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## IF IT AIN'T BROKE, DON'T FIX IT:

WHEN (AND WHY) INDEPENDENT SERVICE DELIVERY IS  
PREFERABLE TO COLLABORATIVE PUBLIC MANAGEMENT

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## **If it ain't broke, don't fix it:**

### **When (and why) independent service delivery is preferable to collaborative public management**

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#### **Abstract**

Collaboration is a commonly prescribed method of public service improvement. If collaboration fails, blame is typically ascribed to transaction costs, organizational inertia, or premature evaluation. Drawing on a notable case of collaborative failure in England, however, we show that misdiagnosing public service problems as being of a type likely to be cured by joint working also generates poor results, and belongs conceptually prior to many “go-to” explanations of failure. Using stacked difference-in-difference estimators on 11 years of performance data relating to subnational tax collection, we show that inter-municipal cooperation produced no cost or quality improvements over independent service delivery. Supplementary testing attributes this less to governance problems, inertia or precipitate evaluation, than to a basic lack of interdependence – the specific “problem” to which collaboration is the “solution” – between large councils. Having exhausted scale economies internally, partners experienced *no mutual reliance* warranting their attempt to further economize through collaboration.

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## **Keywords**

Collaborative public management; interdependence; inter-local cooperation; local government; policy failure; shared services

## **Evidence for practice**

- Inter-organizational collaboration will help improve public service performance *only* in situations of material interdependence, in which unilateral action by single organizations is unable to deliver desired goals.
- When external interdependence is present but weak, the costs of establishing and operating inter-organizational collaborations may still outweigh the benefits.
- In the case of inter-municipal cooperation (also known as “shared services”), interdependence can be estimated from the relation between municipal size and service costs. When doubling municipal size is associated with less than doubling of service costs, economies of scale are present. The further a municipality is from the revealed optimal size, the greater its dependence on others to achieve efficiency gains through collaborative up-scaling.
- Where interdependence is non-existent or immaterial, organizations should resist overt and covert pressure from stakeholders to adopt inappropriate collaborative solutions for their image-enhancing or “feel-good” effects.

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*“[Often] there is a stress on interdependence where in fact none exists. ... Agency personnel meet with each other and attempt to coordinate their activities when ... there is not sufficient interdependence to warrant it.”*

*– Litwak & Rothman, 1970, Towards the Theory and Practice of Coordination between Formal Organizations*

## **1. Introduction**

Increasing the quantity and quality of joint working among agencies responsible for public services must be among the most oft-repeated of recommendations directed at governments, the world over (Peters, 2015; Trein et al., 2019; Molenveld et al., 2020). Few of us would struggle to name instances of ineffective “join up” based on our own first-hand experience of government. And it is hard to imagine how the biggest policy challenges facing societies today – inequality, global security, environmental decline – could be tackled without integrated effort from a whole panoply of actors. So it is that collaborative public management has become “the smart thing to do and the right thing to do” (Stout & Keast, 2021, p.17), and has assumed pole position as “the predominant approach to solving complex public problems” (Silvia, 2018, p.472).

Nonetheless, poor integration of disparate organizational or sectoral efforts is but one category of public management challenge. Even when flawlessly executed, therefore, collaboration provides no universal “fix-all” for public services (Huxham & Vangen, 2005; O’Flynn, 2008). Rather, logic dictates that policies be based on intimate understanding of specific difficulties, their root causes, and the efficacy and possible side-effects of any prescribed intervention; though, in practice, this is easier said than

done. Means-ends uncertainty pervades organizations (March & Olsen, 1976), and analytic capacity is often scarce. Attractive “solutions” may present themselves *before* “problems” are identified or understood (Cohen et al., 1972). And pressures for isomorphic adoption of popular (if unproven) management practices, or for symbolic reorganizing in pursuit of legitimacy, can be considerable (Ashworth et al., 2009; Campbell, 2021). Therefore, while much research has, rightly, sought to explain situations of *under*-collaboration, or “collaboration gaps” (Hamilton et al., 2021), in which social cost arises from lack of coordination between interdependent parties, the converse situation of *over*-collaboration – or collaborative *excess* – cannot be dismissed as a mere logical possibility. Rather, imperfections in decision-making about public management reforms mean that collaboration instigated *without* meaningful interdependence between partners is a wholly realistic prospect (as Litwak and Rothman noted long ago), and one deserving of much greater attention.

Accordingly, in this article, we enumerate some conditions that might facilitate collaborative excess, and then demonstrate the value of being attuned to this possibility by showing how demonstrable absence of interdependence helps explain collaborative failure when other, more orthodox explanations prove insufficient. Using “stacked” difference-in-difference estimators on 11 years of performance data relating to subnational tax collection in England, we show that inter-municipal cooperation produced no cost or quality improvements over independent service delivery, contrary to reformer expectations. Supplementary testing attributes this failure less to complex governance, organizational inertia or precipitate evaluation (all prominent themes in existing literature) than to a basic lack of interdependence – the specific “problem” to which collaboration is the “solution” – between England’s already super-sized (by

international standards) local councils. Stochastic frontier analysis demonstrates that, having exhausted economies of scale internally, partners experienced *no mutual reliance* with one another warranting their attempt to further economize through collaboration. In short, collaboration failed to “fix” services that weren’t “broken” in the first place, yet imposed significant disruption along the way.

## **2. The allure of collaboration**

At least four conditions may give rise to collaborative excess.

First is that “interdependence” between two or more organizations, whereby attaining mutually-desired outcomes, or avoiding mutually-damaging externalities, is contingent on each other’s behavior, is extremely common in the public sector (Bingham & O’Leary, 2014; Peters, 2015). Moreover, interdependence is likely to be increasing due to globalization, changing societal expectations, and the growing specialization of work and organizations (O’Toole, 1997; Eriksson et al., 2020). Agranoff and McGuire (2003, pp.2, vii) thus speak of “the uniqueness of interdependence,” and of “the era of the manager’s cross-boundary interdependency challenge.” In such a context, instigating more collaboration may be seen as a “safe bet” for securing public service improvements – without need of thorough analysis and review.

Second is the ease with which instances of defective integration can be recalled by service users, managers and commentators alike, and the effect this has on judgements and generalizations about public service improvement. From poor data sharing across bureaucratic silos, to incoherent responses to “wicked issues” like poverty and

recidivism, examples of government action manifoldly in need of greater “join up” are told and retold without hesitation (Peters, 2015). However, ease of recollection does not predict problem likelihood or impact. Indeed, psychologists warn of the dangers of both “availability bias,” when probability is misjudged from how vividly an example can be recalled, and “confirmation bias,” where evidence contrary to prior expectations is down-weighted (Battaglio Jr. et al., 2019; James et al., 2020). Salient (if atypical) examples of coordination failure, or the *a priori* expectation that government is poorly integrated, could thus lead to over-estimation of the prevalence or significance of interdependence, prompting unjustified collaboration. Furthermore, if user feedback consistently demands “more collaboration,” managers may over-compensate by engaging in too many inter-organizational relations, or doing so in domains chosen not for their suitability to collaborative remedy, but for their external visibility to collaboration-demanding stakeholders.

A third cause of collaborative excess could be the difficulty of calculating with any precision the *degree* of interdependence between agencies (O’Flynn, 2008, p.191). Collaborators often “discover” their synergies gradually, rather than objectives and benefits being firmly established in advance (Ansell & Gash, 2008; Koppenjan, 2008; Innes & Booher, 2018). Thereafter, quantifying this mutual reliance presents many additional hurdles. Strictly, the strength of a multi-party dependence inheres in “the opportunity costs of severing the relation” (Baldwin, 1980, p.501); though, practice this is a formidable calculation to undertake. Many partnerships may thus be instigated in response to interdependencies that are poorly understood and with partnership costs and benefits estimated only very approximately. Moreover, Tjosvold (1986) suggests that



interdependence is socially constructed, so that one group may overlook or dispute connections that another regards as highly consequential (see also Hedlund et al., 2022).

