

Corporatization in the Public Sector: Explaining the Growth of Local Government Companies (*forthcoming in Public Administration Review*)

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The creation of companies by local governments to provide public services (or corporatization) is an example of systemic public entrepreneurship that is popular across the world. To build knowledge around the antecedents of public sector entrepreneurship, we investigate the factors that lead local governments to create companies for public service delivery. Using zero-inflated negative binomial regressions to analyze secondary data from 150 major English local governments for 2010-2016, we find that governments with higher levels of grant and debt dependence are more involved in the creation and operation of companies, as are larger governments. Further analysis reveals that very low and very high managerial capabilities are strongly associated with more involvement in profit-making companies, while local government involvement in companies is more prevalent in deprived areas. At the same time, government ownership of companies is more common in areas with high economic output.

Evidence for practice:

- In a context of budget cuts, grant and debt dependence are leading local governments in England to corporatize service provision.
- Local governments with low or high management capacity are also motivated to create and control more companies, especially profit-making entities.
- Systemic entrepreneurial activity within English local governments does not depend on left-wing or right-wing political control.

Governments across the globe increasingly use publicly-owned companies to deliver public services (McKinlay 2013; Thynne, 2013). The process of ‘corporatization’ – the creation of government-owned companies – has significant and far-reaching implications for the governance, performance and efficiency of local public services, and, as such, it represents an excellent example of the systemic or corporate public entrepreneurship that can occur in large, complex bureaucratic organizations (Bernier and Hafsi 2007; Kearney, Hisrich and Roche 2007). For local governments, which are at the forefront of service delivery and citizen demands (Arapis 2013; Rubin 1988), corporatization of service provision is a form of public entrepreneurship with the potential to ensure organizational “survival, sustainability and growth” (Lukes and Verreyenne 2006, p.5).

Corporatization involves moving a function from hierarchical line control within a government bureaucracy and placing it into a wholly or partly-owned corporate entity (Thynne, 2003). Unlike other entrepreneurial approaches to service delivery - for example contracting-out, co-production and public-private partnerships - corporatization is still comparatively neglected by the academic literature (Voorn, van Genugten, and van Thiel 2017). In particular, despite a long history of corporatization within local government (e.g. Skelcher 2017), few studies examine the financial, socio-economic, managerial and political factors explaining *why* local governments set up their own companies or the types of company that are set up.

Previous European research suggests local financial, socio-economic and political factors may be important influences on corporatization (e.g. Tavares and Camoes 2010; Rodrigues, Tavares, and Araújo 2012). Those studies have cast valuable light on the factors shaping local governments’ decisions to create companies, but we still need to know more about the managerial capabilities that underpin corporatization. Public sector capabilities are the organizational assets and practices that can be deployed to create public value (Klein et al., 2013). Capabilities such as management capacity and managerial experience enable the

effective coordination of alternative forms of public service delivery (e.g. Cabral, 2017; Cabral, Lazzarini and Azevedo, 2013). In addition to better understanding of the role of capabilities, further research is required to clarify the factors determining the legal form of the companies in which local governments are involved (Tavares 2017). Locating transaction costs and capabilities theories within a public entrepreneurship framework, we analyze the managerial factors along with the financial, socio-economic and political ones influencing corporatization, and whether these vary according to the legal form and ownership of the company.

When confronted with fiscal challenges and complex socio-economic circumstances, local governments may favour corporatization over other approaches because they retain control over the companies that they create (Tavares and Camoes 2007). Company creation may also represent a politically acceptable ‘middle-ground’ between in-house provision and privatization (Leavitt and Morris 2004). From a capabilities perspective, local governments with low administrative intensity and less managerial experience may corporatize services to expand their capacity for meeting citizens’ needs (McKinlay 2003). Company creation may also be more prevalent in governments with very high administrative intensity and managerial experience because they have more of the administrative resources needed to coordinate complex service delivery arrangements (Grossi and Reichard 2008). These capabilities arguments are especially likely to apply to involvement in profit-making companies and for companies in which local governments hold a controlling share.

To investigate the determinants of corporatization, we analyze the creation of companies by all major English local governments during the financial years 2010/11 until 2016/17.¹ Since 2010/11, the UK central government has cut grant funding for local governments in England, and placed a 2% annual cap on their ability to raise their only independent source of tax revenue – a property tax, known as the ‘Council Tax’ (Figure A1 in the Appendix illustrates these changes).² Although there is no necessary connection between

grant reductions, tax limits and fiscal stress, the UK's National Audit Office (2018) has highlighted that these policies threaten the financial sustainability of English local government. At the same time, the demand for local public services continues to increase across England as the population grows, with the number of older people requiring long-term care provided by local governments rising particularly rapidly (Institute for Fiscal Studies, 2017). Our analysis ends in 2016/17 as this is the last full year for which data was available. This makes the period in which we undertake our study an especially interesting one for researching local governments' responses to fiscal challenges.

We exploit comprehensive information from local governments' annual accounts to examine what determines their involvement in different types of company and the degree of control that they exert over those companies. Using zero-inflated negative binomial regressions, we analyze the number of companies in which each local government has an interest, utilizing a range of financial, socio-economic, political and managerial variables: grant revenue reductions; grant dependence; long-term debt as a % of revenues; debt servicing as a % of revenues (*financial*); local government size; population density; age diversity; ethnic diversity; deprivation; and Gross Value Added per capita (*socio-economic*); Labour Party control; Conservative Party control (*political*); and, administrative intensity; chief executive tenure; and chief finance officer tenure (*managerial*).

Our study suggests that corporatization is more likely in local governments with increased grant allocations, but also in those with higher levels of grant dependence and debt financing. In addition, larger local governments are more corporatized. Further analysis reveals that very low and very high administrative intensity is associated with involvement in companies, especially profit-making ones. Furthermore, while socio-economic deprivation is associated with company involvement *per se*, economic output is positively related to local

government ownership of companies. These results highlight that financial and socio-economic circumstances and managerial capabilities shape systemic public entrepreneurship.

Theory and Hypotheses

Theories of public entrepreneurship often distinguish between two main types of entrepreneurship: i) individual entrepreneurship, undertaken by heroic leaders seeking to transform public services; and, ii) systemic (or corporate) entrepreneurship, carried out across an organization with the aim of achieving strategic objectives (Bernier and Hafsi 2007; Hayter, Link and Scott 2018; Kearney, Hisrich and Roche 2007). According to Bernier and Hafsi (2007), public entrepreneurship follows a cycle from the birth of an organization when resources are available for individual entrepreneurs to experiment with services, until a point of stability, professionalization and routine is reached. After that, systemic entrepreneurial activity becomes necessary to enable the whole organization to overcome strategic persistence and adapt to environmental threats. The creation of companies by local governments thus represents entrepreneurial action undertaken to revitalize long-established bureaucracies.

Although public organizations are sometimes assumed to be less entrepreneurial than private firms (Rainey and Bozeman 2000), the use of public corporations for commercial activities by government has a long history (see Seidman 1954). Nonetheless, company creation by public organizations in recent times has reflected the wider drive to make government more business-like in the wake of the New Public Management (NPM) (Thynne 1994). As a result, there has been a growth in hybrid organizations with mixed forms of ownership and control to address an “actual or perceived crisis of legitimacy, responsiveness and efficiency in government” (Thynne and Wettenhall 2004, p.609).

