. No MATs before the academic year 2002/2003.

MATs and Academies

- MAT Board of Directors (leaders) responsible for strategic decision making and accountable for school performance
 - Key MAT stakeholders represented on MAT board; range of expertise to set the direction of the trust
 - Crucially, has the authority to delegate certain functions to schools or rather centralise them
- Head-teachers and school managerial team responsible for the day-to-day management of the school
 - Implement actions to achieve goals set by the MAT board
 - Varying degrees of autonomy in terms of decision making
- MAT funding? Top-slicing from school budgets
 - Fixed vs. variable rates; some data but not the focus of current research

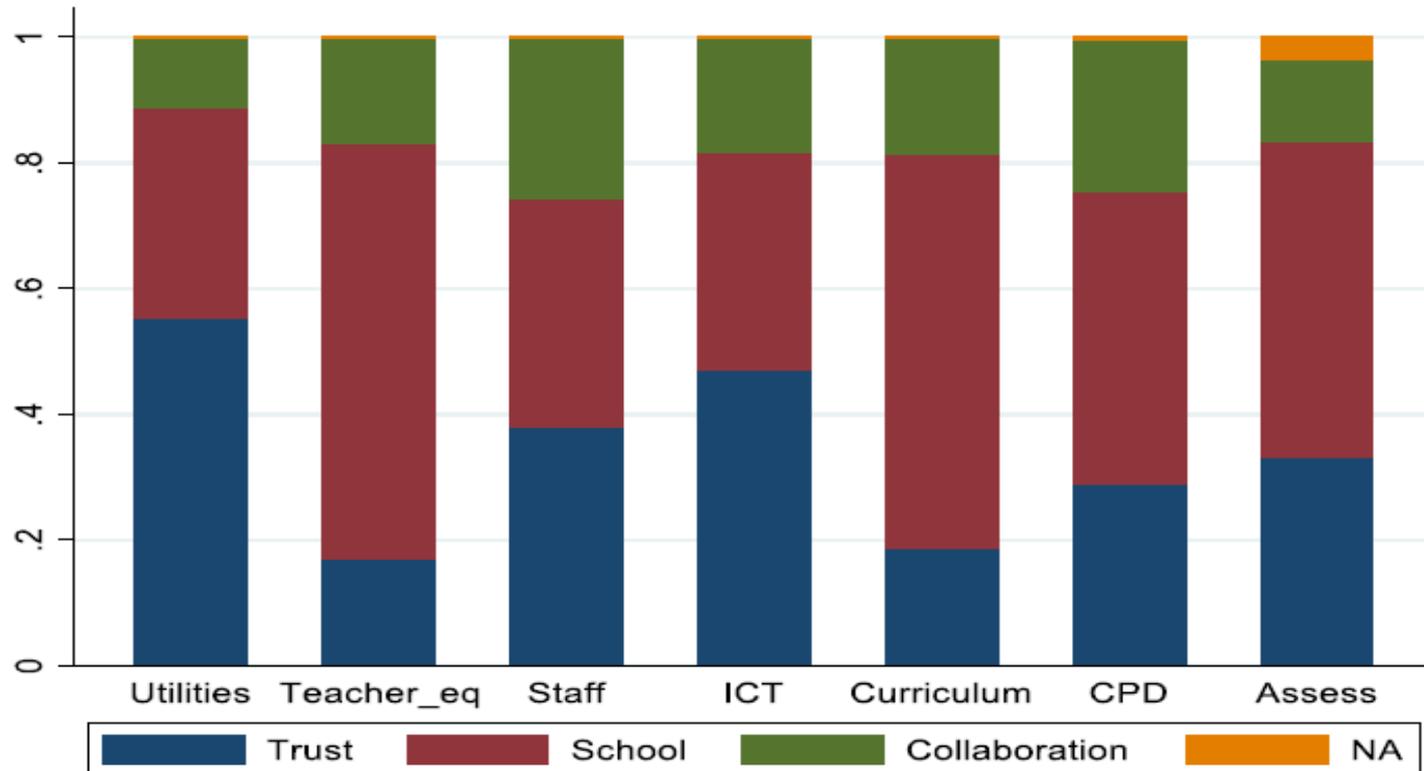
Data and empirical methods

Our MAT data

- Information on structure of approx. 410 MATs collected by education service providers in 2016 (BESA)
 - Only 'true' MATs including at least two schools