Finally, relaxing the rational-instrumental logic implied above provides several additional routes to collaborative excess. Behavioral experiments show that managers respond more favorably to positively-framed collaborative opportunities, even if projected success is mathematically identical to those framed negatively (Walter & Thurmaier, 2021). Garbage can models suggest that decision-making is chaotic, and that “solutions” can appear *before* problems emerge, rather than after and in response (Cohen, et al., 1972). And neo-institutionalists argue that managers seek not only technically-superior production, but legitimacy among the external stakeholders that influence resourcing and organizational autonomy (Ashworth, et al., 2009; Campbell, 2021). Thus, rhetoric and framing effects, solutions in search of problems, and symbolic, image-enhancing motivations (Dickinson & Sullivan, 2014; Jacobsen, 2015; Dixon & Elston, 2020), could all produce collaborative excess.

Overall, therefore, wrongful collaboration is not as unlikely as might be presumed; and recognizing this brings both practical and theoretical benefits. Because inter-organizational relations may be highly “resource consuming” (Huxham & Vangen, 2005), and because they expose partners to new risks (Walter & Thurmaier, 2021) and new interdependencies (Elston et al., 2018), unjustified collaboration incurs opportunity costs. If collaborative capacity is finite, unpromising relations may displace more productive ones (Lubell et al., 2010; Scott & Thomas, 2017), meaning that excess in one domain causes collaboration gaps in another. And misdiagnosing public service problems as likely to be resolved by collaboration will delay more appropriate remedy.

As for theoretical implications, collaborative excess implies a new cause of partnership failure, complementing the existing focus on collaborative “drags” or “frictions” (like transaction costs). Specifically, collaborative excess questions the appropriateness of problem diagnosis and reform prescription *in the first place*, rather than the effectiveness (or not) with which that prescription was implemented.

### **3. Collaborative excess: test case and hypotheses**

Many of the factors that facilitate collaborative excess also impede its empirical investigation. If interdependence is difficult to quantify, how can its absence be registered and its effect on collaborative outcomes be tested? Here, our solution is to focus on the particular case of inter-municipal cooperation – an unusually research-able instance of public-to-public collaboration, for which, as each subsection below explains, (1) performance can be robustly gauged (2) degree of interdependence can be calculated, and (3) alternative explanations of failure can be compared.

#### ***3.1 Evaluating inter-municipal cooperations***

Inter-municipal cooperation is a subtype of collaborative public management (Chen & Thurmaier, 2008; Li et al., 2021) in which two or more neighboring or non-neighboring local governments provide one or more public service jointly across their jurisdictions (Tavares & Feiock, 2017; Teles & Swianiewicz, 2018). Often regarded as a substitute either for complete municipal amalgamations or for service outsourcing, the primary rationale for inter-municipal cooperation (hereafter IMC) is to obtain cost savings by generating scale economies (Bel and Warner, 2015, 2016); although, particularly in the

USA, cooperation is also a means of improving regional coordination (Warner, 2015). Providing the same service over a larger area can dilute fixed costs of management or indivisible equipment; lead to volume-enabled specialization of workforce and processes, enhancing productivity; and enable pooled investments in new technologies that exceed the purchasing power of any individual partner. Many IMCs also purport to improve service quality, although this has received less empirical testing (exceptions are Holum and Jakobsen (2016) and Arntsen et al. (2021), who use subjective measures of service quality; and Blåka (2017b), Blåka et al. (forthcoming) and Elston and Bel (2022), with objective measures). Again, size is credited with fostering quality improvements; for instance, enabling more specialist handling of complex cases that occur only infrequently in small municipalities; or providing better employment prospects to aid staff retention and development.

Inter-municipal cooperation is an ideal test case for studying collaborative excess, firstly, because outcomes are more easily studied than is possible for many other types of collaborative public management. Vague or emergent objectives, lack of quantified performance metrics, and infrequent or idiosyncratic cases without counterfactuals often impede impact evaluations of collaborative projects (Hardy et al., 2003; Koppenjan, 2008; Provan & Sydow, 2008; Guarneros-Meza et al., 2018; Stout & Keast, 2021). But improvements in service cost and quality metrics are clear, pre-determined and more-or-less measurable objectives for IMCs. Adoption of such collaborative arrangements also typically involves a change in *mode* of delivery rather than instigation of new services, providing a pre-reform comparator. And IMCs are usually implemented among only a *proportion* of local government units, again providing evaluative leverage. Thus, IMCs

can be evaluating using multivariate econometric techniques (for reviews, see Bel & Warner, 2015; Bel & Sebő, 2021).

Consequently, our baseline hypothesis is that:

- Hypothesis 1: Inter-municipal cooperation reduces the costs and improves the quality of public service delivery.

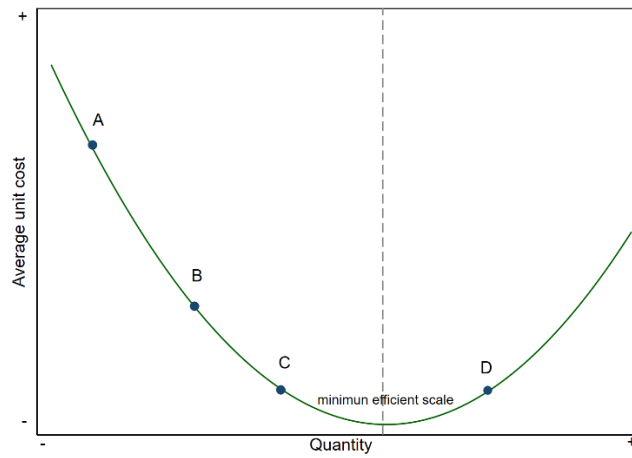
### ***3.2 Degree of interdependence***

If collaboration gaps are “instances characterized by the absence of collaboration between actors who are interdependent” (Hamilton, et al., 2021, p.461), collaborative excess is the converse situation in which inter-organizational relations arise without sufficient interdependence to warrant them. This is conceptually neat but empirically problematic, since measurement of interdependence has proven highly challenging, in both organization studies and adjacent disciplines (in international relations, for instance, see Tetreault, 1980). One option is to use survey questions to gauge actors *perceived* dependence on others (Price, 1997). Another is to count the number of connections or interactions between parties, and infer from this their mutual reliance. Both approaches are problematic in the present context, assuming perfect correspondence between the objective condition of interdependence and actors’ measured response to it. A third approach is simply to determine interdependence from the presence of some shared characteristic between parties; for instance, in a study of environmental governance, Hamilton, et al. (2021, p.461) infer interdependence geographically on the basis of jurisdictional overlap between actors. But this too is

unsuitable presently, revealing little about the *degree* of mutual reliance or the opportunity cost of *independence*.

Again, choice of IMCs as our test case helps overcome this impasse. Because of the clarity of both the objectives that IMCs pursue (cost and quality improvements over the *status quo ante*) and the “theory of change” by which those objectives are achieved (accrual of scale economies), interdependence can be calculated by first, observing the cost function of the service(s) performed by the IMC, and then comparing partner size against the revealed optimal. This is illustrated with the hypothetical cost function in Figure 1, where the U-shaped curve depicts decreasing average unit costs, albeit at a declining rate, up to a tipping point. After this “minimum efficient scale,” in this illustration diseconomies accrue with any further increase in quantity. Thus, Partner A, with the lowest autonomous volume of work, operates furthest from minimum efficient scale, meaning that failure to increase production scale through collaboration carries significant opportunity costs. The same is true for Partner B, although, being larger than A, its opportunity cost of foregoing collaboration is lower. Conversely, the proximity of Partner C to the tipping point is such that collaboration is likely to produce only small gains (which may be eclipsed by transaction costs; see below). As for Partner D, since this already operates above the minimum efficient scale, and so is facing scale diseconomies from further enlargement, it holds no external interdependence, at least with respect to obtaining technical efficiency. Any up-scaling will likely *reduce* performance, barring some significant change in the cost function (for instance, through major technological change).

**Figure 1: Differing external interdependence among local governments undertaking the same service delivery at different scales of operation**



From this analysis of cost functions, collaborative excess is diagnosed as cases of partnership formation in which partners are either too close to minimum efficient scale to justify the transaction costs of participating; or, worse, already of a scale that matches or exceeds this optimal. And while inter-municipal cooperation does involve a level of clarity in terms of objectives, theory of change and outcomes that is unusual among other forms of collaborative public management, selection of this as test case for collaborative excess closely follows Eisenhardt's (1989, p.573) methodological recommendation that "the process of interest" – i.e., degree of interdependence – "is transparently observable" (see also Hardy & Phillips, 1998).