Corporatization potentially offers a number of benefits for public organizations. It can enable them to undertake commercial trading activities and thus generate new revenue (Stumm

1996). It can offer flexibility in employment and reward systems (Thynne 2003). And where companies are registered as charities or trusts, it can bring tax advantages and access to sources of charitable income (Babbage, Ewles and Smith 2006). At the same time though, corporatization can generate unwanted costs. Company creation can contribute to “fiscal illusion” by hiding the true scale of government activities (Arapis 2013; Tyer 1989). It may also make it harder to move money between different budgets (Rubin 1988) or generate financial instability as non-tax revenue streams can be less predictable (Carroll 2009).

The extent to which the potential benefits of company creation can be maximized could depend on the legal structure chosen (Seidman 1954). In England, corporations can be registered as a private company limited by shares or by guarantee (the latter may also be registered as a charity), a joint venture public limited company, a community interest company, or a limited liability partnership. The degree of control that governments retain over a company is also likely to matter, with majority share ownership potentially key to effective co-ordination and oversight (Voorn, van Genugten, and van Thiel 2017).

Local governments across England are exploring alternative service delivery models, such as sharing services and collaborative outsourcing (Sandford 2016); as indeed, are their counterparts across Europe. For example, Italian local governments are experimenting with community delivery of services (Cepiku, Mussari and Giordano 2016), while, in Spain, municipalities increasingly use public companies and other business entities to provide services (Ferran and Puey 2016). In this setting, corporatization may be a particularly appealing approach to dealing with financial pressures because governments retain significant control over service delivery and so reduce the transaction costs associated with doing things differently (Tavares and Camoes 2007).

Where established revenue streams are drying up, local governments may create companies because they can better control labour costs through corporatized arrangements that

are less influenced by public employment regulations and trade union activism. In addition, dependence on intergovernmental transfers may encourage local governments to diversify their revenue sources, especially if, as in England, the power to increase property tax is limited. Dependence on loan financing may also be associated with corporatization, as local governments take on debt to bolster under-pressure services – something that has been facilitated in England by the prudential borrowing powers accorded by the Local Government Act of 2003. Given the ever-increasing levels of service demand in England (National Audit Office 2018), profit-making entities that can generate funds for reinvestment in hard-pressed services, reduce dependence on central government grants and be used to repay loans seem likely to be more attractive than non-profit entities (Localis 2015). Hence, we propose:

Hypothesis 1 Financial pressures will be positively related to corporatization, especially the creation of profit-making companies

Bernier and Hafsi (2007) emphasize that systemic entrepreneurship occurs when governments confront a complex external environment. The complexity of an organization's task environment reflects the sheer number and diversity of human and material factors that must be considered in service production decisions (Dess and Beard 1984). So, for local governments, the number of people they serve, their geographical concentration and the quantity and diversity of their needs are all key indicators of socio-economic complexity. A high level of economic output is another potential source of complexity, as local governments serving more vibrant economies will probably have to address the needs of a more diverse range of firms and businesses (Porter 2003). These indicators all seem likely to be positively related to corporatization.

Contingency theories of organizational design have long averred that in a complex environment innovation is vital to meet the needs of clients and stakeholders (Donaldson 2001). Large local governments and those serving concentrated, deprived or heterogeneous populations may therefore need to explore new opportunities for service provision in response to the socio-economic complexity that they confront (Romero, Haubrich, and Maclean 2010). Since corporatization implies systemic public entrepreneurial action, local governments may endeavour to design corporatized services that are tailored to the specific needs of the different social groups they serve. However, due to uncertainty about the market for those services in complex socio-economic circumstances, this design process may result in the creation of not-for-profit rather than for-profit organizations (Girth, Hefetz, Johnston and Warner 2012). Weisbrod (1997), for example, argues that “when populations are diverse, services that satisfy the majority may leave many people undersatisfied; nonprofits are thus understandable as an alternative mechanism for providing collective services” (542). This leads us to put forward:

Hypothesis 2 Socio-economic complexity will be positively related to corporatization, especially the creation of not-for-profit entities.

In addition to financial and socio-economic circumstances, the local political context is also likely to influence corporatization. In particular, the citizen-candidate model of political competition highlights that the ruling party’s ideological commitments usually determine a local government’s policy choices (Osborne and Slivinski 1996). In theory, right-wing parties seek to enhance public service efficiency by cutting costs, whereas left-wing parties favour state intervention to improve public service equity. In fact, right-wing governments across Europe have been linked with cost-cutting management reforms at the local and national level

(Wollmann 2018). Such ideological effects may be even more important during fiscally challenging periods.

Systemic public entrepreneurship tends to occur in times of crisis (Bernier and Hafsi 2007). Hence, it seems likely that the creation of companies by English local governments in recent times will be more prevalent in those led by the main right-wing party – the Conservative Party, than the main left-wing party (i.e. the Labour Party). However, while local governments controlled by right-wing political parties may be ideologically-inclined towards contracting-out (Osborne and Slivinski 1996), such plans can be unpopular with local citizens. Corporatization may therefore enable right-wing governments to demonstrate responsiveness to citizens' concerns about service continuity despite fiscal pressures (Tavares and Camoes 2010), rendering it a politically acceptable 'middle-ground' between in-house provision and privatization (Leavitt and Morris 2004). At the same time, the pro-business orientation of right-wing political parties may mean that they are more comfortable with the creation and operation of profit-making entities. In addition, right-wing politicians may have more business expertise and experience of managing companies, particularly those that make profits operating in a competitive market environment. For this reason, we advance:

Hypothesis 3 Right-wing party control will be positively related to corporatization, especially the creation of profit-making companies

From a NPM perspective, corporatization shifts control over service delivery from politicians and bureaucrats to professional managers motivated to find innovative service delivery solutions, and thereby reduce costs (Osborne and Gaebler 1992). However, systemic entrepreneurship of this kind is not the work of a single heroic entrepreneur, but requires 'a high level of cooperation among specialized actors within the system' (Bernier and Hafsi 2007:

494). Implementation of any new service delivery model may give rise to a host of unanticipated problems (Van de Ven, Polley, Garud, and Venkataraman 1999). For this reason, successful public entrepreneurship is likely to be dependent upon the quality of the management within a public organization (Kearney, Hisrich and Roche 2007).

Researchers increasingly draw on capabilities theories to examine the management resources required to underpin effective public entrepreneurship (Klein et al., 2013). Broadly defined, capabilities are the organizational assets and competencies that can be deployed to coordinate an organization's productive activities (Winter 2003). Public organizations with higher levels of administrative capacity and better quality managers may be better equipped to make alternative service delivery models work (Cabral 2017). Because corporatization accords service managers' freedom from standard bureaucratic controls, a high degree of central managerial capability is essential to facilitate effective control over local government companies, especially those that are profit-making. At the same time though, services may be corporatized in order to create new capabilities that can be directed back towards system-wide improvements – something that may be appealing to organizations that have weaker capability in the first place, especially if profit-making is a concern. Hence, we suggest:

Hypothesis 4 Managerial capabilities will exhibit a u-shaped relationship with corporatization that will be stronger for the creation of profit-making than not-for-profit entities

Data and Methods

The units of analysis for our study are the 150 single and upper tier local governments responsible for the provision of the largest and most important local public services across England. The dataset for the study has been collected from the full population of those governments for the financial years 2010/11 to 2016/17. They are elected bodies with a

Westminster-style cabinet system of political management, made up of senior members of the ruling political party. English local governments manage about a quarter of the total UK public sector budget (HM Treasury 2018) and retain a strong capacity for institutional choice. Locally elected politicians implement national policy frameworks on the advice of professional local government managers led by a chief executive officer. Strategic decisions with major financial implications, such as those associated with company creation, involve the chief finance officer, who has the legal obligation to ensure local governments balance their budgets.