 - Covers around 2,100 schools – including primary and secondary; sponsored and converters
- Crucially, data includes information on procurement activities and MAT board composition/expertise
 - MATs were asked to state whether certain procurement activities are managed 'centrally', 'jointly with the school' or 'by the school'
 - MATs were asked to classify board background as 'business', 'educationalist' or 'mixed'
- Combine these data with pupil and school level administrative data measured in 2009 (pre-MAT expansion) and 2015

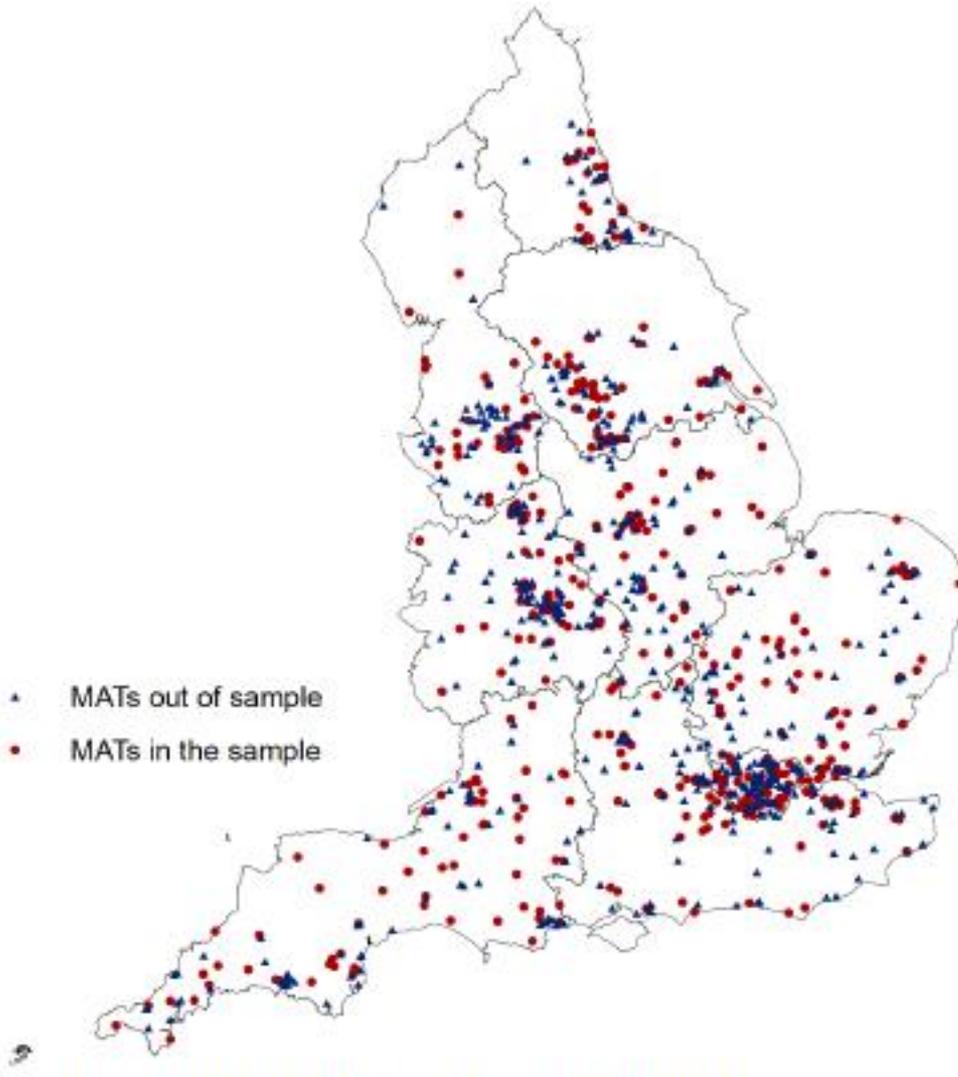
Procurement and decentralisation

Figure 2: Procurement and distribution of roles within MATs - by surveyed items



Note: data available for 410 MATs in our sample. However, number of observations varies depending on the specific item. Information on procurement and decentralisation of facilities maintenance is not tabulated due to insufficient number of observations

Representative? Yes and no...



