Via Po, 53 – 10124 Torino (Italy)
Tel. (+39) 011 6704917 - Fax (+39) 011 6703895
URL: http//www.de.unito.it

WORKING PAPER SERIES

Performance Competition in Local Media Markets

Federico Revelli

Dipartimento di Economia “S. Cognetti de Martiis”

Working paper No. 1/2008

Università di Torino

Performance competition in local media markets*

Federico Revelli†

Abstract

This paper investigates the impact of tax and public service performance on English local government popularity by using data on local property taxes, service performance ratings and local election results after the introduction of a system of evaluation of local government performance (Comprehensive Performance Assessment). The evidence emerging from estimation of a re-election equation offers a somewhat more rounded portrait of the voter than the conventional fiscal conservative icon, by highlighting the beneficial consequences of public service performance on government popularity and pointing to the role of local media networks (the BBC regional television, local radio and web network) in shaping consensus by spreading tax-related information.

JEL classification: C23; C25; D72.

Key words: yardstick competition; property tax; performance rating; local elections.

*The paper has benefited from discussions in the Public Economics UK Workshop held in Leicester and in the II Workshop on Fiscal Federalism held in Sevilla. I would like to thank in particular Gianni De Fraja, Hamish Low, Albert Solé, Per Tovmo and David Wildasin for comments. All remaining errors are mine.

†Address: Department of Economics, University of Torino, Via Po 53, 10124 Torino (Italy); e-mail: federico.revelli@unito.it.

1 Introduction

Due to the recent and widespread process of public sector reform and move towards M-form (multi-divisional form) organization (Maskin et al. [21]), decentralized governments throughout the world tend to have growing responsibilities in a number of key policy areas - such as education, health, social care and economic development - and rely, to a large and increasing extent, on own and shared sources of revenue (OECD [23]). However, given the difficulty of measuring public sector output and service quality, typically little is known about local governments' overall performance.[1] Consequently, the actual benefits of decentralization relative to centralized arrangements are hard to evaluate, and the consequences of public service performance on local welfare and government popularity remain virtually unknown.

This paper tackles the above issue by analyzing the impact of the system of evaluation of local government performance that was introduced in Britain in 2002 (Comprehensive Performance Assessment (CPA)) on the popularity of local incumbent governments. In particular, by setting up an empirical framework that controls for a jurisdiction's ideological complexion and party affiliation, and that allows for the effect of national politics on local election results, this paper investigates the role of local property taxation (the Council tax on residential property) and public service performance ratings on the outcomes of the local elections that took place in England after the introduction of the CPA system.

Moreover, the paper explicitly tackles the issue of the relevance of information spill-overs from other jurisdictions' tax and public service performances in affecting the re-election chances of local incumbent governments. While the hypothesis of comparative performance evaluation in decentralized electoral processes ("yardstick voting") has recently received consistent empirical support (Case [11], Besley and Case [7], Revelli [27], Vermeir and

[1] See Dixit [14], Hoxby [19] and Propper and Wilson [25] for a discussion of the issue of performance measurement in the public sector.

Heyndels [34], Bosch and Solé-Ollé [9]), this paper formalizes for the first time the role of media networks in spreading information about local taxation and public service provision practice.

The role of the media is attracting an increasing interest within the political economy literature particularly as regards the impact of the media on voter participation and fiscal policy-making. As far as voter participation is concerned, Gentzkow [16] analyzes the impact of television's introduction on voter turnout by assigning US counties to geographic regions reached by television stations - the Designated Market Areas (DMAs) - and combining them with county-level election returns data. The evidence shows that, by crowding out consumption of newspapers and radio, entry of TV in a market discourages political engagement and depresses voter turnout. On the other hand, Oberholzer-Gee and Waldfogel [22] use information on the availability of local Spanish-language TV news in the US to estimate the impact of local television on voter turnout, and find that regulatory policies that promote media market "localism" have a significant positive impact on civic engagement. Finally, Larcinese [20] analyzes the 1997 British General Elections and finds that mass media played an important role in influencing political participation.

As for the impact of the media on policy-making, Stromberg [33] considers the unemployment relief program implemented in the 1930s in the US in order to verify whether US counties with a higher share of informed citizens - proxied by the share of households with radios - received more relief funds. Based on a political agency model where the media play a crucial role as an information provider, Besley and Burgess [6] use panel data on Indian states and find that state governments are more responsive to the needs of informed citizens, in the sense that provision of relief expenditures is higher in states where newspaper circulation is higher and electoral accountability greater. Finally, Shi and Svensson [32] show that the share of informed voters - measured by the number of radios per capita combined with an

indicator of freedom of broadcasting - explains a large part of the inter-country differences in the size of electoral budget cycles, and Brender [10] highlights the role of transparency and information quality and availability in affecting the relationship between fiscal prudence and relection chances in local government elections in Israel.

This paper aims at providing a novel contribution to that strand of literature by analyzing the role of the media - namely, the BBC local web, radio and television networks - in spreading information on English local government tax and public service performance. In particular, the paper offers empirical evidence from estimation of a re-election equation that allows for information spill-overs across jurisdictions belonging to the same "local media market" (LMM). The results show that own tax has a negative impact and own public service performance has a positive impact on incumbents' chances of re-election. However, the detrimental popularity effect of a tax increase is almost completely offset by tax increases in the jurisdictions belonging to the same LMM. As far as public service performance ratings are concerned, there is little evidence of a significant popularity effect from information flows across the authorities belonging to the same LMM, probably due to the national nature of the system of evaluation of local public service performance spurring nation-wide competition on service quality and rendering local information spill-overs less poignant.

The remainder of the paper is organized as follows. Section **2** presents the English local government institutional framework and illustrates the BBC media network. Section **3** turns to the estimation of an incumbent re-election equation based on the results of English local government elections after the introduction of Comprehensive Performance Assessment. Section **4** tackles the issue of policy endogeneity, and section **5** concludes.

2 Institutional framework

The English system of local government has an asymmetric structure, in the sense that a two-tier and a one-tier arrangement of local government coexist. In fact, while in most parts of non-metropolitan England a two-tier system is in place - comprising 34 Counties and 238 Districts - the rest of non-metropolitan England and all metropolitan areas have a single tier of government, with 47 non-metropolitan Unitary Authorities and 69 metropolitan Authorities (Boroughs).