In terms of public service responsibilities, single-tier (London boroughs, metropolitan districts and unitary authorities) and upper-tier local governments (county councils) are responsible for, and may also fund or provide, services in the areas of: education (e.g. primary and secondary schooling), social care (e.g. services for older people), environmental services (e.g. waste management), highways, economic development, and leisure and culture services (e.g. sports centres, libraries). With the exception of county councils, they are also responsible for aspects of housing (e.g. sheltered accommodation and rent subsidies).³

Dependent Variables

Our first dependent variable, *corporatization*, is an annual count of all the companies in which local governments register an interest in their annual accounts for 2010/11 – 2016/17. We then analyze two further indicators that disaggregate corporatization according to the two main types of company in which governments are involved: *companies limited by shares*; and, *companies limited by guarantee*. Companies limited by shares are typically used for trading activities (e.g. property development and IT services). Companies limited by guarantee are used where the activity is non-profit distributing or charitable (e.g. museums or libraries). Other legal forms, for example charities and trusts or limited liability partnerships, are seldom used (see Figure 1) and are not analyzed separately. Our three indicators of corporatization are

recalculated to capture levels of *company ownership* by counting only companies in which governments retain 50% or more shares. The accounts from which these indicators are constructed are audited and publicly available, and were downloaded from local government websites, enabling us to build a comprehensive data set without having to request documents from individual governments or rely on perceptual survey-based measures.

To identify a government's interest in a company, the type of company in which they had an interest and its continued existence, a coding frame was developed and applied to the annual accounts. We specifically draw on International Financial Reporting Standard (IFRS) 10, which requires local governments to present consolidated financial statements for all entities they control, and IFRS 11, which determines whether a joint arrangement exists and the type of arrangement that it might be; as well as IFRS 12, which covers disclosure of interests in other entities.⁴ Our search procedure revealed that 676 separate companies existed at some time during the period 2010-2016. The adoption of these arrangements did not, of course, occur simultaneously, but changed year-on-year during the study period, as some companies were created and others were closed.

Figure 1 shows that the number of companies in which major local governments registered an interest rose from nearly 400 in 2010 to almost 600 in 2016. Most of this growth is accounted for by increasing involvement in companies limited by shares, which grew from about 170 to 320, while the number of companies limited by guarantee remained fairly static. The number of companies depicted in Figure 1 is net of closures in any given year, which totalled 78 for the study period. Further analysis indicates that about 50% of the companies in existence at some point between 2010 and 2016, operated in the areas of land use planning and economic development, 30% in the areas of administration, housing and leisure, with a further 20% in the areas of education, social care, transportation and environmental services.

[Figure 1]

Independent Variables

To test our hypotheses, we draw upon sixteen financial, socio-economic, political and managerial variables. To gauge financial pressures, we first measure the reduction in grant revenue from central government using a variable capturing the annual percentage *grant reductions* (for a similar approach see Jordan 2003). We reverse the polarity of the sign for this variable to ensure that we capture reductions. The revenue expenditure of English local governments is principally financed by grants from central government (see Table A1). Hence, a decline in grant revenue can be regarded as a clear indication of the financial challenges that stimulate systemic entrepreneurship. To gauge *grant dependence* we measure the percentage of local governments' revenue expenditure that is accounted for by central government grants – a measure employed in prior research (e.g. Tavares and Camões 2010). Figures for these measures come from the revenue expenditure statistics published by the Ministry for Housing, Communities and Local Government (MHCLG).

Our next financial measures are long-term debt (£'s) and debt-servicing expenditure (£'s) as a percentage of revenue expenditure. Long-term debt is calculated by summing annual borrowing from: negotiable bonds & commercial paper; other listed securities; Public Works Loan Board (PWLB)⁵; UK banks; building societies; other financial intermediaries; public corporations; private non-financial corporations; central government; household sector; and other sources. These figures come from the borrowing and investment statistics published by MHCLG. About three-quarters of local governments' long term debt was held by the PWLB, with UK banks holding just over 10%. Debt-servicing figures are drawn from MHCLG revenue statistics. Overall, long-term debt makes up over 90% of the total debt held by local governments. Debt and debt servicing as a proportion of revenue expenditure are thus good

indicators of the potential threat to financial sustainability posed by dependence on borrowing to meet future needs (Kloha, Weissert, and Kleine 2005).

We use six measures of socio-economic complexity. First, *population size* is measured using figures from the 2001 and 2011 census published by the Office of National Statistics. These statistics capture the full scale of local governments' output (De Borger and Kerstens 1996). Next, population density figures capture the geographic concentration of the population served by local governments. Densely populated areas have more complex social needs (Ladd 1992), and greater interest group competition (Dahl 1961). Third, we include the Index of Multiple *Deprivation* score for each area served by a local government.⁶ Higher social needs and lower co-production capacity confront governments in deprived areas (Romero, Haubrich and Maclean 2010). Fourth, Hehrfindahl indices capturing the age and ethnic diversity of the population are included in the models. The proportions of the various sub-groups within each of the different categories identified by the 2001 and 2011 UK national censuses within a government's jurisdiction (e.g. ages 0–4 and Black African) were squared and the sum of these squares subtracted from 10,000. These indices are proxies for interest group competition. Finally, we measure the potential effects of business interest group competition within more economically productive areas by using estimates of the Gross Value Added (GVA) (£'s) per capita for each local government published by the Office of National Statistics.

For our analysis of political factors, right-wing party rule is measured using a dichotomous variable coded 1 for local governments controlled by the *Conservative Party* and 0 otherwise. Left-wing party rule is measured using a dichotomous variable coded 1 for local governments controlled by the *Labour Party* and 0 otherwise. Although most governments are Labour or Conservative controlled, in a small number of cases they are controlled by the Liberal Democrat Party, the main UK centrist party, or by coalitions. Hence, we deploy both dichotomous variables in our models (see also Alonso, Andrews, and Hodgkinson 2016).

Political control statistics come from the Local Election Handbooks published annually by the Local Government Elections Centre, Plymouth University.

Three measures are used to capture management capabilities within local governments. First, using the revenue statistics published by MHCLG, *administrative intensity* is measured as the percentage of each government's expenditure that is spent on central services (e.g., finance, internal audit), and management and support services (e.g., human resources, IT). This type of indicator captures the administrative capacity available to coordinate service delivery (see Boyne and Meier 2013). Second, the variables *CEO tenure* and *CFO tenure* measure the length of tenure (in years) of the chief executive officer (CEO) and chief finance officer (CFO) for each local government. The accumulated experience of the CEO and CFO are proxies for managerial capability (Cabral 2017). Data on tenure length came from: Boyne et al. (2017), Municipal Year Books, local governments' webpages and local newspaper articles.

Finally, we control for the possibility that county councils register an interest in fewer companies than single -tier local governments because they have fewer service responsibilities by including a dichotomous variable in the regression models coded 1 for county councils and 0 for all the others.