- Geographical spread in data mirrors national distribution
- However MATs in our data tend to be...
 - Bigger in terms of schools and students
 - More likely to have sponsored academies
 - Less likely to have primary schools
- Still interesting sample to study delegation problem

Key variables of interest – Part I

- How to measure decentralisation? Different approaches
 - Assign values to ‘school’ (1), ‘collaboration’ (0.5) and ‘trust’ (0) for various procurement items; then take average value
 - Create ‘decentralised dummy’ (0/1) if average above 0.5 – identifies trusts that ‘on balance’ decentralise (dummy=1; otherwise=0)
- Alignment of preferences? Start considering expertise of board: business/management; education; mixed
 - What is the background of the head-teacher and his/her managerial team?
 - Use SWF data to gather information on field of their degree; identify business/management vs. education
 - Do the trust leaders and the local ‘school managers’ have the same background? If so, preferences are likely to align
 - Note that this is ***not*** the direct effect of background!

Key variables of interest – Part II

- Learning, distance to ‘best practices’, heterogeneity, trust age... and all that – how do we measure?
 - Leverage data at pupil- and school-level to create various proxies
 - Age: ‘join date’ of older school determines age of MAT
 - Technological frontier? Measure value-added (KS1-to-KS2 and KS2-to-KS4) of schools in the LA where MAT operates
 - Identify 99th percentile – best schools in the LA: that is the frontier. How far on average are the schools within the MAT from this frontier?
 - Heterogeneity of ‘practices’? 10th-to-90th percentile (worst-to-best) spread of value-added distribution of LAs in which MAT operates
- Variables measured before ‘big push’ in 2009 to avoid some reverse causality – but can use other years!

Findings on the determinants of decentralisation

Organizational Economics of School Trusts

| VARIABLES | Decentralization | | | |
|---|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) |
| Distance to frontier - Value Added (2009) | -0.212*** (0.075) | | -0.245*** (0.078) | -0.245*** (0.078) |
| Average School Value Added (2009) | | 0.123 (0.125) | | |
| Frontier, 99th Percentile of Value Added (2009) | | -0.258*** (0.086) | | |
| Heterogeneity - Value Added (2009) | -0.046 (0.039) | -0.043 (0.039) | -0.035 (0.039) | -0.027 (0.041) |
| Age < 25th percentile | 0.210** (0.087) | 0.220** (0.087) | 0.357* (0.183) | 0.347* (0.184) |
| 25th < Age < 50th percentile | 0.160* (0.091) | 0.167* (0.091) | 0.272** (0.136) | 0.265* (0.136) |
| 50th percentile < Age < 75th percentile | -0.040 (0.089) | -0.035 (0.089) | -0.010 (0.115) | -0.014 (0.116) |
| School and MAT board alignment (2009) | 0.213* (0.121) | 0.223* (0.124) | 0.271** (0.130) | 0.275** (0.133) |
| Board alignment information imputed (2009) | -0.030 (0.079) | -0.035 (0.079) | -0.024 (0.080) | -0.029 (0.080) |
| Trust type - imputed values | 0.007 (0.052) | 0.007 (0.052) | 0.007 (0.053) | 0.006 (0.053) |
| Trust type (economics/business type) | | | -0.007 (0.052) | -0.006 (0.052) |
| Percentage of academy converter (×100) | | | 0.160* (0.097) | 0.163* (0.098) |
| Percentage of primary schools (×100) | | | -0.297** (0.116) | -0.298** (0.118) |
| School chain controls | N | N | Y | Y |
| Student demographic controls | N | N | Y | Y |
| Market level (LA) controls | N | N | N | Y |
| Observations | 410 | 410 | 410 | 410 |
| R-squared | 0.067 | 0.069 | 0.118 | 0.121 |