Where a two-tier system is in place, the upper tier (the Counties) plays a predominant role. In fact, while the Districts share responsibility with the Counties in a number of environmental services (including planning and development, waste management and environmental protection), the major public service blocks - education, social care and roads and transport - are exclusive responsibility of the County governments. As a result, our empirical analysis will focus on the homogeneous group of the 150 authorities (the 34 Counties and all single-tier Authorities) having responsibility for those major services.[2]

2.1 Local taxation

The main source of own revenues for English local governments is a tax on property, the Council tax. The Council tax base is the value of residential property, with each domestic hereditament being allocated to one of eight centrally set bands of values (A to H) and corresponding Council tax dues.[3]

[2]This is the grouping approach employed by the independent commission delivering service performance ratings (Audit Commission [2]). Besley and Preston [8] base instead their analysis of the effect of electoral bias on policy choices in Britain on a sample that includes single-tier and lower-tier (District) authorities.

[3]For instance, the Council tax dues on a band A dwelling (below £40,000 value) and on a band H one (above £320,000 value) have to amount to $\frac{2}{3}$ and twice the tax set by the local government on a band D dwelling (£68,000 to £88,000 value) respectively. On the other hand, taxation of non-residential (commercial and industrial) properties has been centralized since 1990.

Due to the fact that the Council tax funds a relatively small proportion of local government expenditure (less than $\frac{1}{4}$ of total expenditures, the rest being mostly funded by central government block grants), it follows that relatively small increases in a local authority's expenditure will be reflected by a greater proportionate increase in their Council tax (the so-called "gearing effect").[4] Moreover, the fact that local authorities have virtually unlimited control over the level of the tax means that the Council tax burden on local residents is likely to play a crucial role in terms of government accountability and popularity.[5] In fact, the variance of the Council tax across local authorities is remarkable. As shown in table 1, the tax burden on a band D (£68,000-£88,000 value) dwelling ranged from £360 to almost £1300 in 2006 (CIPFA [12]).

2.2 Comprehensive performance assessment

In 2002, a system of rating of local government performance - the CPA (Comprehensive Performance Assessment) system - was introduced in the United Kingdom in order to measure how well Councils deliver services for local communities.[6] An independent body - the Audit Commision - is in charge of assessing local government performance in the provision of local public services. Based on its own audit and inspection activity, on the assessments provided by other independent Commissions (the Commission by the Office for Standards in Education (OFSTED), the Commission for Social Care Inspection (CSCI) and the Benefit Fraud Inspectorate (BFI)), as well as on

[4]Central government grants are distributed according to a formula accounting for assessed spending needs and tax base availability (CIPFA [12]).

[5]Starting from 2004, central government reserves the right to impose a "capping" on authorities setting "excessive budget increases over 6%." However, a negligible number of authorities (≤ 2 per year) were affected by those capping rules (CIPFA [12]).

[6]The interest in the measurement of local government performance is increasing in a number of countries. Recent papers by Barankay and Lockwood [4], Geys [17] and Revelli and Tovmo [30] employ indexes of local government efficiency and explore their patterns in Switzerland, Belgium and Norway respectively.

existing service performance information through national performance indicators, the Audit Commission annually delivers ratings on a 0 to 4 scale of the overall performance of the English local authorities in the provision of local public services (Audit Commission [2]).

The CPA spirit consists in looking at the performance of a local government from a range of perspectives.[7] In particular, the CPA ratings are based on a four-component framework (corporate assessment, use of resources assessment, service assessment and direction of travel assessment) whose distinct ratings are combined to generate one of five rating categories: 0 (poor), 1 (weak), 2 (fair), 3 (good), 4 (excellent).

The first component of the CPA framework - corporate assessment - aims at measuring how effectively the Council is working corporately, and with its partners, to deliver improved outcomes for local people. Each Council has a corporate assessment over a three year period, with corporate assessment teams assessing how effectively the Council is working, how well Councils understand their local communities, how this understanding translates into ambitions and priorities, and what, in practice, Councils are achieving. In particular, local government achievements are assessed and scored under the following five themes: ambition for the community; prioritisation; capacity; performance management; outcomes (sustainable communities and transport; safer and stronger communities; healthier communities; older people; children and young people).

The second component of the CPA framework - the use of resources assessment - is conducted annually and provides a judgement on how well a Council manages and uses its financial resources. The assessment focuses on the importance of a sound and strategic financial management to ensure that resources are available to support the Council's priorities, and covers the themes of financial reporting, financial management, financial standing,

[7]For a critical assessment of the ability of CPA to properly and effectively capture local government performance and public service quality, see Andrews et al. [1].

internal control and value for money.[8] Judgements are made by the Audit Commission for each theme and the scores are then combined to produce an overall use of resources score.

The third CPA component consists of annual service assessment scores that bring together existing service performance information through national performance indicators and relevant service inspections by independent inspectorates or by the Audit Commission itself. By combining the above information, the Commission delivers an overall assessment score for each of the major public service blocks.[9]

The fourth and final CPA component is an annual judgement which is meant to ascertain whether a Council is complying with its duty of making arrangements to secure continuous improvement. The assessment is scored through the use of four levels of judgement: improving strongly; improving well; improving adequately; not improving adequately or not improving.

Finally, the four CPA components are combined using rules designed to ensure that minimum standards are being met across the board, to generate one of five rating categories: 0 (poor) to 4 (excellent).

Since its introduction, the CPA system has produced five waves of Council ratings, as shown in table 2.[10] As far as overall performance is concerned, the rating system appears to have had a significant positive effect. Table 2 shows

[8]For instance, the judgement criteria refer to whether the Council's accounts are prepared in accordance with regulatory requirements and accounting standards (financial reporting), whether the Council has put in place a sound medium-term financial strategy (financial management), whether the budget is balanced (financial standing), whether the Council conducts an annual review of the effectiveness of the system of internal control (internal control) and whether costs are significantly higher than other Councils providing similar services (value for money) (Audit Commission [2]).

[9]Examples of performance indicators include the educational achievements of looked after children and the unit cost of residential and nursing care in the personal social services area; the percentage of pedestrian crossing with facilities for disabled people in the service area of environment; the average time spent by homeless people in temporary accommodation in the service area of housing; aggregate library opening hours per 1000 population in the service area of culture (Audit Commission [2]).

[10]Two of the 150 authorities (the City of London and the Isles of Scilly) are excluded from the empirical analysis because of their peculiar characteristics.

that average Council performance increased from 2.34 in the first evaluation to 3.08 in the latest, with more than half of the authorities exhibiting a performance improvement since the start of the system (Audit Commission [3]).