To ensure temporal causality runs in the correct direction, the independent variables are measured in the year preceding the dependent variables. Descriptive statistics for all the variables are reported in Table 1. Due to missing or questionable financial data, a small number of data points for some local governments are excluded.⁷ In addition, we do not include the city of Birmingham in our analysis because it is an extreme outlier, with an interest in more than 60 companies, four times more than any other local government (the mean is 3.4).

[Table 1]

Methodology

We use a Zero-Inflated Negative Binomial (ZINB) regression model to account for overdispersion and an excess of zeroes in our dataset (Cameron and Trivedi 1998). The variance of the company count (11.47) is more than three times larger than the mean (3.41). In addition, there seem to be an ‘excessive’ number of zeroes in our data set - approximately 20% (see Figure A2 in the Appendix). ZINB models extend the single-equation negative binomial (NB) model by introducing a two-stage process which can incorporate zeroes in the data-generating process. In our case, the first stage of the model includes a logit regression predicting the probability of whether a local government will have any companies at all during the study period. There may be “always zeroes” in our data set for two key reasons. Firstly, some local governments may have experienced less financial pressure than others (Gray and Barford forthcoming). Therefore, we add three of our financial measures to the logit part of the model (grant revenue reductions; grant dependence; and, debt servicing as a % of revenues). Long-term debt as a % of revenues is included in the NB part of the model, as a higher level of debt seems likely to be associated with more company creation. Secondly, in-house public service provision may reflect the ideology of a left-wing ruling party. Hence, in the logit part of the model, we include the Labour Party control variable. This also reduces the potential collinearity present if the Labour and Conservative variables were both included in the NB model.

Following estimation of the logit part of the ZINB model, the second stage, i.e. the NB equation estimates the determinants of corporatization, given that a local government is willing to corporatize services, as predicted by the logit part of the model (see Cameron and Trivedi 1998). Our choice of a ZINB model over a Poisson or single equation-NB model is supported by Akaike’s information criterion (AIC) and Bayesian information criterion (BIC) for the fitted models. Furthermore, since the variation year-on-year in companies is not large and in many

cases zero, NB estimates with random or unit-fixed effects failed to converge, so we regard our ZINB models as the most robust approach for our analysis.

Statistical Results

Tables 2 and 3 present the ZINB regressions estimating corporatization/company ownership and local governments' involvement in/ownership of companies limited by shares and companies limited by guarantee for 2010-2016. For all six dependent variables, model 1 regresses the company count indicator on to the independent variables, whereas model 2 includes squared versions of the administrative intensity and CEO and CFO tenure variables to estimate whether particularly low and high values of those variables are associated with corporatization. The average Variance Inflation Factor (VIF) score for the independent variables in the models is below three, suggesting the results are not distorted by multicollinearity. Logged versions of the population and GVA variables are used to correct for a skewed distribution. All other independent variables were not skewed (see Table 1).

[Table 2]

The results of the logit models suggest, first, as anticipated, that financial factors influence the likelihood of having zero company involvement and company ownership. In particular, the coefficients for grant dependence and debt servicing are negative and statistically significant in nearly all of the models. Hence, local governments experiencing these fiscal challenges appear (on average) to be more likely to have set up companies. However, the coefficient for the grant reductions variable is positive and statistically significant in several of the models, suggesting that local governments whose grant allocation has decreased are more likely to have no company involvement. This finding, though contrary to our expectations,

mirrors that from previous research on the reluctance among US cities experiencing fiscal stress to set up public enterprises (Rubin 1988). The coefficient for Labour political control, is negative in all of the logit models, but only reaches statistical significance for the model predicting ownership of companies limited by guarantee. Thus, left-wing political control does not increase the likelihood of having no companies at all, but is associated with ownership of at least one non-profit entity – corroborating studies of the sectoral outsourcing preferences of left-wing local governments (e.g. Alonso, Andrews and Hodgkinson 2016).⁸

[Table 3]

The NB part of the models predicts the number of companies in which local governments have an interest or a controlling share. First, we note that inclusion of the county council variable to control for local governments' service responsibilities appears justified – the coefficient for the variable is negative in all of the models, and achieves statistical significance in some of them. Furthermore, the NB models indicate that debt is a statistically significant predictor of corporatization and of company ownership. However, these findings do not apply for involvement in and ownership of non-profit entities, thereby affirming our hypothesis that financial pressures are more likely to increase involvement in profit-making entities – something also suggested by the weaker results for grant dependence and debt servicing in the logit models predicting non-profit ownership.

To understand the substantive effects of the coefficients for each NB model we computed discrete changes in the dependent variable given a one standard deviation (SD) change in the independent variable(s), while holding all other independent variables at their means (see Tables A1 and A2 in the Appendix).⁹ These figures indicate that a one SD increase in debt as a % of revenue is associated with involvement in almost one (Model 1 = .839/Model

2 = .862) further company, with over a third of such increased corporatization being accounted for by a local government-owned entity (.385/.375). These changes are more likely to be observed for involvement in or ownership of profit-making than non-profit entities.

Our second hypothesis regarding the correlation between socio-economic complexity and corporatization is confirmed for some of the variables. In particular, the coefficient for population is positive and statistically significant in all six models, and its substantive effect is very strong. The discrete change estimates indicate that a one SD increase in population is associated with the addition of more than one (1.315/1.222) further company to a local government's portfolio, which is likely to be owned by that government (.960/.910). This effect is stronger for companies limited by shares than by guarantee. Involvement in companies also appears to be an attractive option for local governments serving deprived communities, with a one SD increase in deprivation associated with involvement in more than one new company (1.204/1.181) – involvement which appears to be evenly split between profit-making and non-profit making entities. This may signal 'necessity being the mother of invention' (Kelman 2006). However, deprivation is not associated with company ownership, suggesting that local governments serving disadvantaged communities prefer to partner up with other organizations to corporatize services, rather than shoulder all of the risk themselves.

The coefficient for age diversity is positive in all of the models, but does not achieve statistical significance in the models predicting involvement with non-profit-making entities. By contrast, the coefficient for ethnic diversity is negative in all of the models, and achieves statistical significance at the 5% level for all four models predicting involvement in profit-making entities. These results suggest local governments may use corporate entities to meet the demands of different age groups to raise additional revenue, but that corporatization to serve different ethnic groups is less financially or politically viable. The discrete change scores indicate that only the relationship between age diversity and company ownership *per se* is

substantively and statistically significant at the 5% level. Hence, more detailed assessment of the market conditions for different types of corporatized services is required to understand corporatization in demographically heterogeneous areas.

Contrary to our expectations, we have no evidence to suggest that population density has a relationship with corporatization – a finding confirmed by the discrete change estimates. While there is no evidence that economic output determines involvement in companies, the results shown in Table 3 indicate that company ownership is more prevalent in economically productive areas, especially of profit-making entities. The discrete change estimates indicate that a two SD increase in GVA is associated with ownership of nearly one additional company limited by shares. This finding that governments in economically vibrant areas are more enthusiastic about company ownership stands in stark contrast with the reluctance of their counterparts in economically deprived areas to own companies.