Note: Variable description and key statistics in Table 1. School chain controls include: average number of months since the school joined the MAT (school age, in months); standard deviation of school age within the MAT; average number of students in the school levels in the network; standard deviation of the number of school students within the MAT; standard deviation of school value-added within the MAT; MAT size (total number of schools); total number of pupils in the MAT; Herfindahl index (share of schools in different LAs); dummy for MATs with only one school. Student demographic controls include: percentage of White students; percentage of FSM eligible students. Market level (LA) controls include: share of primary schools; share of community schools; share of sponsored academies; share of converter academies. F-stat (P-value) on the test that Average School Value Added (2009) and Frontier, 99th Percentile of Value Added (2009) are the same: 0.92 (0.3368). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Additional findings

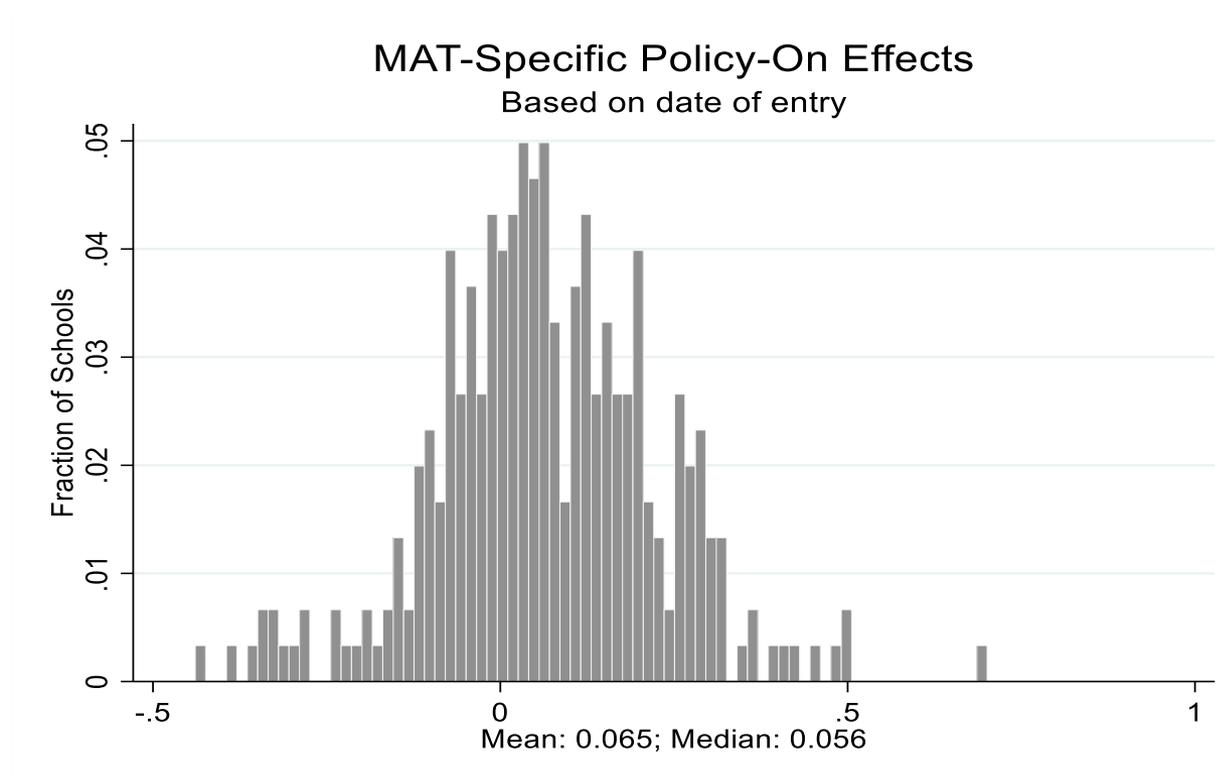
- Main tables use decentralisation dummy but using other proxies for decentralisation confirms these findings
 - Age and distance to frontier matter, but heterogeneity is not a significant correlate
 - Alignment of trust leaders and local management still shows significant association
- What about different domains of procurement and decentralisation?
 - Distance to frontiers matters everywhere but especially for teaching equipment, curriculum, CPD and assessment
 - Age more important for ICT, staffing and utilities management
 - Preference alignment most important for assessment, CPD and curriculum