2.3 Local elections

English local government elections are normally held on the first Thursday in May, that is after the budget for the financial year starting on April, 1, has been made. For electoral purposes, local jurisdictions are divided into wards, each represented by a varying number (usually three) of councillors (Rallings and Thrasher [26]).

The local electoral system is heterogeneous. About two thirds of the authorities (including all Counties and London Boroughs, plus a fraction of non-metropolitan Unitary Authorities) have *en bloc* elections every four years. Over the period considered here (2003-2006), "all-out" elections took place in 2003, 2005 and 2006 in most non-metropolitan Unitary Authorities, non-metropolitan upper-tier Authorities (Counties) and London Boroughs respectively.[11] In the other localities, elections take place "by thirds," in the sense that one third of the councillors are elected every year - typically in each of the three years between the County council elections (2003, 2004 and 2006). In both all-out and by-thirds systems, all councillors are elected on a "first past the post" basis and sit for a four-year period.

The features of the electoral system make the panel data set on local election results unbalanced, both in the sense that there are more observations on some authorities than on others, and because observations correspond to different points in time. Overall, we observe 238 election occurrences and 70 government changes in the 2003-2006 time span.

As far as party representation is concerned, most jurisdictions (60%) are

[11] In some non-metropolitan Unitary Authorities, though, all-out elections took place in 2006.

ruled either by the Labour or by the Conservative party, with a steady growth of the latter party in recent years. In the rest of the localities, either Liberal Democrats are in power (8%) or no single political party has overall control of the Council (32% of authorities), meaning that a coalition government needs to be formed. The empirical work controls for party affiliation and fragmentation of local governments.

2.4 Media markets

In the presence of decentralized information provision arrangements, local communities tend to have easier access to more detailed information on the localities belonging to the same local media market. As a result, communities sharing local media information tend to work as easily available "yardsticks" against which to compare the policies of own governments (Besley and Case [7]).

Clearly, due to the number and diversity of distinct information providers (television, radio, newspapers and the internet), there exists no unique local media market definition. Local media markets are defined here based on the structure of the BBC web, radio and television networks.[12] The BBC local web site network (BBC *Where I live*) consists of 41 online sites dealing with local news, sport and entertainment. According to the latest BBC Review (BBC [5]), they are regularly used by more than 10 million distinct individuals, with above 50 million average page impressions per month. The BBC radio network consists of 37 local radios, with about eight million regular listeners and one in five of the population listening to an average of twelve hours of BBC local radio each week (BBC [5]). Finally, the BBC regional TV network consists of 12 televisions covering the regions of North East, North West, Yorkshire, East Yorkshire, East Midlands, West Midlands, West, South West, South, South East, East and London (BBC [5]).

[12]In investigating the pattern of social care expenditures in the UK, Revelli [29] uses the structure of the BBC local radio network.

We start from the most decentralized level of information provision represented by the 41 BBC online sites, and assign the 148 local jurisdictions to those BBC web markets based on their clearly defined area coverage (BBC [5]). Next, in order to avoid the occurrence of single-authority media markets, we pairwise merge eight of those BBC web markets by using information from the area coverage of the 37 BBC local radios.[13] Still, the area coverage of about half of the resulting BBC web and radio markets roughly coincides with the boundaries of a single jurisdiction. Consequently, each single-authority media market is merged with the nearest BBC web and radio market according to the area coverage of the twelve BBC regional televisions. This results in the 22 local media markets reported in the Appendix and depicted in figure 1. The size of the local media markets varies considerably both in terms of area (from less than 200,000 to over 3,000,000 acres) and in terms of number of jurisdictions (from 2 to 32). Consequently, the local media network structure overlaps but does not coincide with a bordering-based spatial structure.[14]

3 Empirical implementation

We investigate the determinants of the election results in jurisdiction i at an election held at time t by estimating a discrete response model - equation (1) below - with $E_{it} = 1$ for an incumbent government being re-elected, and

[13] In particular, based on the BBC local radio area coverage, the southern Counties of Dorset and Hampshire are pulled together in the Southampton radio market, Bradford (West Yorkshire) is merged with the Leeds radio market, Birmingham joins the rest of the West Midlands, and Newcastle radio subsumes the North East authorities of Tyne and Wear.

[14] Furthermore, unlike purely geographic interaction structures, the local media market neighborhood definition implies that any two localities belonging to a local media market of size n have $n-2$ common "neighbors."

$E_{it} = 0$ for a government being voted out of office:[15]

$$E_{it} = \mathbf{1}(\rho_\tau \tau_{it} + \rho_\pi \pi_{it-1} + \theta_\tau \widetilde{\tau}_{it} + \theta_\pi \widetilde{\pi}_{it-1} + x'_{it-1}\beta + y_i'\alpha + \eta_{it} > 0) \quad (1)$$

$$\widetilde{\tau}_{it} = \sum_{j \in LMM_i} w_{ij} \tau_{jt} \quad (2)$$

$$\widetilde{\pi}_{it-1} = \sum_{j \in LMM_i} w_{ij} \pi_{jt-1} \quad (3)$$

$$\eta_{it} = h_t + h_{it}^{PM} + \mu_i + \varepsilon_{it} \quad (4)$$

First, equation (1) includes the Council tax (τ_{it}) and the latest service performance rating (π_{it-1}) in jurisdiction i among the explanatory variables.[16] Second, equation (1) includes the Council tax ($\widetilde{\tau}_{it}$) and performance rating ($\widetilde{\pi}_{it-1}$) of the authorities belonging to the same local media market as authority i. The weights w_{ij} in equations (2) and (3) equal $\frac{1}{n_i - 1}$ if authority $j \neq i$ is in the same LMM as authority i (with n_i being the number of jurisdictions in the local media market LMM_i) and zero otherwise, meaning that $\widetilde{\tau}_{it}$ ($\widetilde{\pi}_{it-1}$) represents the average property tax (performance rating) of the authorities in the LMM.

Equation (1) also includes variables (x_{it-1}) capturing the idea that the voting decision is a complex one and that other determinants of local voting behavior should not be assumed away. Typically, voters have heterogeneous attitudes towards the incumbent, and a proportion of them may stick with their preferred party even in the presence of a high local property tax burden or poor public service performance. Moreover, we should allow for the fact that, in a relatively centralized system of government as the UK one, voters

[15] This is the same approach as Case [11] and Besley and Case [7]. Besides making our results comparable to theirs, this approach avoids the complications of dealing with vote share data and political control outcomes in a first-past-the-post electoral system generating complex seats-votes curves. Recent works tackling the seats-votes curve issue from a political economy stand are Besley and Preston [8] on the UK electoral system, and Coate and Knight [13] on US State elections.