As for the effect of over-collaborative on reform failure, there are two distinct mechanisms by which low or absent interdependence might undermine performance. First, as already implied, is that the routes to improvement (e.g. sharing indivisibilities, enhanced specialization) have already been exhausted internally. Second is that, if staff recognize the limited probable gain from collaboration, their personal investment and

commitment may weaken, or possibly be replaced by resentment at the poor use of their time and efforts. As Ansell and Gash (2008, p.563) argue, “Interdependence fosters a desire to participate and a commitment to meaningful collaboration ... By contrast, where interdependence is weaker, ... stakeholders will engage in collaboration with one eye on alternative (noncollaborative) strategies.”

Therefore, we specify our second hypothesis thus:

- Hypothesis 2: Inter-municipal cooperation improves performance where there is material interdependence between municipalities.

### ***3.3 Transaction costs, inertia and delay***

Collaborative excess joins a crowded literature. It thus seems appropriate to test the concept’s explanatory power against three more seasoned accounts of collaborative failure: transaction costs, organizational inertia, and precipitate evaluation.

The cost of making and enforcing contracts, known as transaction costs, is perhaps the preeminent existing explanation for collaborative failure (Warner, 2015; Blåka, 2017a; Scott & Bardach, 2019). Transaction costs arise as each party to an exchange seeks to protect itself against bounded rationality (about the abilities and motivations of others, for example) and from the risk of opportunism (Brown & Potoski, 2005; Walter & Thurmaier, 2021). Where transaction costs are high, say because of the difficulty of writing complete contracts or a lack of mutual trust, these may eat into the rewards of collaboration (Blåka, 2017a); and, in cases of only marginal interdependence (Partner C

in Figure 1, above), even produce collaborative failure. Conversely, those collaborations that devise or adapt their governance arrangements to lower transaction costs should perform better. Hence:

- Hypothesis 3a: Inter-municipal cooperation improves performance where transaction costs are limited through simple, streamlined governance.

Inability or unwillingness to adapt organizational goals, policies and routines to meet the requirements of partnership working is also a much-cited source of failure. Such inertia may be a product of what Fleishman (2009, p.41) calls “general ‘inconvenience factors’” of collaboration; or it may reflect a desire to protect autonomy or a difficulty in reconciling the co-occurrence of the individual and joint identities that collaboration entails (Thomson & Perry, 2006). Inertia can lead to collaborations that are superficial or self-contradictory, rather than “genuine,” or “true” or “authentic” (Hardy & Phillips, 1998; O’Flynn, 2008; Innes & Booher, 2018, ch. 3; Stout & Keast, 2021). In addition, in shared services specifically, policy and process standardization across the various jurisdictions is essential, since co-location of dissimilar, “customized” services offers little opportunity for securing scale economies (Knol et al., 2014). Thus:

- Hypothesis 3b: Inter-municipal cooperation improves performance where organizational inertia is low.

Finally, there is wide agreement that collaboration offers no “quick fix,” and that benefits are only realized over time (Leach et al., 2002; Imperial, 2005; Ovseiko et al., 2014). As Koppenjan (2008, p.708) argues, “Interactions can hardly be expected to take



the right shape and produce results immediately. Collaborating parties have to undergo a learning curve, which takes time” (see also Scott & Thomas, 2017; Li & Huang, 2023). In addition, short-term disruption is likely to affect productivity, caused by restructuring work and workers whilst merging previously separate service operations. This may involve turnover of both management and personnel, leading to potential “brain drain” and problems with staff morale and anxiety (Andrews & Boyne, 2012; Wynen et al., 2019). Harmonization of procedures and ICT will mean abandoning the familiar and forging new routines, for staff and service users alike – placing extra demands on the inchoate partnership to explain changes and correct both administrative and client errors. Thus, we expect differential short- and long-term effects:

- Hypothesis 3c: Inter-municipal cooperation damages performance in the short term but reduces costs and improves quality in the long term.

#### **4. Empirical context**

We test our hypotheses on data relating to inter-municipal cooperation in England. Because English councils serve far larger populations than those in most of Europe or the US, IMC was rare until about 15 years ago, when fiscal tightening and a desire to try alternative reforms to municipal amalgamations prompted extensive collaborative rollout (Dixon & Elston, 2020). We exploit this series of voluntary and incomplete reforms to evaluate the effect of collaboration on the cost and quality of public service delivery, concentrating on subnational tax collection, which is among the most frequently “shared” of local services, and one for which long-running, multi-dimensional and nationally-standardized performance data is available.

Councils collect two nationally-legislated taxes on property, of which we focus on the domestic “council tax” (the other being business rates). This is a charge on dwellings paid by every household (whether owner-occupier or tenant) to the local authority in which the property resides. (In rural areas that retain a two-tier system of districts and counties, the lower-tier district is the “billing authority.”) Council tax is typically paid in ten or twelve installments, raises about £31.5bn annually (covering about one third of local government expenditure), and is distributed by the billing authority to other “precepting” bodies, such as police and fire authorities. The tax is based on the saleable value of the house or flat (categorized into one of eight tax bands), assessed by the UK’s national tax authority. Individual councils then determine what charge to levy for a mid-value “Band D” property, with other bands calculated as ratios of this. Some nationally- or locally-specified discounts or additional levies may then be applied for or imposed when specific criteria are met.

## **5. Data and empirical strategy**

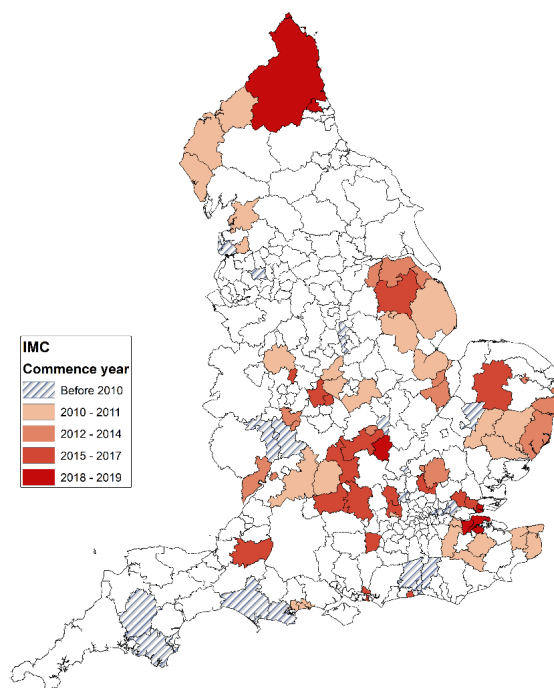
### ***5.1 Variables and data sources***

We construct a panel dataset consisting of council-level data on tax collection performance and costs, mode of service delivery (IMC or independent), and local socio-economic conditions. The period 2009-19 is selected because this encompasses the majority of IMC adoption and provides a (rare) extended interval during which no municipal amalgamations affected the overall population for analysis.

Service quality is measured by the in-year tax collection rate, which is the proportion of monies owed to each billing authority that is received by 31<sup>st</sup> March each year. This includes prepayments made in the previous financial year, but excludes those for subsequent years. It also excludes recoument of arrears. Cost is measured by total expenditure on council tax collection, including employee and operating costs, but net of inter-council transfers (to avoid double counting). Both of these dependent variables are reported annually to, and subsequently published by, central government.

Mode of service delivery was determined through a trawl of individual council committee papers over the 11 years 2009-19; and, where necessary, by freedom of information (FOI) requests. Where collaboration occurred, date of commencement and/or dissolution, identities of partners, mode of governance (joint committee or lead authority), and date of any governance changes was also recorded. Figure 2 visualizes the rollout of IMCs across England, with hashed areas joining IMCs before 2010, red shaded areas joining progressively thereafter, and white polygons never joining IMCs.

**Figure 2: Rollout of IMC at the local authority in England from 2010 to 2019**



Because local characteristics may affect tax collection operations, we employ several control variables. The number of properties liable for tax, and the proportion subject to either discount or additional levy (which involves considerable extra work for the billing authority in proving eligibility and calculating changes), are measured from data returns to national government. We also consider the complexity of local tax condition by controlling the standard deviations of tax band composition and discounted-or-levied dwellings respectively. And to account for local macroeconomic variations, including those that might affect ability to pay promptly, we incorporate council-level data on population and GDP per capita from the national statistics bureau.