Decentralisation and effectiveness – preliminary evidence

Measuring MAT effectiveness

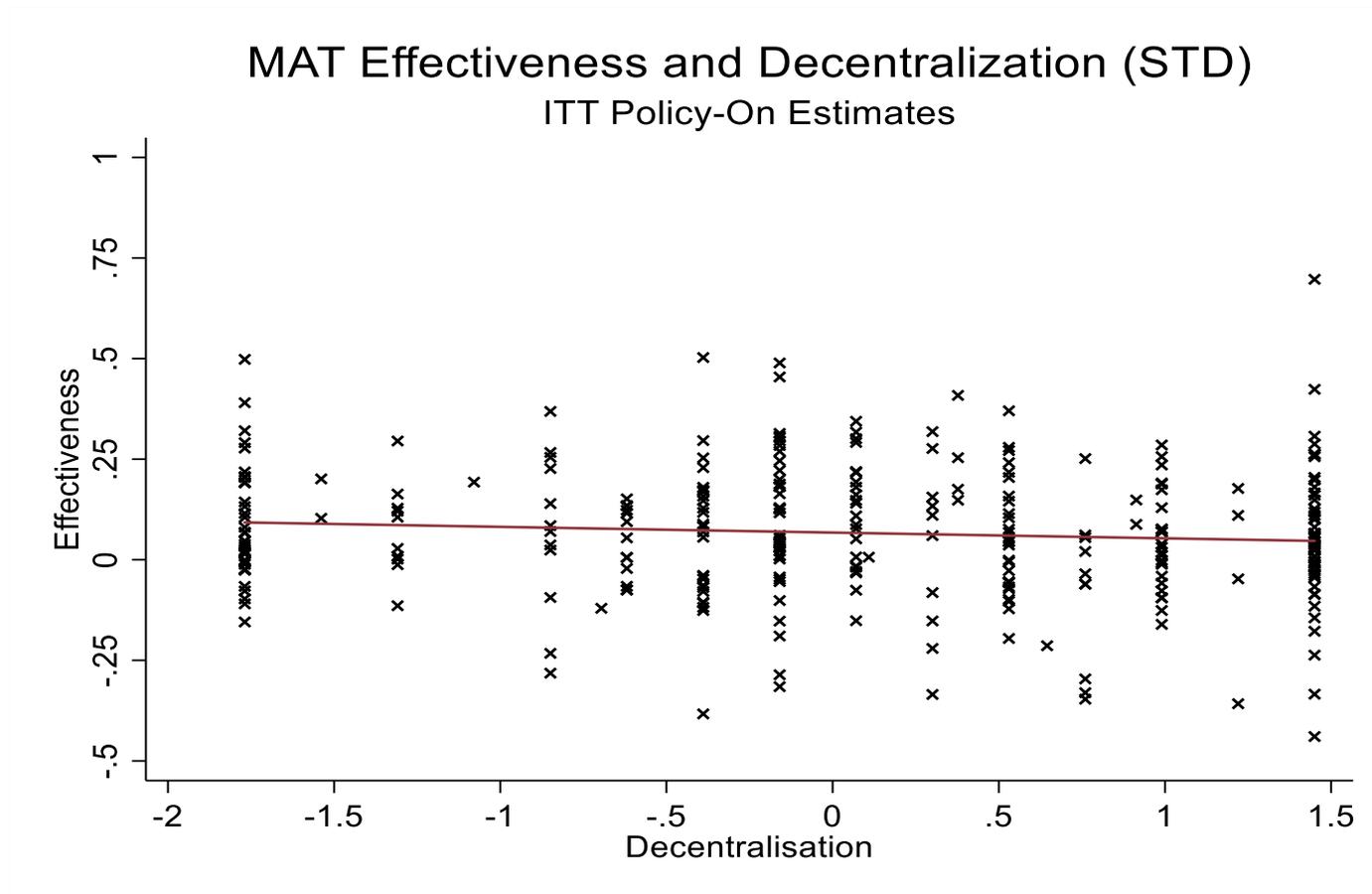
- How to measure MAT effectiveness? Study changes in student value-added after schools have joined the MAT
 - Borrow insights from previous work on academies: use ‘legacy’ students who were at the school before it joined the MAT
 - Compare up-tick in performance of schools after joining compared to schools that will join in the future
 - Data on performance covers 2005/2006 till 2014/2015
- From average effect of joining a MAT to MAT-specific effect?
 - Estimate directly MAT-specific effect: each MAT is given a proxy for its own effectiveness
 - ✓ Not showing you which MATs are doing better or worse – but we could...
 - Take results with a pinch of salt: still preliminary!