[16] In particular, the Council tax is measured as the tax due on a band D domestic property in the financial year in which elections take place.

might hold the central government responsible for the tax and public service performance of local governments. As a result, vector x_{it-1} includes dummies for the political party affiliation of the local incumbent government elected at time $t-1$ to account for the effect of the underlying partisanship of the electorate. In addition, the stochastic structure of the model (equation (4)) allows for a time-varying impact of national politics (namely, the popularity of the Prime Minister's party) on local elections through time-party specific effects: $h_{it}^{PM} = h_t \times PM_{it}$, where PM_{it} equals 1 if jurisdiction i is ruled in period t by the same political party as the Prime Minister's, and h_t is a year dummy. In practice, since the Labour party was in power throughout the period considered here, $PM_{it} = 1$ for Labour-controlled authorities. Consequently, h_{it}^{PM} captures the cascade effect of the popularity of the Blair Cabinet in year t on Labour incumbents in local elections held at time t.

Moreover, given the heterogeneous institutional framework (comprising single-tier authorities and upper-tier authorities where a two-tier structure of local government exists) and the differences in the local electoral system, equation (1) includes a set of dummies (vector y_i) for the class of authority (London single-tier Authority, metropolitan single-tier Authority, non-metropolitan single-tier Authority and non-metropolitan upper tier Authority) as well as for the electoral rules (all-out elections every fourth year versus yearly by-thirds elections). As for the effect of the electoral system, it is reasonable to expect that government changes be less likely when elections involve only one third of the members of the Council. Finally, the stochastic term η_{it} includes standard time effects to allow for shocks that might hit all incumbents irrespective of party affiliation (h_t), random jurisdiction-specific effects (μ_i) and an innovation ε_{it}.[17]

Equation (1) is estimated on our unbalanced panel data set by Probit. As a comparison, the estimates obtained when employing a linear probability

[17]Due to the fact that the panel data set is short and that in most jurisdictions only one election occurred in the period considered, fixed effects estimation is not feasible.

model (LPM) are also reported. The estimation results are shown in tables 3 and 4. The specifications in table 3 do not allow for local media market information spill-overs and focus on the impact of own tax and public service performance on the probability of re-election. Columns (a) and (b) include the level of the property tax and the public service performance rating respectively, while columns (c) and (d) include both. Columns (a) to (c) report the Probit estimation results (in terms of marginal probability effects computed at the regressor means), and column (d) reports the LPM estimation results.

The results in table 3 show a large, negative and significant effect of the local property tax burden on incumbents' chances of re-election. At mean values, a 1% tax increase (corresponding to around £10) lowers the chances of re-election of the incumbent by about two percentage points. On the other hand, incumbent governments are estimated to be more likely to hold office in the presence of high public service performance ratings: moving up one rating category is estimated to foster the chances of re-election by about seven percentage points.

The estimated effects of the party affiliation variables suggest that local governments from the Labour party are less likely to gain re-election. However, the Labour Cabinet effect is roughly the same in each of the four years 2003-2006. Similarly, Liberal Democrats are more likely to be defeated at local elections in favour of Conservative candidates. While the authority class dummies do not play any significant role, government changes are estimated to be significantly more likely where all-out elections take place and where the degree of political competition - as measured by the presence of a politically fragmented Council where no single party holds a majority of the seats - is more intense.

In table 4, we test whether the taxes and public service performance ratings in the LMM have an impact on incumbents' chances of re-election. As far as service performance ratings are concerned, there is no evidence of a

significant effect on popularity from information flows across the authorities belonging to the same local media market. In fact, while own performance ratings retain a significant positive impact on incumbents' chances of re-election, performance ratings in the LMM are not estimated to affect the popularity of local incumbents. The above result is likely to be attributable to the national nature of the system of evaluation of local service performance: by spurring nation-wide competition on service quality relative to a unique benchmark, the CPA system should in fact make local information spill-overs less poignant (Revelli [28]).

On the other hand, while own property taxes are estimated to have a significant negative effect on incumbents' chances of re-election, the taxation level of the authorities belonging to the same local media market has a significant positive effect. It is remarkable that the size of the LMM tax effect is about the same as that of the own tax effect, suggesting that a tax increase in a jurisdiction is not detrimental to incumbents' popularity as long as it is matched by similar tax increases by the authorities belonging to the same LMM. At mean values, a 1% tax increase lowers the chances of re-election by two to three percentage points, while no effect on popularity is estimated to occur if the authorities in the LMM are raising the tax by the same amount. The above result is consistent with the view that voters evaluate their governments based on their comparative tax performance, making use of the information flowing through the local media.

Finally, the Probit model and the LPM give similar results, even though the estimates are less precise in the linear model.

4 Policy endogeneity

If politicians manoeuvre local tax rates or service performance ratings strategically, those variables will be endogenous in equation (1). However, the direction of the potential endogeneity bias is ambiguous. In fact, a government

whose perceived popularity on the eve of an election is low might either cut the tax in an attempt to remain in office - thus exerting a sort of fiscal discipline - or raise it and accumulate rents at the expense of service performance. In the former case, the estimates of the effects of tax and service performance on incumbents' chances of re-election $(\widehat{\rho}_\tau, \widehat{\rho}_\pi)$ would be biased downwards, while in the latter case - where elections serve the role of identifying and unseating rent-seeking governments - they would tend to be biased upwards.

However, while governments control taxes to a considerable extent, CPA ratings tend to adjust sluggishly and, due to the role of bureaucrats in managing service provision, are admittedly harder to manoeuvre strategically. Furthermore, as shown in section **2.2**, sluggish rating adjustment is somewhat produced by the very CPA rules, which require an important CPA component (corporate assessment) to be updated every three years.

Therefore, we allow for tax endogeneity in the Probit estimation of equation (1) by implementing the two-stage procedure developed by Rivers and Vuong [31] and discussed in Wooldridge [35]. In the first stage, the Council tax τ_{it} is regressed on a set of conventional tax determinants (z'_{it}) comprising property tax base size and composition (domestic and business), central government block grants, population size and population density.[18]

In the second stage, Probit estimation is performed on equation (1) including the residuals from the first stage $(\widehat{\nu}_{it})$, yielding consistent estimates of the coefficients scaled by the factor: $\psi \equiv (1-\kappa^2)^{-\frac{1}{2}}$, where $\kappa \equiv Corr(\varepsilon_{it}, \nu_{it})$ (Wooldridge [35]).[19] Marginal probability effects from the second stage are

[18]These variables can reasonably be taken as exogenous with respect to the Council tax setting process. In fact, the relatively low degree of household mobility (as documented in Dowding and Mergoupis [15]), coupled with the equalizing features of the grant distribution system, does not create any incentive for local authorities to compete with each other to increase their residential property tax base. Furthermore, the arguably more mobile component of the property tax base (business property) is taxed by central government at a uniform rate. Finally, since grants are distributed according to a formula accounting for spending needs and fiscal capacity, they are virtually lump-sum.