Regarding our third hypothesis, there is no evidence of a relationship between right-wing party rule and corporatization: the coefficient for Conservative Party control does not achieve statistical significance in the ZINB models or the discrete change estimates. For our fourth hypothesis, when the squared versions of the capabilities measures are added to the model we find evidence of non-linear effects. The coefficient for the ‘base’ administrative intensity variable is negative and statistically significant in four out of the six models at the same time that the squared version of the variable is positive and statistically significant. In line with the standard interpretation of the inclusion of squared variables in regression models (Clark, Oswald and Warr 1996), this indicates the presence of a u-shaped relationship between administrative intensity and corporatization. More specifically, our results imply that corporatization in general, and involvement in profit-making companies in particular, is more prevalent in governments with very low or very high administrative intensity.¹⁰

The discrete change estimates indicate that shifts in administrative intensity have a potentially sizeable substantive effect on corporatization: a two SD increase in this variable would be associated with the subtraction of more than one company from a local government's portfolio up until the tipping point after which it would be associated with the addition of more than one company. As anticipated, these substantive effects are only observed for the creation of companies limited by shares.

Although we observe a u-shaped relationship between administrative intensity and corporatization, we find very little evidence of a similar relationship between CEO or CFO tenure and involvement in or ownership of companies. Local governments with more experienced CFOs seem to be less likely to own companies, which may reflect risk-aversion on the part of the senior managers with the greatest responsibility for balancing the budget. Nevertheless, overall, it seems that corporatization may be driven by gaps or strengths in administrative capacity rather than managerial experience.

Discussion

Our analysis indicates that financial and socio-economic factors may be more important predictors of corporatization than managerial or political factors. In particular, debt and grant dependence, and a large client population, all seem to be critical influences, with socio-economic disadvantage, economic output and age diversity also associated with specific forms of company creation and operation. Nevertheless, the evidence suggests that administrative intensity and the political control of local governments matter in some circumstances as well.

Our results provide support for arguments about the nature of systemic public entrepreneurship (Bernier and Hafsi 2007) and post-NPM organizational hybridization (e.g. Thynne and Wettenhall 2004), and reaffirm the transaction costs perspective advanced in prior European studies of corporatization (e.g. Tavares 2017). In the internationally large English

local governments that we analyze (see John 2010), where many viable alternative service delivery models are available, including a thriving commercial outsourcing industry (Julius, 2008), local decision-makers appear to increasingly favour corporatizing services. This development suggests that local governments' systemic entrepreneurship is being shaped by their long experience of the high transaction costs associated with contracting out (Wollman 2018). This finding has relevance in terms of the emerging research on other European local government systems. Here, the ability of politicians to retain control appears to be important in the choice of corporatizing services (e.g. Tavares and Camoes 2007), possibly because of greater sensitivity to citizen demands in these typically smaller local government units. Thus political control of services may be inversely related to size as a motivator for corporatization rather than another form of arm's length service provision. Nonetheless, our research and that in other European countries indicates that local governments generally seem to prefer creating profit-making rather than nonprofit entities, indicating that the death of NPM and managerialism may have been exaggerated (Pollitt 2016).

In addition, our analysis suggests that managerial capabilities should be incorporated more fully in research on corporatization. Administrative capacity has been shown to influence contracting out in US school districts (O'Toole and Meier 2004), but has seldom been evaluated in relation to the creation of government-owned companies. Although we do not identify a direct relationship between CEO or CFO tenure and corporatization, our finding that very low and very high administrative intensity matter is a valuable one. Other indicators of individual managerial capability, such as years of business experience or a large salary, may, of course, be salient, as research on public entrepreneurship in hybrid public-private organizations suggests (e.g. Cabral 2017). However, extensive biographical information is not available for all local public managers in England.¹¹ Even then, it may be the case that for the decision to corporatize public services, the quality of the relationships between senior managers and

politicians is ultimately more important than individual capabilities. Hence, qualitative case studies would cast valuable light on the mechanisms that make corporatization happen within the decision-making structure of local governments.

Practically speaking, for practitioners and policy-makers, information on the determinants of corporatization, can help to guide their thinking about when it may be most appropriate to corporatize services. For example, if, as we find, many local governments experiencing grant reductions do not create companies, then for hard-pressed public organizations in-house provision may be preferable. Nevertheless, it would still be vitally important to know if corporatized public service delivery results in better public management outcomes than either in-house provision or contracting out, whether this varies by service area and what modes of political and managerial accountability are most effective. A comprehensive research agenda building on the limitations of our study could therefore illuminate the implications of this distinctive form of public entrepreneurship for the theory and practice public administration in several valuable ways.

Firstly, due to the nature of the data and estimators that we employ, we only identify levels of association between key variables. Studies utilising quasi-experimental designs could examine the causal mechanisms relating to the antecedents and effects of corporatization. For example, preliminary analysis using Granger tests suggests that corporatization may have a reciprocal relationship with debt, leading to further borrowing by local governments. In-depth investigation of the dynamics of corporatization, would therefore provide vital knowledge about the potential for this form of public entrepreneurship to meet its intended aims.

Secondly, we examine a particular group of public organizations during a period of fiscal challenge, so it would be especially important to explore whether the results we observe here differ in other time periods and organizational settings. For instance, because there is no comprehensive publicly available data on union membership at the local government level in

England, we are unable to investigate the impact of unionization on this occasion. However, this is something that should certainly be incorporated within future studies if at all possible. Indeed, cross-country comparative research may be essential to help pinpoint the precise role that different administrative, legal and political traditions play in the corporatization of public services.

Finally, research comparing the financial and non-financial performance of different types of companies and ownership structures would provide invaluable evidence that could help policy-makers identify the most promising forms of corporatization. Researchers seeking to understand why, and in what circumstances, some local government companies succeed but others fail, should also investigate whether the adoption of hybrid managerial strategies is necessary to enable these hybrid organizations achieve the goals that are set for them.

Notes

¹ The UK financial year runs from 1st April to 31st March.

² There was limited relief from this in 2016/17 in relation to increases in taxation hypothecated for social care expenditure.

³ Our study does not cover the 201 lower tier district councils, which are responsible for a smaller range of services within each county council (upper tier) area and have significantly lower levels of expenditure.

⁴ The International Accounting Standards Board (IASB) advanced group accounting standards - International Financial Reporting Standard (IFRS) 10 Consolidated Financial Statements, IFRS 11 Joint Arrangements, and IFRS 12 Disclosure of Interests in Other Entities - to address concerns from the financial crisis 2008 that certain risky arrangements were being excluded from company balance sheets. The public sector adopted these standards, including local government in England. IFRS 10 addressed consolidated financial statements issues by

importantly revising the definition of having "control" of another entity, and requiring that entity to be consolidated onto the controlling entity's balance sheet. IFRS11 addressed joint ventures and through adopting the IFRS 10 definition of "control" means "joint control" is deemed to exist in some circumstances where it wasn't previously. IFRS 12 addressed disclosures of interests in other entities and requires disclosures related to subsidiaries, joint ventures and interests in other entities that are not consolidated to be combined into a single disclosure. It also requires disclosures about judgements used to determine whether control exists, why it determined that control did not exist and its relationship with entities it did not consolidate.

⁵ The Public Works Loan Board is a central government agency that made loans to local governments. It was abolished in 2017 after 223 years of operation, and its functions transferred to the UK Treasury.