**Table 1: Summary statistics**

Variable	Obs	Mean	SD	Min	Max
<b>Outcome variables</b>					
Council tax in-year collection rate	3,279	97.34	1.43	89.99	100.00
Expenditure on council tax collection	3,277	3173.11	2873.88	112.00	24675.00
Change in Band D council tax (including parish precepts)	3,270	1.87	1.75	0.00	28.30
Change in Band D council tax (excluding parish precepts)	3,269	0.14	0.34	0.00	14.50
HHI of empty properties discount type (total level)	3,032	0.69	0.23	0.13	1.00
HHI of empty properties discount type (band average level)	3,032	0.70	0.23	0.34	1.00
<b>Variable of interest</b>					
IMC	3,289	0.14	0.34	0.00	1.00
Lead authority model	3,289	0.06	0.26	0.00	1.00
Joint committee model	3,289	0.08	0.26	0.00	1.00
<b>Control variables</b>					
Population	3,169	172736.40	117400.60	6031.00	1141816.00
GDP per capita	3,169	57415.28	494371.00	12394.00	9285763.00
# Of chargeable dwellings	3,279	71984.75	47328.60	5847.00	429511.00
# Of discount dwellings	3,279	25853.49	18644.49	1860.00	166912.00
# Of chargeable dwellings (SD)	3,279	9007.34	7746.88	707.88	58700.16
# Of discount dwellings (SD)	3,279	4048.63	3926.61	218.25	28333.98

Our final panel includes nearly 300 council-level units from 2009 to 2019. Summary statistics are presented in Table 1. As indicated, tax collection rates are typically high (mean 97 per cent, SD 1.43), providing only limited opportunity to improve service quality (and much scope for deterioration). Nonetheless, by 2019, some 28 per cent of billing authorities were party to an IMC (including 40 per cent of lower-tier “district” councils). And more than half of panel’s IMC observations relate to the more participative (and complex) “joint committee” model of governance.

## ***5.2 Empirical strategy***

Given the staggered and partial rollout of IMCs, we adopt a stacked difference-in-differences research design (Cengiz et al., 2019; Baker et al., 2022). This considers each reform wave as a separate sub-experiment, around which we construct difference-in-differences using local authorities affected and unaffected in that year. We then stack

all individual event-specific difference-in-differences to estimate effects on service quality and costs, tracking a panel of local authorities around each reform time (i.e., the IMC commencement year). As such, let  $j = [2010, 2011, \dots, 2019]$  denote reform time and let  $k$  be years before or after the IMC adoption. Since  $k$  is centered around each reform wave, negative values are years leading up to the IMC reform event, and  $k = 0$  denotes year of reform. The window covers  $k = [-4, -3, \dots, 5]$ . For local authority  $i$ , reform time  $j$  and  $k$ -th time around the reform, we estimate:

$$Y_{i,j,k} = \alpha + \beta \text{treat}_{i,j} \times \text{post}_{j,k} + \gamma_{i,k} + \delta_{j,k} + \epsilon_{i,j,k} \quad (2)$$

where  $\text{treat}_{i,j} = 1$  if local authority is reformed in the event time  $j$ , and 0 otherwise. The variable  $Y_{i,j,k}$  is the outcome of interest (cost or quality). The indicator variable  $\text{post}_{j,k}$  is defined as  $\text{post}_{j,k} = 1[k \geq j]$ , taking the value 1 post-reform, and 0 before.  $\delta_{j,k}$  are reform-specific time fixed effects. Since local authorities can serve both in the treatment and control groups multiple times, we estimate the local authority fixed effect  $\gamma_{i,k}$  separately for each reform time.

While controlling for many observables and fixed effects with this approach, some unobservable factors may still correlate with reform timing and outcomes, biasing the estimation. Councils that reform earlier in the period could be more suited to, or enthusiastic about, collaboration, for example. Thus, a formal test of the identification assumption is required. As in any DID specification, this is a standard parallel trend assumption: in the absence of reform, growth in the outcomes of interest would be the same across any local authority within the country, conditional on all observables. We propose a flexible DID model indicating trends of the treatment effects before and after

the reform year. Specifically, we estimate a set of yearly treatment effects beginning four years prior to the reform event and continuing for three years thereafter. This is a more flexible form of baseline regression to allow the effect to vary by year in relation to the reform. The specification is as follows:

$$Y_{i,j,k} = \sum_{l=-4}^5 \beta_l treat_{i,j} \times 1[k = l] + \gamma_{i,k} + \delta_{j,k} + \epsilon_{i,j,k} \quad (3)$$

The effects beyond +5 and -4 years are grouped into +5 and -4, respectively. We set the year just prior to the reform as the omitted group, so all the coefficients are relative to the gap in the -1 year. If the parallel trend assumption holds prior to the reform,  $\beta_l = 0$  when  $l < 0$ .

## 6. Results

We first test the effect of collaboration on service quality and costs (Hypothesis 1). Then we examine the pre-IMC cost function in order to test for collaborative excess (Hypothesis 2). Finally, we explore the effects of mode of governance, inertia and time as alternative explanations of failure (Hypotheses 3a-c).

### *6.1 Impact of IMC on quality and costs*

Table 2 examines the effect of IMC adoption on in-year tax collection rates. For column 1, we include the dummy variable, IMC reform, as the only regressor while

controlling for reform wave-by-local authority and reform wave-by-year fixed effects of implementing the stacked DID strategy. The estimation shows that, after a council begins sharing services, its *decrease* in the collection rate is 0.249 per cent more than those that remain non-IMC councils. We include socio-economic variables (population and GDP per capita) and time-variant local tax characteristics (number and composition of chargeable and discounted-or-levied dwellings) in column 2. Considering its variation is 1.43, the quality of council tax collection has thus fluctuated downward by about 15 per cent.

**Table 2: IMC and the effectiveness of council tax collection**

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	<b>Council tax in-year collection rate</b>					
	All		Within gov. type		Across gov. type	
IMC	-0.249*** (0.0775)	-0.216*** (0.0758)	-0.240*** (0.0601)	-0.317 (0.433)	-0.122* (0.0647)	-0.613 (0.483)
Reform wave*Local council FE	Y	Y	Y	Y	Y	Y
Reform wave*Year FE	Y	Y	Y	Y	Y	Y
Controls	N	Y	Y	Y	Y	Y
IMC Sample	all	all	district	all- purpose	district	all- purpose
Observations	23,663	23,185	11,102	6,017	10,094	6,647
R-squared	0.903	0.911	0.857	0.890	0.894	0.855

Robust standard errors are clustered at the local authority level.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

As noted, parts of rural England have a two-tier system of local government, with several district councils (each acting as billing authority) beneath each county council. Elsewhere, single-tier (or “all-purpose” / “unitary”) councils predominate. To test whether this institutional variation affects our results, we divide the sample into two subgroups and test both within and across-type effects. The stark difference in significance levels in columns 3 and 4 in Table 2 confirms that the baseline result is mainly driven by the divergence between non-IMC and IMC *district* councils. In contrast, the effect of across types has primarily been weakened. Being far larger and



more multi-purpose than small district authorities, unitaries are more effective against the corrosion of IMC on the tax collection capacity.<sup>2</sup>

Our DID approach requires that, while IMC adoption may not be random, it is uncorrelated with pre-existing differences in performance trends across local authorities after controlling for time-invariant council characteristics, common annual shocks, and other time-varying factors. There is no clear relationship between the amount of under-collected taxes and the determinants of the early-reforming councils. Therefore, even if differentiated trends between treated and control councils exist, the only plausible direction is a downward bias that reinforces our findings.

A further assumption is that treatment and control councils would have evolved along common trends in the absence of the reform. While not directly testable, we can investigate the presence of pre-trends. Figure 3 provides visual evidence for the effects of reform on the effectiveness of tax collection of equation 3 – a flexible version of table 2, where  $\beta$  is allowed to vary by each year. The plotted coefficients together with the 95% confidence intervals help to check the pre-treatment balance between treated and control councils. If the annual changes in the coefficients have been on a significant downward trend before the reform, our causal evidence might not be valid.