[19]In order to evaluate the validity of the instruments (i.e., instrument-residual orthogonality and correct exclusion of z'_{it} from equation (1)), and in the absence of a straight-

then computed by averaging the partial effects (ϕ) across the $\widehat{\nu}_{it}$, and are reported in table 5, column (i).[20]

When allowing for endogenous tax policy determination, the effect of own taxes is estimated to be larger than the one in table 4. That result is consistent with the hypothesis that "unsafe" governments attempt at gaining popularity by lowering the local property tax, pointing to the supremacy of the "fiscal discipline" role of elections. At mean values, a 1% tax increase is estimated to lower the chances of re-election of the incumbent by four percentage points, consistently with the view that voters are fiscal conservatives, and that incumbents manoeuvre taxes strategically when the chances of re-election are dim (Peltzman [24]). However, the evidence also highlights the role of public service performance in the local electoral process: performance ratings are estimated to have a significant positive impact on the popularity of the incumbent.

As for information spill-overs, while no significant cross-jurisdictional effect is found as far as service performance ratings are concerned, the results in table 5 confirm a significant positive impact of the taxation level of the authorities belonging to the same media market on an incumbent's chances of re-election. The size of the media market effect is such that the detrimental effect of a tax increase is almost completely offset by tax increases in the jurisdictions belonging to the same LMM.

Finally, in order to assess the tenability and generality of the above empirical evidence, table 5 reports the estimation results of the re-election equation (1) when local jurisdictions are allowed to interact within alternative "ref-

forward way of testing it in the Rivers and Vuong [31] two-stage Probit, a Sargan test of overidentifying restrictions can be performed on the two-stage LPM specification. While the null hypothesis of instrument validity cannot be rejected ($p-value > 0.30$), the Sargan test is well known to have poor (low power) properties in samples of this size (Hahn and Hausman [18]).

[20] A Wald test on the first stage random effects regressions - not reported here to save space - reveals that the instruments contribute significantly to explaining the endogenous tax variable ($p - value < 0.001$). Adding lags of those variables as further instruments has unnoticeable effects on the results.

erence groups." The results in column (j) are based on the "regional media markets" generated by the 12 BBC regional televisions reported in section **2.4**, while those in column (k) rely on a standard border-sharing criterion, according to which the set of adjacent jurisdictions of a locality constitutes its relevant information market. On the other hand, the specification in column (l) uses a non-geographic reference group definition based on the similarity in the size of population. In particular, the 148 English localities are allocated to 10 demographic bands based on the size of resident population, with the jurisdictions in the same demographic band representing the reference group of a locality, irrespective of geographic location.[21]

In neither of those specifications does the explanatory power exceed the one based on the LMM definition. As one should expect, the specification based on the regional media markets yields reassuringly similar results as the LMM-based one. However, the regional media market specification in column (j) achieves a lower likelihood and provides smaller and less precise estimates of the crucial parameters than the LMM one.

Similarly, since the LMM criterion and the border-sharing one tend to generate overlapping reference groups, the overall picture emerging from the latter is, not surprisingly, close to the one resulting from the former. However, the LMM-based model achieves a higher likelihood than the frequently used border-sharing one (column (k)), and the LMM-based estimate of the coefficient capturing the tax information spill-over is almost twice as large as the border-sharing one.

Finally, as far as the specification relying on the demographic groups is concerned (column (l)), the likelihood is considerably lower than the one based on the LMM structure, and the estimate of the cross-jurisdictional tax spill-over is small and not statistically significant, thus confirming the local nature of tax information spill-overs.

[21]The 10 demographic bands range from population less than 120,000 to population over 800,000, and are based on CIPFA [12] data.

5 Concluding remarks

Based on data on local property taxes, public service performance ratings measured on a 0 (poor) to 4 (excellent) scale, and English local government election outcomes, this paper has explored the impact of tax and public service performance on the popularity of local incumbent governments. The analysis of the determinants of local election results is performed by estimating a binary outcome re-election equation that controls both for the heterogeneous institutional features of the English system of local government and for the influence of national politics on local election outcomes. The results reveal that local incumbents are more likely to hold office in the presence of low property taxes and high public service performance ratings. Moreover, it turns out that the higher the level of taxation of the authorities belonging to the same local media market, the higher the chances of re-election of an incumbent. The size of the media market effect is such that the detrimental effect of a tax increase is almost completely offset by tax increases in the jurisdictions belonging to the same LMM, and suggests that, as far as local property taxation is concerned, voters evaluate their governments based on their tax performance relative to those of jurisdictions that share the same local media. As far as service performance ratings are concerned, there is no evidence of a significant impact on popularity from information flows across the authorities belonging to the same local media market, probably due to the national nature of the system of evaluation of performance spurring nation-wide competition on service quality.

Overall, the above evidence offers a somewhat more rounded portrait of the voter than the conventional fiscal conservative icon. In fact, it corroborates the view that the electoral fortunes of decentralized governments depend both on the tax burden they impose onto residents and on their ability to attain satisfactory performances in the provision of public services. Moreover, the fact that incumbents' popularity appears to be affected by their tax performance relative to those of jurisdictions belonging to the same local

media market points to the potentially crucial role of local media networks in shaping consensus by spreading tax-related information.

While this paper is meant to move just a first step in the process of uncovering the role of the media in conveying information on decentralized governments' fiscal performance, an explicit attempt at measuring the actual fiscal content of the information provided by the media seems to represent a potentially interesting further step in the exploration and quantification of media influence on decentralized political-economic processes.

References

[1] Andrews, R., Boyne, G., Law, J., Walker, R., External constraints on local service standards: The case of Comprehensive Performance Assessment in English local government, Public Administration 83 (2005) 639-656.

[2] Audit Commission, CPA - The harder test 2006: Guide to service assessments for single tier and county councils, Audit Commission, London, 2006.

[3] Audit Commission, Comprehensive Performance Assessment: Scores and analysis of performance, Audit Commission, London, 2003-2006.