⁶ The UK government's deprivation index is commonly used by both scholars and practitioners to analyse socio-economic pressures in local governments across the country. It is a composite score based on administrative data that are used to construct six Indices of Deprivation, namely: the employment scale (the number of people who are unable to work due to unemployment, sickness or disability); the income scale (the number of people in receipt of means-tested welfare benefits); the average of ward scores (the population weighted average of the combined employment and income scales for the neighbourhoods in a local area); the average of ward ranks (the population weighted average of the combined employment and income ranks for the neighbourhoods in a local area); the extent of deprivation (the proportion of the local population living in neighbourhoods which rank within the most deprived 10% of neighbourhoods in the country); and, local concentration (the population weighted average of the ranks of a local area's most deprived neighbourhoods that contain exactly 10% of the area's population). The IoD are updated every few years by the Ministry for Housing, Communities

and Local Government. The IoD for 2007, 2010 and 2015 are all included in the dataset employed for our analysis.

⁷ We lose 29 local government-year observations (about 2.5%), which is unlikely to influence our findings, since the analysis is based on the population of single and upper-tier local governments.

⁸ To further test the potential for political ideology to matter, we substituted a dichotomous variable capturing the ideological strength of left-wing local governments for the Labour-control variable in the logit part of the model. This was done by considering Labour-controlled governments as especially left-wing or ‘Old’ Labour’ (and coding them 1) if they had been continuously controlled by the Labour party since the local elections prior to the election of Tony Blair’s ‘New’ Labour national government in 1997. All other Labour-controlled governments were then recoded 0. Inclusion of this variable in our models made little difference to our findings and was not related to corporatization (results available on request).

⁹ Here, we deployed discrete change analysis using the *mchange* function in STATA, which has recently been developed to illustrate the marginal effects of changes in the unstandardized coefficients on categorical and count outcomes, such as those we use. For more information on *mchange*, see J. Scott Long and Jeremy Freese. 2014. *Regression Models for Categorical Dependent Variables Using Stata*, Third Edition. College Station, TX: Stata Press.

¹⁰ Further analysis revealed that the turning points for the statistically significant administrative intensity variables were between 4.9% and 5.2%, respectively, about two standard deviations above the mean administrative intensity level. Twenty-five local governments had administrative intensity above this turning point in at least one of the years between 2010 and 2016.

¹¹ To investigate the potential impact of former private sector experience, basic information on the careers of the CEOs in each local government was gathered by searching documentary

evidence available online, including LinkedIn profiles, local government webpages and minutes, and local newspaper and trade journal articles. Through this process, we were able to identify whether a CEO had private sector experience prior to taking up their post in about 90% of cases. Nevertheless, inclusion of a dichotomous variable coded 1 for private sector experience and 0 otherwise for a reduced sample of local governments made little difference to our findings and was unrelated to corporatization (available on request). Nevertheless, it is conceivable that the number of years of private sector experience is a more important influence on corporatization than the mere fact of such experience. However, that level of detail on the careers of local government CEOs is only available for a handful of cases.

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Table 1 Descriptive statistics (2010-2016)

	Mean	Min	Max	SD	Skew
<i>Dependent variables*</i>					
Corporatization (number of companies in which an interest is held)	3.42	0	16	3.39	1.32
Companies limited by shares in which an interest is held	1.70	0	13	1.94	1.39
Companies limited by guarantee in which an interest is held	1.27	0	12	1.79	2.61
All companies (50% ownership or more)	1.80	0	13	2.20	2.06
Companies limited by shares (50% ownership or more)	.94	0	12	1.41	2.21
Companies limited by guarantee (50% ownership or more)	.55	0	6	.89	2.99
<i>Independent variables</i>					
Grant reductions (% annual change)	-.03	-80.73	56.45	18.06	1.82
Grant dependence (%)	58.39	34.38	93.66	7.50	.46
Debt (£'s) as (%) share of revenue expenditure	60.00	0	198.97	33.67	1.03
Debt service (£'s) as (%) share of revenue expenditure	2.84	-2.5	27.21	2.07	1.73
Population	340669.2	34563	1463740	254459.2	2.20
Population density	2580.61	61.12	13741.67	2936.53	1.80
Socio-economic deprivation	23.16	5.36	46.97	8.55	.29
Age diversity	8761.59	8419.95	8875.93	85.26	-1.48
Ethnic diversity	3167.1	372.71	8915.3	2473.19	.86
GVA (£'s) per capita	24455.01	12003	225818	18562.13	6.61
Conservative control	.41	0	1	.49	.37
Labour control	.41	0	1	.49	.39
Administrative intensity	2.54	0.02	11.38	1.31	.99
CEO tenure	5.24	0#	24	4.24	1.48
CFO tenure	4.30	0#	13	2.98	.73
County council	.18	0	1	.38	1.68

Number of observations = 1015. *Some of the dependent variables are skewed due to the large number of zeroes in the dataset. This is accommodated through the logit part of the zero-inflated binomial regression model. # tenure of 0 years is recorded when a CEO/CFO is not in place.

Table 2 Determinants of corporatization in major English local governments

	Corporatization		Companies limited by shares		Companies limited by guarantee	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
<i>NB model (count of companies)</i>						
Debt (£) as share of revenue expenditure	.006** (.002)	.006** (.002)	.004* (.002)	.004* (.002)	.004 (.003)	.004 (.003)
Population (log)	.542** (.152)	.508** (.151)	.518** (.174)	.449** (.157)	.738** (.267)	.736** (.280)
Population density	-2.0E-05 (4.7E-05)	-1.8E-05 (4.7E-05)	1.4E-06 (5.7E-05)	1.2E-05 (4.8E-05)	3.59E-06 (6.8E-05)	3.4E-06 (6.9E-05)
Socio-economic deprivation	.035** (.010)	.034** (.010)	.025+ (.015)	.023+ (.013)	.038** (.015)	.038** (.015)
Age diversity	.002+ (.0009)	.002* (.0008)	.002+ (.001)	.003** (.001)	.002 (.001)	.002 (.001)
Ethnic diversity	-5.3E-05 (3.4E-05)	-6.3E-05+ (3.5E-05)	-9.4E-05* (4.1E-05)	-1.1E-04** (4.2E-05)	-8.6E-04+ (4.9E-04)	-9.0E-05+ (5.1E-05)
GVA (£) per capita (log)	.254 (.194)	.264 (.174)	.421 (.287)	.462* (.216)	-.088 (.307)	-.067 (.303)
Conservative Party control	-.006 (.164)	.023 (.158)	-.111 (.190)	-.051 (.171)	.089 (.280)	.100 (.283)
Administrative intensity	-.065+ (.034)	-.202** (.071)	-.091* (.040)	-.303** (.083)	-.014 (.047)	-.007 (.100)
Administrative intensity ²		.020** (.008)		.030** (.008)		-.001 (.011)
CEO tenure	-.0002 (.017)	-.069 (.047)	.013 (.028)	-.124** (.034)	-.016 (.017)	-.063 (.045)
CEO tenure ²		.022 (.009)		.009** (.002)		.003 (.003)
CFO tenure	-.015 (.014)	-.039 (.042)	-.016 (.017)	-.021 (.040)	-.017 (.019)	.001 (.056)
CFO tenure ²		.002 (.004)		.0001 (.004)		-.002 (.005)
County council	-.373 (.259)	-.430+ (.259)	-.383 (.334)	-.472 (.309)	-.381 (.358)	-.405 (.369)
<i>Logit model (no companies)</i>						
Grant reductions	.014 (.009)	.014+ (.008)	.017* (.007)	.016* (.007)	.020* (.009)	.020* (.008)
Grant dependence	-.071* (.036)	-.071* (.033)	-.079* (.036)	-.069* (.030)	-.061+ (.037)	-.062+ (.036)
Debt servicing (£) as share of revenue expenditure	-.327** (.122)	-.348** (.117)	-.601** (.155)	-.588** (.138)	-.466** (.144)	-.473** (.143)
Labour Party control	-.505 (.834)	-.464 (.734)	-.456 (.581)	-.433 (.487)	-.751 (1.036)	-.670 (1.014)
Wald chi ²	74.72**	100.08**	47.84**	95.43**	40.25**	45.57**
Log likelihood	-2233.32	-2222.45	-1658.06	-1628.99	-1464.27	-1462.51