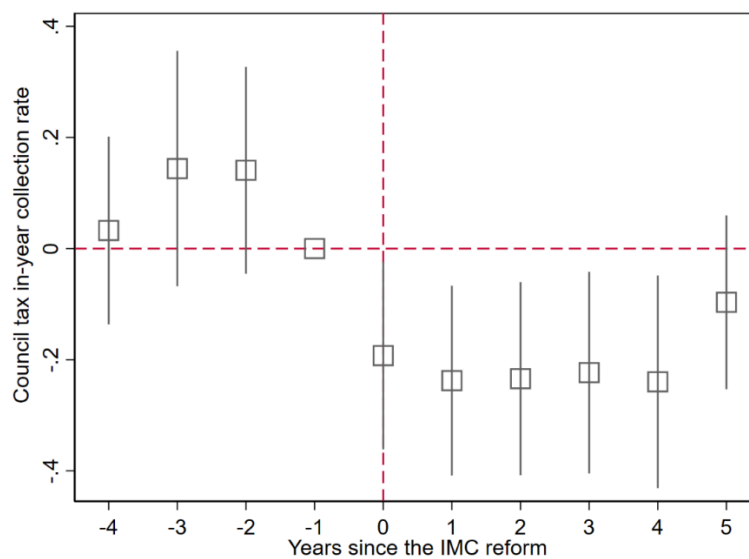
Finally, Figure 3 shows that the decline in in-year collection rates does not occur prior to collaboration. The coefficients for the years preceding IMC reform are not significantly different from 0. The treatment effect appears immediately in the reform year. The huge jump in the estimated coefficient before and after IMC adoption

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<sup>2</sup> The incidence of IMC is also lower among unitary than district authorities.

increases confidence in the validity of our identification strategy, as it would be difficult to explain such a discontinuous increase in the year immediately following IMC adoption as resulting from unobservable trends. We also show the coefficient of the year-by-year effect before and after the IMC reform in Table A6, which further confirm our estimations in Figure 3.

**Figure 3: IMC and the effectiveness of council tax collection across years**



Turning to our second dependent variable, service costs, column 1 and 2 in Table 3 show that the IMC effect on administrative cost savings is negative (i.e., costs increase) at the aggregated level (confirmed by figure 4). However, by specifying it within and across type effects, we find this effect is fully led by the aforementioned difference between IMC district councils and non-IMC unitary councils (columns 5). Although none of the remaining intra- and inter-group comparisons is significant, the direction of the coefficients suggests that IMCs do not reduce service costs.

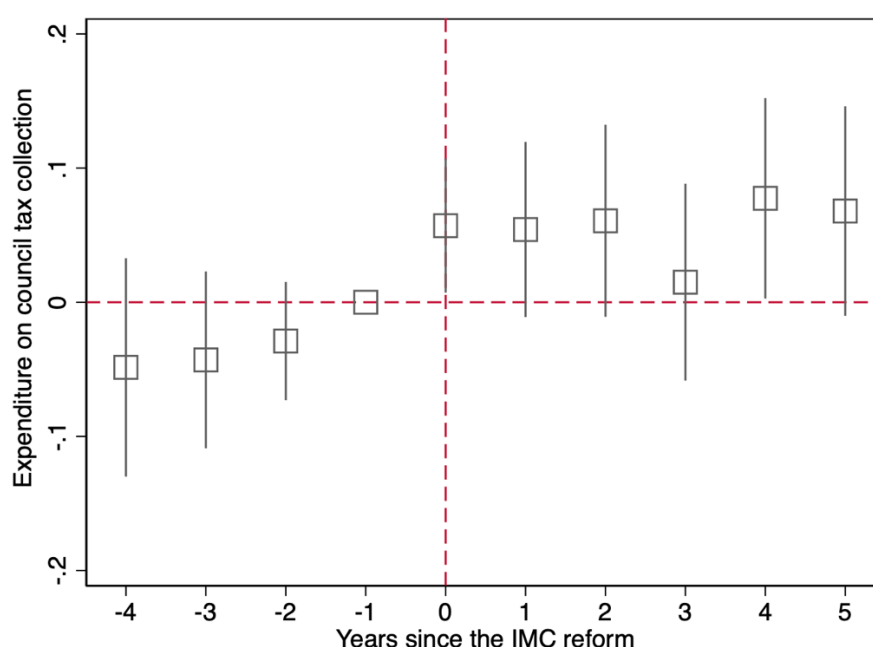
**Table 3: IMC and cost of council tax collection**

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Expenditure on council tax collection					
	All		With gov. type		Across gov. type	
IMC	0.0804*** (0.0284)	0.0739** (0.0313)	0.0633** (0.0322)	0.0599 (0.0871)	0.0917*** (0.0353)	0.0504 (0.0944)
Reform wave*Local council FE	Y	Y	Y	Y	Y	Y
Reform wave*Year FE	Y	Y	Y	Y	Y	Y
Controls	N	Y	Y	Y	Y	Y
IMC Sample	all	all	district	all-purpose	district	all-purpose
Observations	23,654	23,176	11,102	6,012	10,086	6,647
R-squared	0.946	0.946	0.869	0.905	0.915	0.876

Robust standard errors are clustered at the local authority level.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Figure 4: IMC and the cost of council tax collection across year**

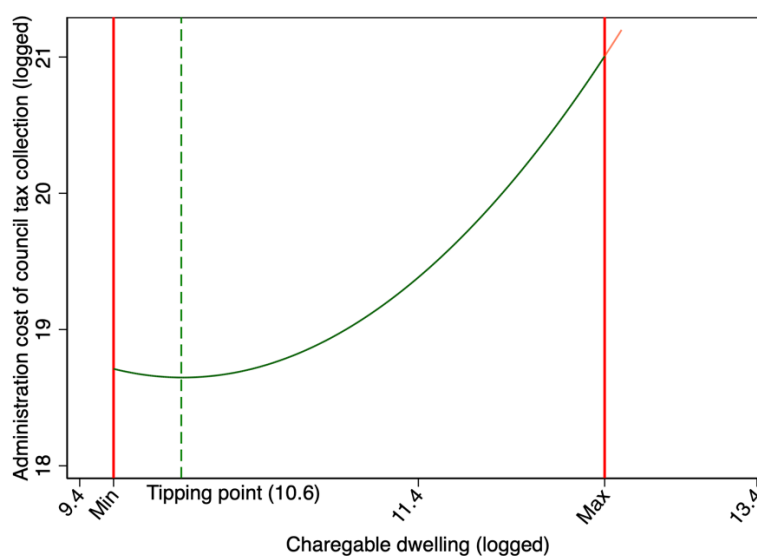


## 6.2 Degree of interdependence

Having established that collaboration failed to achieve cost savings or quality improvements in domestic property tax collection, we turn now to explaining this. IMC reform is predicated on the notional that small local governments exhibit scale diseconomies, and, short of amalgamation, depend upon each other to approach

minimum efficient scale by pooling service delivery. To test this assumed external interdependence, we analyze the cost function for this service in 2009 before most IMCs were implemented. Following Niaounakis and Blank (2017), who performed a similar analysis in The Netherlands, Figure 5 graphs the estimated relation between expected collection costs and scale (number of chargeable dwellings) using stochastic frontier analysis. We set administration cost as input. We then take the natural logarithm and adopt the maximum likelihood estimates for the parameters of the time-invariant model. This shows that the optimal taxbase is about 40,100 dwellings (logged 10.6). Importantly, the smallest council in England is nearly parallel to this optimal, and most actually fall on the right side of the quadratic function, displaying marginally decreasing productive efficiency. Contrary to the “services shared, costs spared” mantra that guided this wave of collaborative reforms (Local Government Association (LGA), 2012), therefore, we find no evidence that most English councils displayed any external interdependence with regard to obtaining cost improvements in tax collection.