[4] Barankay, I., Lockwood, B., Decentralization and the productive efficiency of government: Evidence from Swiss cantons, Journal of Public Economics 91 (2007) 1197-1218.

[5] BBC, English Regions Annual Review 2005/2006, BBC, Birmingham, 2006.

[6] Besley, T., Burgess, R., The political economy of government responsiveness: Theory and evidence from India, Quarterly Journal of Economics 117 (2002) 1415-1451.

[7] Besley, T., Case, A., Incumbent behavior: Vote seeking, tax setting and yardstick competition, American Economic Review 85 (1995) 25-45.

[8] Besley, T., Preston, I., Electoral bias and policy choice: Theory and evidence, Quarterly Journal of Economics 122 (2007) 1473-1510.

[9] Bosch, N., Solé-Ollé, A., Yardstick competition and the political costs of raising taxes: An empirical analysis of Spanish municipalities, International Tax and Public Finance 14 (2007) 71-92.

[10] Brender, A., The effect of fiscal performance on local government election results in Israel: 1989-1998, Journal of Public Economics 87 (2003) 2187-2205.

[11] Case, A., Interstate tax competition after TRA86, Journal of Policy Analysis and Management 12 (1993) 136-148.

[12] CIPFA, Finance and General Statistics, Chartered Institute of Public Finance and Accountancy, London, 2003-2006.

[13] Coate, S., Knight, B., Socially optimal districting: An empirical investigation, Quarterly Journal of Economics 122 (2007) 1409-1471.

[14] Dixit, A., Incentives and organizations in the public sector: An interpretative review, Journal of Human Resources 37 (2002) 696-727.

[15] Dowding, K., Mergoupis, T., Fragmentation, fiscal mobility and efficiency, Journal of Politics 65 (2003) 1190-1207.

[16] Gentzkow, M., Television and voter turnout, Quarterly Journal of Economics 121 (2006) 931-972.

[17] Geys, B., Looking across borders: A test of spatial policy interdependence using local government efficiency ratings, Journal of Urban Economics 60 (2006) 443-462.

[18] Hahn, J., Hausman, J., A new specification test for the validity of instrumental variables, Econometrica 70 (2002) 163-189.

[19] Hoxby, C., The productivity of schools and other local public goods producers, Journal of Public Economics 74 (1999) 1-30.

[20] Larcinese, V., Does political knowledge increase turnout? Evidence from the 1997 British General Election, Public Choice 131 (2007) 387-411.

[21] Maskin, E., Qian, Y., Xu, C., Incentives, information, and organizational form, Review of Economic Studies 67 (2000) 359-378.

[22] Oberholzer-Gee, F., Waldfogel, J., Media markets and localism: Does local news en Espanol boost hispanic voter turnout? NBER Working Paper No. 12317 (2006).

[23] OECD, Revenue Statistics 1965-2005, OECD, Paris, 2006.

[24] Peltzman, S., Voters as fiscal conservatives, Quarterly Journal of Economics 107 (1992) 327-361.

[25] Propper, C., Wilson, D., The use and usefulness of performance measures in the public sector, Oxford Review of Economic Policy 19 (2003) 250-267.

[26] Rallings, C., Thrasher, M., Local Elections in Britain, Routledge, London, 1997.

[27] Revelli, F., Local taxes, national politics and spatial interactions in English district election results, European Journal of Political Economy 18 (2002) 281-299.

[28] Revelli, F., Performance rating and yardstick competition in social service provision, Journal of Public Economics 90 (2006) 458-474.

[29] Revelli, F., Local media networks and social spending: Evidence from the UK, Economics Letters 96 (2007) 144-149.

[30] Revelli, F., Tovmo, P., Revealed yardstick competition: Local government efficiency patterns in Norway, Journal of Urban Economics 62 (2007) 121-134.

[31] Rivers, D., Vuong, Q., Limited information estimators and exogeneity tests for simultaneous probit models, Journal of Econometrics 39 (1988) 347-366.

[32] Shi, M., Svensson, J., Political budget cycles: Do they differ across countries and why? Journal of Public Economics 90 (2006) 1367-1389.

[33] Stromberg, D., Radio's impact on public spending, Quarterly Journal of Economics 119 (2004) 189-221.

[34] Vermeir, J., Heyndels, B., Tax policy and yardstick voting in Flemish municipal elections, Applied Economics 38 (2006) 2285-2298.

[35] Wooldridge, J., Econometric Analysis of Cross Section and Panel Data, MIT Press, Boston, 2002.

Table 1 Descriptive statistics[22]

	obs.	mean	s.d.	min	max
Incumbent re-election	238	0.70	0.45	0	1
Band D Council tax (£)	238	995.0	110.7	359.6	1279.0
Grants per capita (£)	238	730.9	217.2	284.5	1535.4
Tax base per capita	238	0.33	0.05	0.25	0.51
Population (,000)	238	315.3	223.0	34.9	1348.8
Population density	238	22.9	23.7	0.6	159.1
CPA rating	238	2.58	1.07	0	4
Conservative	238	0.26	0.44	0	1
Labour	238	0.34	0.47	0	1
Liberal Democrats	238	0.08	0.26	0	1
Fragmented	238	0.32	0.47	0	1
London	238	0.14	0.34	0	1
Metropolitan	238	0.45	0.50	0	1
Non-metropolitan single-tier	238	0.27	0.44	0	1
Non-metropolitan upper tier	238	0.14	0.34	0	1
All-out elections	238	0.45	0.50	0	1

Table 2 CPA ratings (148 authorities)

	0(poor)	1(weak)	2(fair)	3(good)	4(excellent)	mean	s.d.
2002	12	21	41	53	21	2.34	1.13
2003	9	19	39	56	25	2.47	1.10
2004	1	14	33	60	40	2.84	0.96
2005	1	8	35	65	39	2.90	0.88
2006	0	5	25	71	47	3.08	0.79

[22]Band D Council tax is the tax burden on a property in the central value bracket (band D: £68,000-£88,000). Tax base per capita is computed as the number of band D equivalent domestic hereditaments in a jurisdiction, divided by population. Population density is resident population per hectare. Fragmented = 1 f no single party has more than 50% of the Council seats.