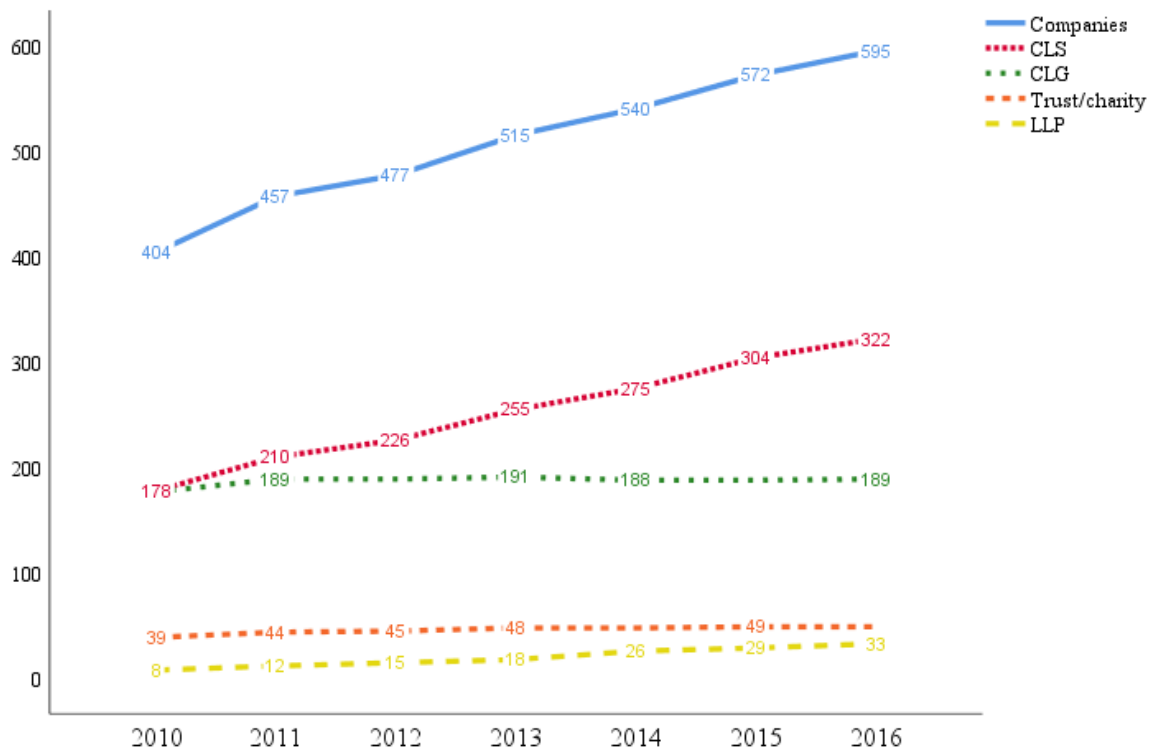
N of observations = 1014. Note: +p < .10; *p < .05; **p < .01. Robust standard errors clustered at the local government level.

Table 3 Determinants of company ownership in major English local governments

	All companies		Companies limited by shares		Companies limited by guarantee	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
<i>NB model (count of companies)</i>						
Debt (£) as share of revenue expenditure	.006** (.002)	.005** (.002)	.004+ (.003)	.005+ (.003)	.001 (.003)	.001 (.003)
Population (log)	.701** (.193)	.673** (.192)	.622** (.269)	.617* (.264)	1.116** (.373)	1.120** (.377)
Population density	-3.7E-06 (7.2E-05)	8.9E-07 (7.3E-05)	2.5E-05 (7.2E-05)	-1.8E-05 (7.1E-05)	6.7E-05 (9.1E-05)	6.4E-05 (9.2E-05)
Socio-economic deprivation	.016 (.013)	.014 (.013)	.009 (.016)	.006 (.016)	.025 (.017)	.026 (.018)
Age diversity	.003** (.001)	.003** (.001)	.002+ (.001)	.003* (.001)	.002 (.002)	.002 (.002)
Ethnic diversity	-6.7E-05 (4.8E-05)	-7.2E-05 (4.8E-05)	-1.1E-04* (5.4E-05)	-1.2E-04* (5.4E-05)	-9.5E-05 (6.6E-05)	-9.5E-05 (6.7E-05)
GVA (£) per capita (log)	.528* (.226)	.502* (.229)	.711** (.276)	.689** (.269)	.054 (.339)	.064 (.342)
Conservative Party control	-.003 (.197)	.008 (.197)	-.058 (.239)	-.036 (.240)	-.147 (.374)	-.140 (.381)
Administrative intensity	-.096* (.047)	-.308** (.088)	-.129* (.066)	-.471** (.066)	-.016 (.064)	.073 (.146)
Administrative intensity ²		.031** (.010)		.048** (.014)		-.014 (.019)
CEO tenure	.012 (.017)	-.016 (.048)	-.011 (.022)	-.071 (.060)	.026 (.021)	.018 (.045)
CEO tenure ²		.002 (.003)		.004 (.004)		.001 (.002)
CFO tenure	-.038* (.020)	-.072 (.051)	-.041+ (.023)	-.026 (.055)	-.014 (.024)	-.016 (.067)
CFO tenure ²		.003 (.004)		-.001 (.005)		8.2E-05 (.006)
County council	-.821** (.380)	-.902* (.380)	-.774 (.494)	-.968* (.489)	-.902 (.553)	-.874 (.570)
<i>Logit model (no companies)</i>						
Grant reductions	.011 (.012)	.011 (.012)	.021** (.007)	.022** (.007)	.012 (.019)	.012 (.019)
Grant dependence	-.098* (.047)	-.095* (.045)	-.105** (.036)	-.103** (.036)	-.071 (.075)	-.072 (.077)
Debt servicing (£) as share of revenue expenditure	-.144 (.194)	-.161 (.186)	-.437* (.197)	-.442* (.192)	-.625+ (.349)	-.623+ (.350)
Labour Party control	-.961 (1.438)	-.969 (1.402)	-.380 (.579)	-.417 (.590)	-20.728** (3.168)	-22.916** (3.155)
Wald chi ²	69.46**	87.04**	37.58**	57.74**	42.88**	44.30**
Log likelihood	-1733.17	-1726.10	-1246.94	-1232.33	-931.99	-931.55

N of observations = 1014. Note: +p < .10; *p < .05; **p < .01. Robust standard errors clustered at the local government level.