**Figure 5: Estimated relation between scale and optimal cost of tax collection**



### 6.3 Transaction costs, inertia and time

Turning to the principal alternative explanations, there are two types of IMC governance in England: joint committees (where participating councils share equal voting rights in the discharge of pooled functions); and lead authorities (where one partner has delegated authority from all others to act as agent). The latter is recognized as far the simpler (albeit less participative), both in this context and internationally (for instance, see empirical comparison in Blåka, 2017a). Qualitative evidence suggests that some IMCs that began as joint committees subsequently sought to change to lead authority models in order to reduce governance costs. As one interviewee recalled, “once the councils had more confidence in the process, we were able to remove that layer of bureaucracy [i.e., the joint committee]” (see Author, 2023). We thus use this dummy structure to examine if simpler governance alters the earlier negative evaluation. The insignificant coefficient of the interaction term in Table 4 indicates that governance type does not affect quality or cost improvements under the IMC.

**Table 4: Transaction costs: Lead authority vs. joint committee**

VARIABLES	(1) Council tax in-year collection rate	(2)	(3) Expenditure on council tax collection	(4)
IMC*Lead authority	-0.0526 (0.185)	-0.211 (0.180)	0.0642 (0.0684)	0.0900 (0.0766)
IMC	-0.333*** (0.109)	-0.363*** (0.135)	0.0113 (0.0350)	0.0417 (0.0400)
Reform wave*Local council FE	Y	Y	Y	Y
Reform wave*Year FE	Y	Y	Y	Y
Controls	N	Y	Y	Y
IMC Sample	all	all	all	all
Observations	1,300	1,300	1,300	1,300
R-squared	0.880	0.882	0.917	0.912

Robust standard errors are clustered at the local authority level.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Organizational inertia could also explain under-performance. We test this by examining two areas of tax policy that are (largely) left to individual councils' discretion: rate of increase year-on-year, and empty-property discounting. Inertia will be present when, post-IMC, inter-council variance between partnership members in these discretionary policies fails to decrease compared with the status quo ante. One interviewee told us that, "harmonizing working practices was probably the biggest challenge" in forming their IMC; and a team leader in another said that "the biggest challenge" was "trying to get everyone to understand what [the different member councils] want" (Author, 2023). Thus, IMCs where discretionary policies continue to diverge post-collaboration should perform worse than those that achieve standardization.

To infer organizational inertia, we aggregate our treatment at the IMC conglomerate/group level and simulate both their pre- and post-IMC effects. The outcome variable is measured by the absolute value of change in Band D tax rate. In table 5, column 1 and 3 reports the baseline specification including and excluding parish precepts (additional charges outside of the control of billing authorities.) On average, IMC-reformed councils experienced a reduction in the tax adjustment of between 46.4 to 52.3%. The results also hold when restricting more controls (columns 2 and 4). Figure 6A and 6B further demonstrate that our findings are persistent in each post-reform year. Both results suggest that the IMC councils are more likely to follow a uniform tax standard after cooperation, indicating that inertia is unlikely to explain reform failure.

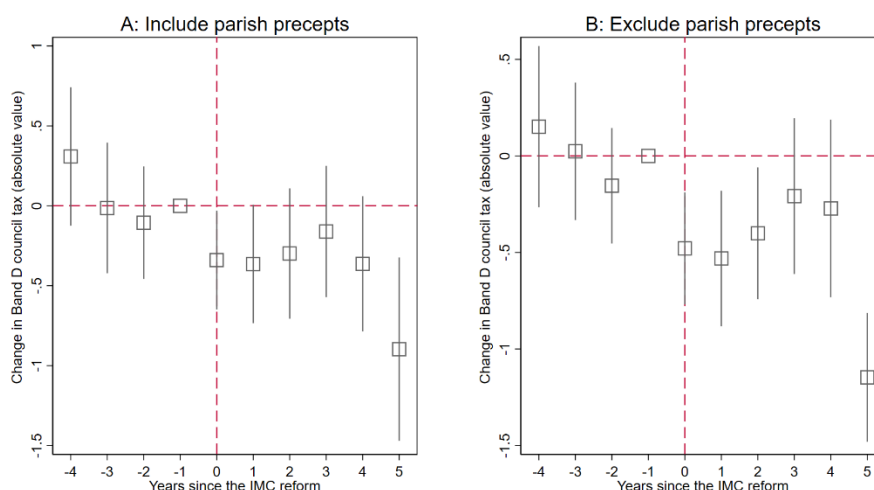
**Table 5: Organization inertia: Change in Band D council tax**

VARIABLES	(1) Change in Band D council tax (Include parish precepts) abs value	(2) Change in Band D council tax (Exclude parish precepts) abs value	(3) Change in Band D council tax (Exclude parish precepts) abs value	(4) Change in Band D council tax (Exclude parish precepts) abs value
IMC conglomerate	-0.523*** (0.127)	-0.445*** (0.124)	-0.464*** (0.146)	-0.391*** (0.144)
Reform wave*Local council				
FE	Y	Y	Y	Y
Reform wave*Year FE	Y	Y	Y	Y
Controls	N	Y	N	Y
IMC Sample	all	all	all	all
Observations	23,167	22,742	23,158	22,733
R-squared	0.648	0.658	0.666	0.678

Robust standard errors are clustered at the IMC conglomerate/local authority level.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Figure 6: IMC and change in Band D council tax across year**



As a second test of inertia, we compare policy variance across the group of (prospective) council partners prior to and after collaboration in terms of the range and type of empty-home discounts offered. Administratively speaking, such policy decisions are of more consequence than setting of tax levels, since adjudicating multiple discount schemes that vary by jurisdiction is time-consuming. Using data returned by local authorities to national government on the size (percentage deduction, in ordinal categories) and property type (tax band) of empty-home discounts awarded each year, we construct an Herfindahl–Hirschman Index (HHI) measuring the concentration (or not) of discount categories awarded each year across each *group* of (prospective)

partner councils. Policy harmonization post-IMC should lead to more discounts being awarded in fewer categories, and thus an increase in HHI concentration.

Table 6 shows that, for both total and band-average discounts, concentration within IMC-grouped councils increases significantly after collaboration, indicating mutual adaptation of discounting policies, not inertia. Data for the 2014 financial year is missing in the government record, meaning that the parallel trends assumption cannot be tested; hence this positive evidence is only suggestive. But even when we scrutinize the concentration of each band respectively (see table A5 in the Appendix), our findings consistently indicate that inertia is unlikely to have inhibited performance gains IMC.

**Table 6: Organization inertia: HHI of empty properties discount type**

VARIABLES	(1)	(2)	(3)	(4)
	HHI of empty properties discount type Total level		Band average level	
IMC conglomerate	0.158*** (0.0309)	0.148*** (0.0316)	0.135*** (0.0278)	0.128*** (0.0286)
Reform wave*Local council FE	Y	Y	Y	Y
Reform wave*Year FE	Y	Y	Y	Y
Controls	N	Y	N	Y
IMC Sample	all	all	all	all
Observations	22,041	20,645	22,041	20,645
R-squared	0.877	0.876	0.872	0.870

Robust standard errors are clustered at the IMC conglomerate/local authority level.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Finally, given the likely disruption to staffing, clients, and routines during the formation of IMCs, we compare short- and long-effects through a set of cooperation duration cutoffs. To avoid arbitrary term definition, we distinguish short-term effects by adopting the IMC duration from 1 to 3 years; whereas the aggregate of the corresponding subsequent years is long-term impact. Table 7 show that this temporal dimension is indeed an important factor, with both the coefficient and significance of



our results having a significant short-term decrease. While negative effects disappear in the long-term on some occasions, neither quality nor costs improve in mature IMCs.