Table 3 Probability of re-election: random effects estimates[23]

	(a) Probit	(b) Probit	(c) Probit	(d) LPM
τ_{it}	−0.0020		−0.0020	−0.0018
	(2.35)		(2.27)	(2.39)
π_{it-1}		0.0729	0.0711	0.0572
		(2.53)	(2.43)	(1.92)
Fragmented	−0.4614	−0.4153	−0.4648	−0.3564
	(4.07)	(3.77)	(3.99)	(4.00)
Liberal Democrats	−0.3485	−0.4294	−0.4011	−0.3314
	(2.17)	(2.67)	(2.40)	(2.26)
Labour	−0.4479	−0.3602	−0.4534	−0.3599
	(3.10)	(2.60)	(3.06)	(2.88)
h^{PM}_{2004}	−0.0036	−0.0416	−0.0231	−0.0693
	(0.02)	(0.25)	(0.14)	(0.47)
h^{PM}_{2005}	0.2177	0.2224	0.2126	0.2109
	(1.05)	(1.06)	(1.02)	(1.06)
h^{PM}_{2006}	−0.1177	−0.1881	−0.1684	−0.1452
	(0.79)	(1.26)	(1.10)	(1.10)
Non-metropolitan single-tier	−0.2776	−0.2897	−0.2582	−0.2190
	(1.02)	(1.12)	(0.96)	(0.87)
Metropolitan single-tier	−0.2160	−0.1890	−0.1907	−0.0992
	(0.70)	(0.62)	(0.61)	(0.34)
London single-tier	−0.3620	−0.4374	−0.3348	−0.2695
	(1.24)	(1.58)	(1.15)	(1.00)
All-out elections	−0.3272	−0.3147	−0.3401	−0.2648
	(2.56)	(2.40)	(2.59)	(2.12)
Log likelihood	−111.052	−110.753	−108.026	
Observations (authorities)	238 (148)	238 (148)	238 (148)	238 (148)

[23] t statistics in parentheses. Probit coefficients are marginal probability effects computed at the regressor means. Year effects included.

Table 4 Probability of re-election: random effects estimates[24]

	(e) Probit	(f) Probit	(g) Probit	(h) LPM
τ_{it}	−0.0029		−0.0025	−0.0019
	(2.56)		(2.71)	(2.63)
$\sum_{j \in LMM_i} w_{ij}\tau_{jt}$	0.0033		0.0029	0.0025
	(2.89)		(3.24)	(3.42)
π_{it-1}		0.0713	0.0646	0.0472
		(2.47)	(2.15)	(1.65)
$\sum_{j \in LMM_i} w_{ij}\pi_{jt-1}$		0.0794	0.0853	0.0864
		(1.15)	(1.20)	(1.26)
Fragmented	−0.5920	−0.4123	−0.5463	−0.3890
	(3.75)	(3.74)	(4.33)	(4.49)
Liberal Democrats	−0.4385	−0.4423	−0.4606	−0.3577
	(2.21)	(2.75)	(2.62)	(2.53)
Labour	−0.6619	−0.3629	−0.6172	−0.4255
	(3.39)	(2.61)	(3.71)	(3.44)
h^{PM}_{2004}	0.0012	−0.0430	0.0105	−0.0649
	(0.01)	(0.26)	(0.06)	(0.44)
h^{PM}_{2005}	0.1881	0.1761	0.1401	0.0749
	(0.79)	(0.83)	(0.61)	(0.38)
h^{PM}_{2006}	−0.0758	−0.1941	−0.1118	−0.1126
	(0.45)	(1.29)	(0.71)	(0.86)
Non-metropolitan single-tier	−0.2972	−0.2906	−0.2752	−0.2565
	(1.02)	(1.13)	(1.02)	(1.04)
Metropolitan single-tier	−0.3518	−0.1735	−0.3026	−0.2415
	(1.04)	(0.58)	(0.94)	(0.85)
London single-tier	−0.0384	−0.4239	−0.0305	−0.044
	(0.12)	(1.55)	(0.10)	(0.17)
All-out elections	−0.3570	−0.3162	−0.3585	−0.2794
	(2.47)	(2.39)	(2.62)	(2.33)
Log likelihood	−104.663	−110.087	−101.631	
observations (authorities)	238 (148)	238 (148)	238 (148)	238 (148)

[24] t statistics in parentheses. Probit coefficients are marginal probability effects computed at the regressor means. Year effects included.

Table 5 Probability of re-election: two-stage estimates[25]

	(i) Probit	(j) Probit	(k) Probit	(l) Probit
τ_{it}	−0.0039	−0.0040	−0.0039	−0.0039
	(3.24)	(3.23)	(3.24)	(3.22)
$\sum_{j \in LMM_i} w_{ij}\tau_{jt}$	0.0029	0.0023	0.0017	0.0016
	(3.26)	(2.44)	(2.68)	(1.45)
π_{it-1}	0.0689	0.0648	0.0723	0.0769
	(2.26)	(2.11)	(2.40)	(2.58)
$\sum_{j \in LMM_i} w_{ij}\pi_{jt-1}$	0.0970	0.0885	0.0211	0.0185
	(1.36)	(0.74)	(0.36)	(0.15)
Fragmented	−0.5900	−0.5802	−0.5384	−0.5229
	(4.67)	(4.48)	(4.46)	(4.39)
Liberal Democrats	−0.5178	−0.5266	−0.4871	−0.4741
	(2.90)	(2.92)	(2.80)	(2.78)
Labour	−0.6993	−0.6768	−0.6014	−0.5867
	(4.09)	(3.94)	(3.76)	(3.71)
Non-metropolitan single-tier	−0.2909	−0.3429	−0.3198	−0.3525
	(1.04)	(1.21)	(1.09)	(1.23)
Metropolitan single-tier	−0.2946	−0.2822	−0.3081	−0.2219
	(0.90)	(0.86)	(0.91)	(0.68)
London single-tier	−0.0338	−0.1630	−0.2662	−0.3901
	(0.11)	(0.53)	(0.85)	(1.29)
All-out elections	−0.3117	−0.2801	−0.2788	−0.2874
	(2.25)	(2.05)	(2.05)	(2.14)
$\widehat{\nu}_{it}$	0.0031	0.0033	0.0027	0.0035
	(1.95)	(2.14)	(1.70)	(2.27)
Log likelihood	−99.740	−102.267	−102.748	−104.933
observations (authorities)	238 (148)	238 (148)	238 (148)	238 (148)

[25] t statistics in parentheses. Probit coefficients are marginal probability effects computed at the regressor means. Year effects and year effects interacted with Prime Minister's party dummies included. Column (i): BBC local radio & web media markets; column (j): BBC regional TV media markets; column (k): border-sharing criterion; column (l): demographic markets. First stage variables: central government grants, property tax base size and composition (domestic and business), population, population density.