MAT-specific effectiveness



- Average MAT-specific estimate close to average estimates pooling all schools: approximately 6.5% - not far from previous evidence
- Interesting given heterogeneous distribution of school characteristics

Decentralisation and MAT effectiveness



- Association of MAT effectiveness and continuous measure of decentralisation: small, negative relation (again, very preliminary and to be taken with a pinch of salt!)

Decentralisation and effectiveness (cont.)

Table 1: Decentralisation and MAT Effectiveness

| Dependent variable: MAT-specific effectiveness | Continuous standardised decentralisation | | | | Decentralisation dummy | | | |
|--|--|-----------------------|---------------------|----------------------|------------------------|-----------------------|---------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Decentralisation proxy | -0.0142 (0.0089) | -0.0182 (0.0090)** | -0.0148 (0.0095) | -0.0163 (0.0096)* | -0.0319 (0.0186)* | -0.0376 (0.0187)** | -0.0325 (0.0203) | -0.0332 (0.0204)* |
| Age controls | No | Yes | Yes | Yes | No | Yes | Yes | Yes |
| MAT and school averaged controls | No | No | Yes | Yes | No | No | Yes | Yes |
| LA level controls | No | No | No | Yes | No | No | No | Yes |
| Observations | 303 | 303 | 303 | 303 | 303 | 303 | 303 | 303 |
| R-squared | 0.0079 | 0.037 | 0.0888 | 0.1034 | 0.0096 | 0.0376 | 0.0902 | 0.1037 |

Note: MAT and school controls include: average number of months since the school joined the MAT (school age, in months); standard deviation of school age within the MAT; average number of students in the school levels in the network; standard deviation of the number of school students within the MAT; MAT size (total number of schools); total number of pupils in the MAT; Herfindahl index (share of schools in different LAs); dummy for MATs with only one school; share of primary schools in the MAT; share of converters in the MAT; percentage of White students; percentage of FSM eligible students. Market level (LA) controls include: share of primary schools; share of community schools; share of sponsored academies; share of converter academies. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

- Progressively more stringent empirical approach: fairly stable pattern confirming graphical impression

Concluding remarks

Conclusions and ‘to do list’

- Use framework of the organisational economics of firms to study structure of school trusts
 - Key insights hold: school trusts work indeed a bit like businesses!
 - Some preliminary evidence that internal structure – specifically decentralisation - matters for performance
- Lots of things to do with the data – amongst others...
 - Gather info on delegation schemes: similar to our ‘decentralisation’?
 - Thoroughly check ‘board specialisation’ using extra data
 - Check pupil/school data for effectiveness analysis
- Future work: study heterogeneity of effectiveness patterns within MAT and links with decentralisation