**Table 7: Precipitate evaluation: Short-term vs. Long-term effects**

VARIABLES	(1) Council tax in-year collection rate	(2)	(3) Expenditure on council tax collection	(4)
IMC duration=1	-0.212*** (0.0604)	-0.182*** (0.0625)	0.0838*** (0.0291)	0.0780** (0.0322)
IMC duration>1	-0.259*** (0.0889)	-0.226** (0.0887)	0.0795*** (0.0304)	0.0727** (0.0333)
IMC duration<=2	-0.223*** (0.0619)	-0.194*** (0.0634)	0.0819*** (0.0293)	0.0848*** (0.0316)
IMC duration>2	-0.268*** (0.101)	-0.232** (0.103)	0.0795** (0.0309)	0.0655* (0.0346)
IMC duration<=3	-0.226*** (0.0630)	-0.198*** (0.0636)	0.0822*** (0.0296)	0.0815** (0.0320)
IMC duration>3	-0.283** (0.113)	-0.244** (0.116)	0.0779** (0.0322)	0.0619* (0.0365)
Reform wave*Local council FE	Y	Y	Y	Y
Reform wave*Year FE	Y	Y	Y	Y
Controls	N	Y	N	Y
IMC Sample	all	all	all	all
Observations	23,663	23,185	23,654	23,176
R-squared	0.903	0.911	0.946	0.946

Robust standard errors are clustered at the local authority level.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 7. Discussion

Collaboration was intended to increase the quality and reduce the cost of domestic property tax collection in England, driven by what one council’s business case described as the “economies of scale *inherent* within any shared service.” By sharing indivisible factors of production over larger volumes of activity, balancing peaks and troughs in demand across jurisdictions, attaining greater specialization of staff and processes, and securing bulk-buy discounts from contractors, councils hoped to reduce costs *and* increase tax revenue (albeit from high baseline performance) at a time of great financial peril after post-recession austerity imposed dramatic cuts in inter-

governmental grants. Our empirical analysis firmly refutes this first hypothesis, however. Following IMC adoption, *under*-collection of property taxes rose compared with both the *status quo ante* and councils that chose to retain autonomous service delivery, while administrative expenditure at the aggregate level *rose* (attributable to district rather than unitary councils). What is more, as our supplementary tests reveal, the negative impact on costs takes over two years to dissipate, in line with expectations about reform disruption (Hypothesis 3c); yet performance does not turn positive in the long-run.

To explain these results, we first tested the presumed interdependence between councils in securing the desired performance improvements. Using data from 2009, we performed stochastic frontier analysis to estimate that economies of scale would be exhausted with a service volume of around 40,100 dwellings. (This is somewhat larger than the optimal estimated by Niaounakis and Blank (2017) for a not dissimilar set of municipal tax services in The Netherlands.) The vast majority of English councils already operate at a size larger than this minimal efficient scale, unlike many other parts of Europe (e.g., France, Spain and Italy) and the USA – but not the Scandinavian countries, which similarly tend not to achieve savings from IMC adoption. This indicates that, after decades of serial council amalgamations that made English local authorities “larger and larger” (John, 2010), there are in fact no opportunity costs in failing to further up-scale tax operations across council jurisdictions, and thus no external interdependencies warranting collaboration (Hypothesis 2).

Collaborative excess is compatible with other prominent explanations of failure, including those based on transaction costs, organizational inertia and premature

evaluation. We did not find differential effects among simpler (“lead authority”) and more consultative and complex (“joint committee”) modes of governance (Hypothesis 3a). Furthermore, our two tests of policy inertia (discretionary choices about tax rates and discounting regimes), led us to dismiss the possibility that the negative evaluation could be explained by partners’ failure to relinquish autonomy and consent to service harmonization (Hypothesis 3b). Finally, we showed that both costs and quality deteriorated in the short term; and, while negative effects disappeared as IMCs matured, these still did not outperform stand-alone production by independent councils. Consequently, the reforms cannot be rationalized as an “invest-to-save” strategy, whereby an initial cost outlay is justified by larger long-term gains.

## 8. Conclusion

Gray (1985, p.921) suggests that collaboration “make[s] no sense” without there being “some fundamental interdependence” among partners. Other scholars have gone further, inserting interdependence into the very *definition* of inter-organizational collaboration itself.<sup>3</sup> Yet, in this article, we have shown that forging such relations *without* material interdependence – which we termed “collaborative excess” – is not merely a remote or theoretical possibility, like supersymmetric particles in physics or the Carnot Cycle in thermodynamics. Rather, collaborations that are unwarranted by the level of interdependence binding their participants (or the size of the coordination costs in comparison with this), are a highly realistic prospect given the many imperfections in the way decisions are taken about public management reform. Interdependencies are

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<sup>3</sup> For instance: “Network collaboration involves enduring interactions between a set of interdependent actors...” (Koppenjan, 2008, p.700); and “Interagency collaboration can be defined as the formal and informal processes between networks of interdependent agencies...” (Mu et al., 2019, p.583)

difficult to observe or quantify. Reform “solutions” often present themselves precipitately, before performance problems are known or understood. And, despite often being portrayed as straightforwardly a tool “for solving public problems” (Scott & Thomas, 2017), collaboration also enjoys “an inherently positive moral feel about it” – like “arguing for ‘mother love and apple pie,’” as McLaughlin (2004, p.103) writes. Indeed, ideas of partnership and joint working have become “institutionalized” – “infuse[d] with value beyond the technical requirements of the task at hand” (Selznick, 1957, p.17) – turning collaboration into what Molenveld, et al. (2020, p.12) describe as “a socially-desirable super-standard” to which all organizations must, seemingly, comply. Consequently, it is imperative that researchers distinguish collaboration from its logical (but not necessarily most probable) cause of interdependence, and avoid jumping to premature or unnecessarily elaborate explanations for reform failure without first discounting the possibility of misdiagnosis and collaborative excess.

Using longitudinal data and quasi-experimental methods, we supported this argument by demonstrating how a significant wave of inter-local collaboration in England was essentially trying to “fix” a public service that, upon closer inspection, was never really “broken.” Subnational tax administration was not subject to diseconomies of scale in England’s already super-sized councils. And, in the short term, shared services actually damaged performance. We have thus shown that collaborative excess helps to explain reform failure where more orthodox explanations of collaborative “friction” (transaction costs, inertia) or premature evaluation fail to do so.

Inter-municipal cooperation provided a valuable test case for this endeavor, affording transparent observation of both the interdependence (or not) between collaborators and

the outcomes of their joint working. But the presence of more emergent and contested goals, and the attendant difficulties of measuring inter-organizational interdependence, will necessitate much methodological innovation if collaborative excess is to be sought out among other subtypes of collaborative public management. Researchers contemplating such a formidable enterprise may seek comfort in the idea that: the greater the challenge of observing and quantifying interdependence, the greater the prospect of uncovering collaborative excess.