Appendix
Local media markets (22)

(number of jurisdictions; acreage [,000])

1) Bedfordshire, Buckinghamshire, Hertfordshire, Luton, Milton Keynes, Oxfordshire (6; 1,839); 2) Bracknell Forest, Reading, Slough, W Berkshire, Windsor, Wokingham (6; 316); 3) Birmingham, Coventry, Dudley, Sandwell, Solihull, Walsall, Warwickshire, Wolverhampton (8; 719); 4) Cornwall, Devon, Plymouth, Torbay (4; 2,565); 5) Essex, Kent, Medway, Southend-on-Sea, Thurrock (5; 1,854); 6) Gloucestershire, Herefordshire, South Gloucestershire, Worcestershire (4; 1,767); 7) Blackburn, Blackpool, Lancashire (3; 769); 8) Bradford, Calderdale, Kirklees, Leeds, Wakefield (5; 507); 9) East R. Yorkshire, Kingston upon Hull, Lincolnshire, NE Lincolnshire, N Lincolnshire (5; 2,360); 10) Halton, Knowsley, Liverpool, Sefton, St Helens, Wirral (6; 180); 11) Barking, Barnet, Bexley, Brent, Bromley, Camden, Croydon, Ealing, Enfield, Greenwich, Hackney, Hammersmith, Haringey, Harrow, Havering, Hillingdon, Hounslow, Islington, Kensington, Kingston upon Thames, Lambeth, Lewisham, Merton, Newham, Redbridge, Richmond, Southwark, Sutton, Tower Hamlets, Waltham Forest, Wandsworth, Westminster (32; 392); 12) Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Stockport, Tameside, Trafford, Warrington, Wigan (11; 364); 13) Cambridgeshire, Norfolk, Northamptonshire, Peterborough, Suffolk (5; 3,733); 14) Derby, Derbyshire, Leicester, Leicestershire, Nottingham, Nottinghamshire, Rutland (7; 1,834); 15) N Yorkshire, York (2; 2,078); 16) Cheshire, Shropshire, Staffordshire, Stoke-on-Trent, Telford (5; 2,072); 17) Bath, Bristol, N Somerset, Somerset, Swindon, Wiltshire (6; 1,943); 18) Bournemouth, Dorset, Hampshire, Isle of Wight, Poole, Portsmouth, Southampton (7; 1,700); 19) Brighton, E Sussex, Surrey, W Sussex (4; 1,364); 20) Barnsley, Doncaster, Rotherham, Sheffield (4; 388); 21) Darlington, Durham, Hartlepool, Middlesbrough, Redcar, Stockton-on-Tees (6; 756); 22) Cumbria, Gateshead, Newcastle, N Tyneside, Northumberland, S Tyneside, Sunderland (7; 3,097).

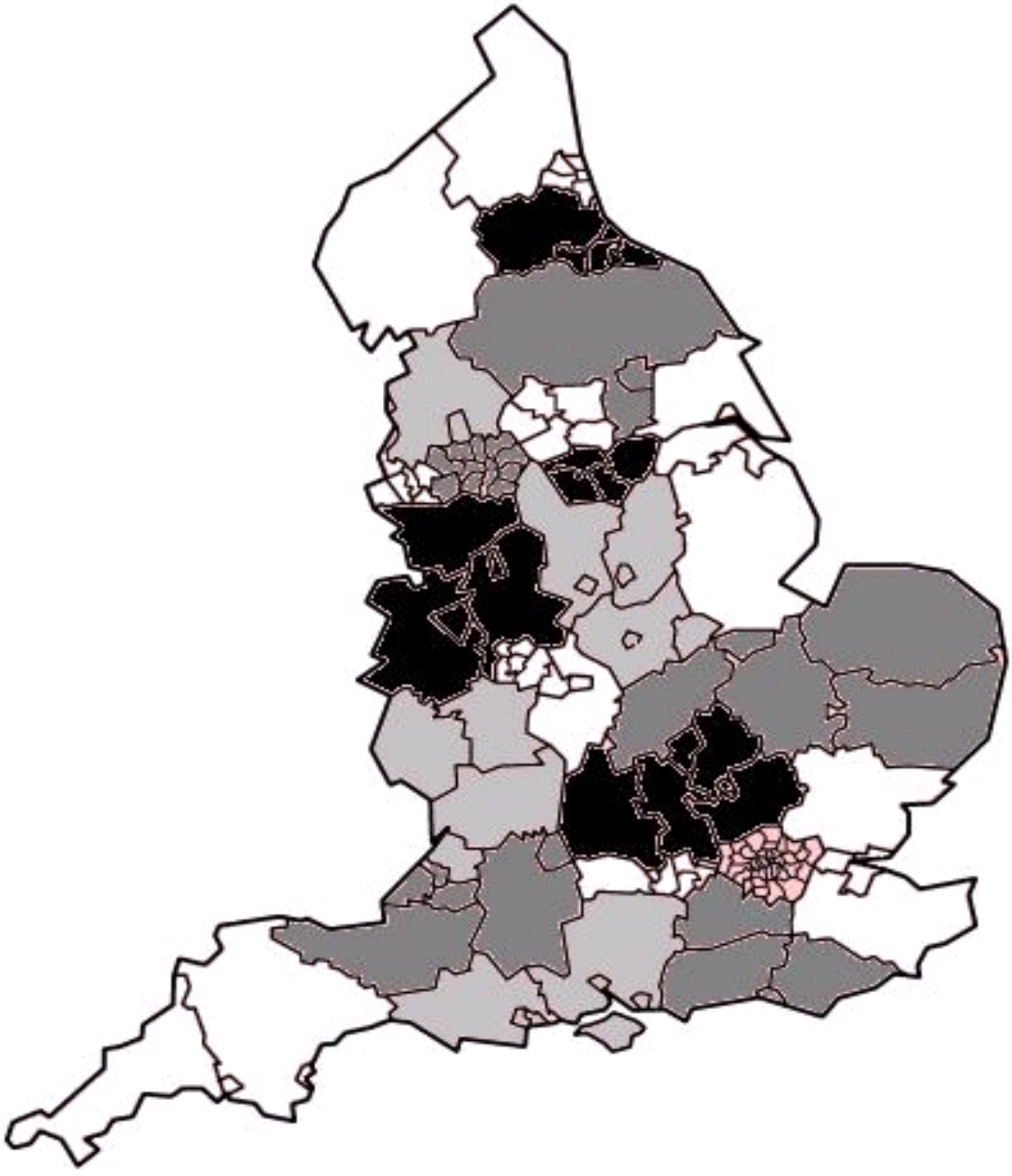

Figure 1: Local media markets