Figure 1 Number and type of companies in which major local governments had an interest, 2010-2016



Appendix

Table A1 Determinants of corporatization in major English local governments (discrete change estimates)

	Corporatization		Companies limited by shares		Companies limited by guarantee	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
<i>NB model (count of companies)</i>						
Debt (£) as share of revenue expenditure	.839** (.245)	.862** (.244)	.484** (.138)	.501** (.136)	.234+ (.140)	.241+ (.141)
Population (log)	1.315** (.487)	1.222** (.480)	.795** (.294)	.744** (.282)	.622** (.303)	.617* (.306)
Population density	-.133 (.784)	-.118 (.493)	-.213 (.262)	-.204 (.259)	.033 (.270)	.032 (.273)
Socio-economic deprivation	1.204** (.444)	1.181* (.444)	.643* (.288)	.621* (.280)	.547* (.265)	.547* (.267)
Age diversity	.541+ (.333)	.576+ (.323)	.185 (.196)	.227 (.194)	.180 (.176)	.201 (.180)
Ethnic diversity	-.331 (.294)	-.365 (.298)	-.274 (.169)	-.297+ (.169)	-.224 (.140)	-.228 (.143)
GVA (£) per capita (log)	.387 (.307)	.388 (.292)	.379 (.245)	.392+ (.216)	-.035 (.156)	-.025 (.155)
Conservative Party control	-.170 (.268)	-.149 (.270)	-.164 (.157)	-.153 (.156)	-.058 (.161)	-.051 (.165)
Administrative intensity	-.246+ (.147)	-.795** (.259)	-.173+ (.091)	-.636** (.146)	-.045 (.077)	-.088 (.151)
Administrative intensity ²		.718* (.316)		.729** (.249)		.044 (.134)
CEO tenure	-.025 (.231)	-.574 (.513)	.028 (.178)	-.362 (.315)	-.063 (.089)	-.255 (.189)
CEO tenure ²		.295 (.501)		.552 (.721)		.274 (.320)
CFO tenure	-.175 (.146)	-.423 (.396)	-.009 (.009)	-.089 (.260)	-.058 (.071)	.011 (.221)
CFO tenure ²		.295 (.501)		.007 (.287)		-.078 (.218)
County council	-.344 (.335)	-.393 (.334)	-.195 (.214)	-.255 (.205)	-.147 (.158)	-.158 (.159)

N of observations = 1014. Note: +p<.10; *p < .05; **p < .01. Robust standard errors clustered at the local government level.

Table A2 Determinants of company ownership in major English local governments (discrete change estimates)

	All companies		Companies limited by shares		Companies limited by guarantee	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
<i>NB model (count of companies)</i>						
Debt (£) as share of revenue expenditure	.385* (.167)	.375* (.163)	.296** (.105)	.296** (.105)	.032 (.052)	.034 (.052)
Population (log)	.960** (.343)	.910** (.336)	.630** (.249)	.616** (.249)	.496* (.218)	.498* (.218)
Population density	.001 (.383)	.021 (.395)	-.125 (.190)	-.112 (.197)	.108 (.181)	.104 (.181)
Socio-economic deprivation	.287 (.233)	.257 (.234)	.155 (.156)	.132 (.157)	.165 (.117)	.169 (.119)
Age diversity	.482* (.224)	.479* (.220)	.177 (.139)	.214 (.146)	.080 (.092)	.079 (.091)
Ethnic diversity	-.232 (.204)	-.244 (.205)	-.185 (.119)	-.205+ (.118)	-.113 (.075)	-.113 (.076)
GVA (£) per capita (log)	.408* (.207)	.384+ (.207)	.344* (.160)	.345* (.160)	.011 (.079)	.012 (.180)
Conservative Party control	-.120 (.155)	-.121 (.157)	-.097 (.103)	-.101 (.106)	-.072 (.064)	-.071 (.064)
Administrative intensity	-.212* (.102)	-.600** (.147)	-.149+ (.079)	-.510** (.107)	-.011 (.047)	.053 (.117)
Administrative intensity ²		.595** (.231)		.755* (.318)		-.060 (.087)
CEO tenure	.090 (.133)	-.036 (.321)	-.043 (.084)	-.151 (.184)	-.065 (.054)	.046 (.113)
CEO tenure ²		.139 (.366)		.146 (.284)		.019 (.104)
CFO tenure	-.201* (.098)	-.378+ (.226)	-.105+ (.065)	-.080 (.176)	-.022 (.039)	-.032 (.112)
CFO tenure ²		.247 (.307)		-.010 (.202)		.009 (.111)
County council	-.467* (.197)	-.500** (.1930)	-.261* (.132)	-.318* (.129)	-.158* (.080)	.153+ (.083)

N of observations = 1014. Note: +p < .10; *p < .05; **p < .01. Robust standard errors clustered at the local government level.

Figure A1 Financing of the revenue expenditure of major local governments, 2009-2016

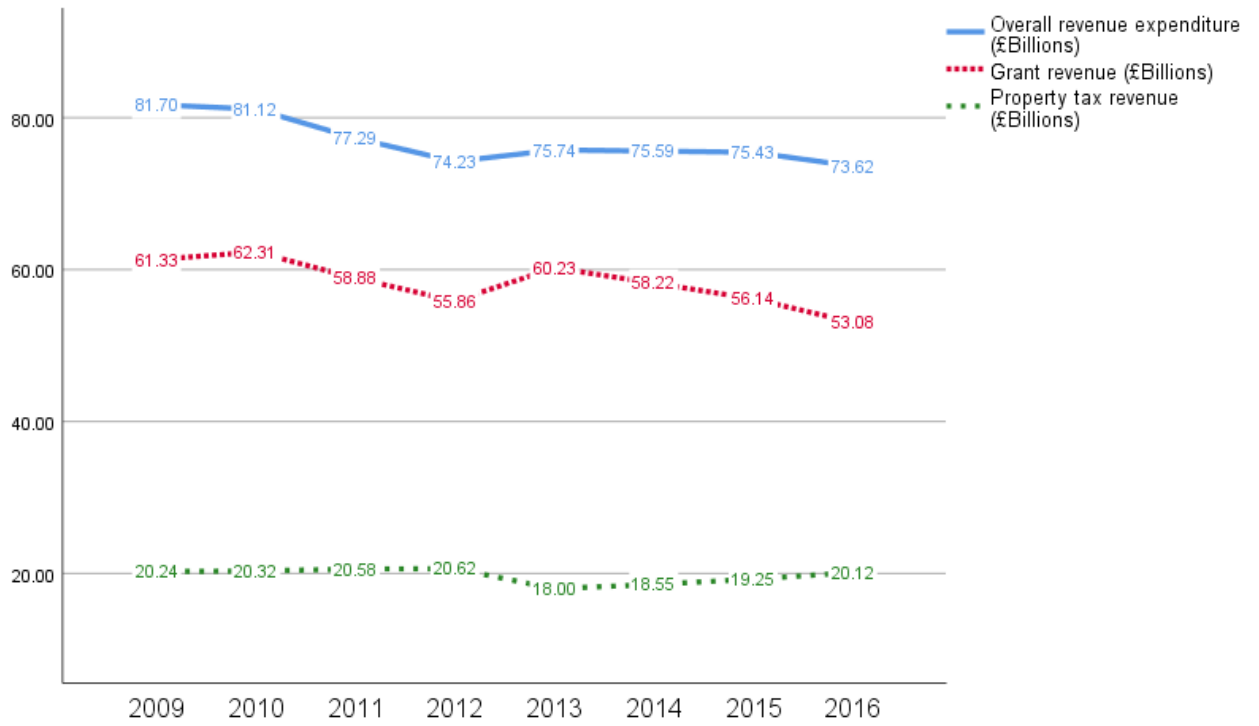


Figure A2 Frequency distribution of local government companies, 2010-2016