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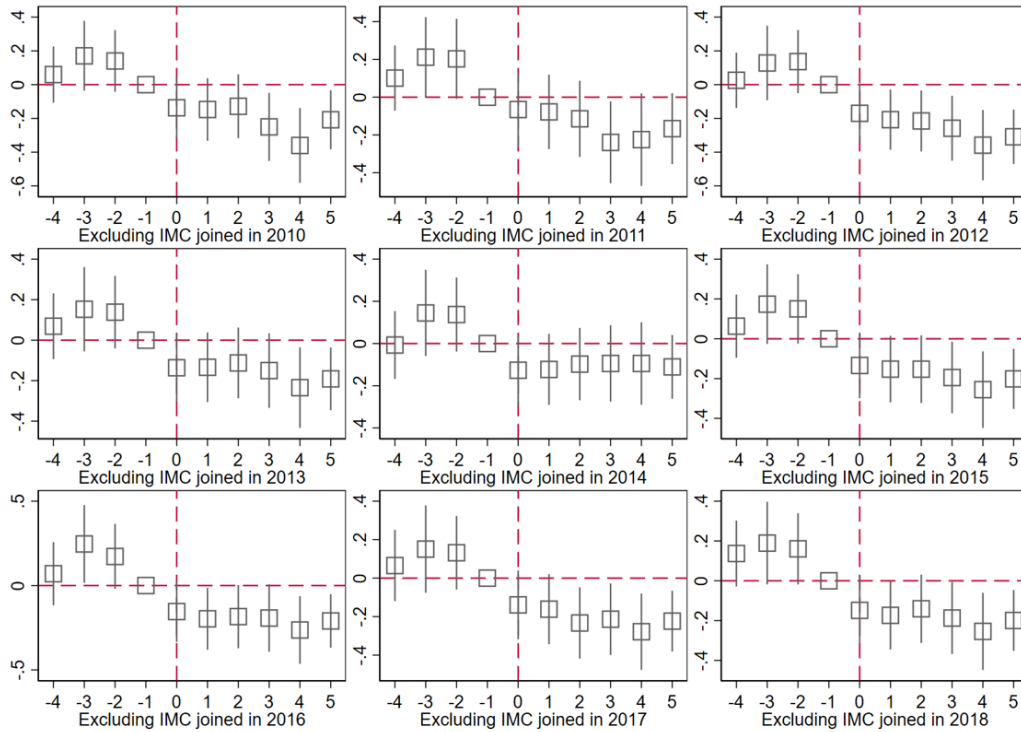
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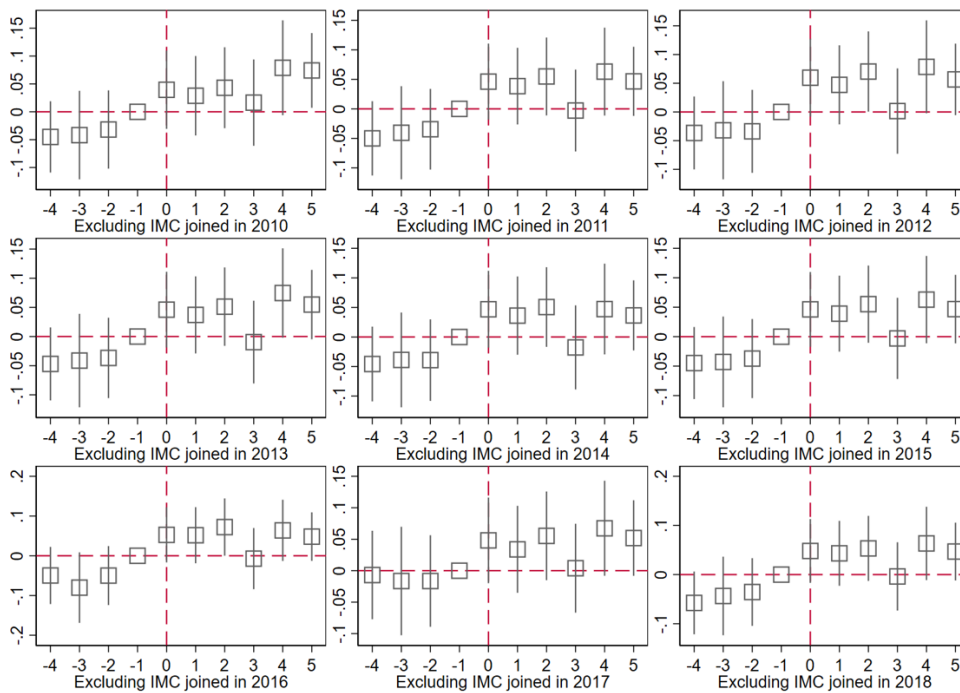
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## Appendix

**Figure A1: IMC and the effectiveness of council tax collection across years, dropping one IMC treatment year at a time**



**Figure A2: IMC and the cost of council tax collection across year, dropping one IMC treatment year at a time**



**Table A1: IMC rollout year and local authority characteristics**

VARIABLES	(1)	(2)	(3)	(4)
		<b>IMC rollout year</b>		
Council tax in-year collection rate		-0.873 (0.579)		-0.714 (0.711)
Expenditure on council tax collection			1.846 (1.665)	0.635 (2.021)
GDP per capita	-0.917 (1.281)	-0.853 (1.364)	-1.064 (1.493)	-0.925 (1.433)
Population	9.635 (12.06)	7.918 (13.12)	10.21 (13.04)	7.958 (13.36)
chargeable dwellings	-3.686 (15.15)	-0.0776 (16.42)	-5.452 (16.38)	-0.631 (17.12)
discount dwellings	-2.453 (6.098)	-4.497 (6.699)	-2.915 (6.384)	-4.541 (6.721)
chargeable dwellings (SD)	1.637 (4.231)	1.501 (4.390)	1.349 (4.540)	1.386 (4.463)
discount dwellings (SD)	-2.263 (4.035)	-2.732 (4.184)	-2.430 (4.340)	-2.637 (4.248)
Observations	61	61	61	61
R-squared	0.149	0.187	0.176	0.189

This table shows the associations between a list of local authority-specific features and year in which IMC starts before the reform (year 2009). Robust standard errors in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A2: Robustness - IMC and the effectiveness of council tax collection, including local authorities joined the IMC before 2010**

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	<b>Council tax in-year collection rate</b>					
	All		Within type		Across type	
IMC	-0.249*** (0.0775)	-0.215*** (0.0758)	-0.242*** (0.0602)	-0.313 (0.429)	-0.128** (0.0650)	-0.616 (0.475)
Reform wave*Local council						
FE	Y	Y	Y	Y	Y	Y
Reform wave*Year FE	Y	Y	Y	Y	Y	Y
Controls	N	Y	N	Y	N	Y
				all-		all-
IMC Sample	all	all	district	purpose	district	purpose
Observations	26,493	25,928	12,580	7,282	11,446	8,038
R-squared	0.902	0.910	0.855	0.888	0.895	0.859

Robust standard errors are clustered at the local authority level.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A3: Robustness - IMC and the amount of under-collected council tax**

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	<b>Amount of under-collected council tax</b>					
	All		Within type		Across type	
IMC	0.110*** (0.0266)	0.0968*** (0.0266)	0.108*** (0.0261)	0.0918 (0.118)	0.0757*** (0.0262)	0.149 (0.132)
Reform wave*Local council FE	Y	Y	Y	Y	Y	Y
Reform wave*Year FE	Y	Y	Y	Y	Y	Y
Controls	N	Y	N	Y	N	Y
IMC Sample	all	all	district	all-	district	all-
Observations	23,654	23,176	11,102	purpose	10,086	purpose
R-squared	0.964	0.964	0.884	0.957	0.960	0.888

Robust standard errors are clustered at the local authority level.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A4: Robustness – IMC and cost of council tax collection, including local authorities joined the IMC before 2010**

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	<b>Expenditure on council tax collection</b>					
	All		With gov. type		Across gov. type	
IMC	0.0804*** (0.0284)	0.0738** (0.0313)	0.0636** (0.0322)	0.0602 (0.0841)	0.0929*** (0.0353)	0.0526 (0.0896)
Reform wave*Local council FE	Y	Y	Y	Y	Y	Y
Reform wave*Year FE	Y	Y	Y	Y	Y	Y
Controls	N	Y	Y	Y	Y	Y
IMC Sample	all	all	district	all-purpose	district	all-purpose
Observations	26,483	25,918	12,580	7,276	11,437	8,038
R-squared	0.945	0.946	0.868	0.903	0.917	0.878

Robust standard errors are clustered at the local authority level.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A5: Robustness - HHI of empty properties discount type, band level**

VARIABLES	(1)	(2)	(3)	(4)
	<b>HHI at band A</b>			
IMC conglomerate	0.143*** (0.0315)	0.164*** (0.0328)	0.146*** (0.0311)	0.136*** (0.0306)
Observations	20,645	20,645	20,645	20,645
R-squared	0.859	0.848	0.868	0.868
	<b>HHI at band B</b>			
IMC conglomerate	0.133*** (0.0287)	0.108*** (0.0281)	0.113*** (0.0264)	0.0849* (0.0471)
Observations	20,645	20,645	20,645	20,645
R-squared	0.864	0.869	0.792	0.534
Reform wave*Local council FE	Y	Y	Y	Y
Reform wave*Year FE	Y	Y	Y	Y
Controls	Y	Y	Y	Y
IMC Sample	all	all	all	all

Robust standard errors are clustered at the IMC conglomerate/local authority level.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A6: IMC and effectiveness of council tax collection across years**

VARIABLES	(1)	(2)
	<b>Council tax in-year collection rate</b>	
Pre4	0.0425 (0.0853)	0.00645 (0.0823)
Pre3	0.147 (0.107)	0.137 (0.103)
Pre2	0.143 (0.0941)	0.139 (0.0906)
Reform year	-0.194** (0.0853)	-0.157* (0.0822)
Post1	-0.242*** (0.0863)	-0.203** (0.0832)
Post2	-0.241*** (0.0878)	-0.196** (0.0847)
Post3	-0.232** (0.0916)	-0.185** (0.0883)
Post4	-0.251*** (0.0966)	-0.198** (0.0932)
Post5	-0.112 (0.0789)	-0.127* (0.0761)
Reform year*Local council FE	Y	Y
Reform year*Year FE	Y	Y
Controls	N	Y
IMC Sample	all	all
Observations	23,663	23,185
R-squared	0.888	0.897

Robust standard errors are clustered at the local authority level.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1