

THE IMPACT OF EXPENDITURE LIMITATIONS  
ON LOCAL GOVERNMENT SPENDING:  
EVIDENCE FROM THE UNITED KINGDOM

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## 1. Introduction.

In recent years, governments have grown increasingly concerned with the spending decisions of lower tier governments within their jurisdiction. In particular, some higher tier governments have introduced strategies which are explicitly intended to deter lower tier governments from taxing or spending beyond subscribed levels. Various reasons have been put forward for introducing such control mechanisms. These include compensating for the incentives which local councils might face to over-provide public services, or provide them inefficiently (Shapiro et al, 1979), as part of an overall strategy for reducing public spending as a share of national GDP, adjusting the boundaries between the public and private sectors and adjusting the balance of funding for local spending between taxation and user charges. Whatever the reason for central government action, the limitation of local expenditures or taxes has become more widespread in both the United States and the United Kingdom over the last two decades. In the United States, the majority of the states now exert some form of spending or property tax limitation, and since 1985 a number of local councils in the UK have been subject to a strict limitation of their expenditures. In the UK the limitations, known as "caps", were imposed by central government according to an "over-spending" criteria and during the 1980s about 5 per cent of local councils in each year were capped.

There is a relatively large empirical literature on the impact of spending and property tax limitations in the United States (see Shannon and Fischer (1976), Rafuse (1979), Preston and Ichniowski (1991), Poterba and Ruebin (1995) and ACIR(1995)). By contrast, there has been very little empirical work on the effectiveness of capping and of the impact of the policy on council's budgets and spending patterns in the U.K<sup>1</sup>. This lack of evidence is especially surprising given the availability of a rich set of information available at local council level, for example data exists on the budgets of local councils at a disaggregated level plus a large set of potential co-variates.

The aim of this paper is to study the impact of the capping regime in England and Wales on local council spending. We focus on the eight year period from 1983-84 through to 1990-91, since during this period there exists a comparison group of councils which were not directly affected by the capping arrangements. We test a number of hypotheses concerning the impact of capping on local authority budgets. First, we investigate whether "capped" local councils did set lower budgets than would otherwise be the case. Second, since local councils in Britain provide a range of major services such as primary and secondary education, social services, highway maintenance as well as other municipal services, a second aim of this paper has been to investigate whether the impact of expenditure limitation has fallen more heavily on some services than on others. Finally, we examine measures of service standards or outputs for some

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<sup>1</sup>Duncan and Smith (1995) examined the assessment of spending need in the presence of expenditure limitation provisions using data from the U.K.

key local services to identify whether control of spending has been achieved at the expense of any noticeable deterioration in the quality of services offered by "capped" local councils.

In order to carry out this empirical study we have created a comprehensive longitudinal data set covering over 450 local councils in England and Wales during the period 1983-1990. The data set includes a range of budgetary information for local councils, such as total spending, spending on individual services, grant income, possible indicators of service quality such as pupil-teacher ratios in schools, information on local politics, time varying information on local economic conditions, a range of demographic information and a set of capping indicators. A key objective of constructing such a panel data set, aside from the advantage of over 3000 data points, is to control for time-invariant unobservable heterogeneity between local councils and the effects of uniform shocks impacting on all local councils in particular years. To address concerns that the non-random selection of authorities for expenditure limitation might reduce the value of our comparison group and bias our results, we exploit additional information in the data set on the actual criteria used by central government to select which authorities were to be capped but which might reasonably be expected not to exert an independent influence on local budgetary decisions.

The structure of the paper is as follows. In section 2, we briefly outline both the structure of local government in England and Wales during the period of the study and how the government's capping policy operated. We provide some descriptive information on the data set and compare the spending levels of capped and uncapped councils over the period. Section 3 sets out the empirical model and identifies the key estimation issues. Section 4 provides the results of our estimation work and a discussion of our findings. Section 5 concludes.

## 2. UK Local Government and Capping.

During the period from 1983 to 1990, the local government structure in England and Wales had an upper tier of "county councils" which were responsible for the provision of the major local services such as education, social services and transport and a lower tier of "district councils" which provide a range of municipal services such as parks and refuse collection. The major exception to this general pattern was within London and the major metropolitan areas where the districts were responsible for a greater number of services, especially after 1986, when the county tier, including the Greater London Council, were abolished. In 1984 central government introduced legislation which gave it powers to cap the expenditure of local councils in England and Wales. The powers were first introduced in the financial year 1985-86. Figure 1 shows aggregate local authority expenditure as a proportion of GDP over the period of study. It can be seen that local government spending as a proportion of GDP declined during the 1980s by close to two percentage points.

Table 1 shows the number of local councils which were capped in each year<sup>2</sup> Several councils were capped on a number of occasions such as the London Borough of Camden (capped 6 times during the period). The capping criteria were determined by central government each year and could be applied if central government thought the local council's budget "to be excessive with regard to general economic conditions". Specifically, central government would set a maximum budget which the council could set the following year if it deemed the local authority to have set a budget which was excessive compared to a central assessment of spending need, and which represented too great a year on year increase in spending.

Figure 2 shows the expenditure levels for those councils responsible for major services such as education, social services and transport grouped according to whether they were capped or uncapped in 1987-88. It can be seen that, in general, capped councils were higher spenders in per capita terms than uncapped councils. The fact that some councils remained uncapped but had a greater level of per capita expenditure than councils of a similar type which were capped can be explained by a number of factors. Some uncapped councils may have had relatively high assessments of their needs by central government. Others may have high but slowly growing or even decreasing expenditure and so would have escaped the capping arrangements. The appendix provides further descriptive information on the data and details on their sources.

To study the impact of capping on local councils, we have created a panel of local councils in England and Wales over the 8 year period from 1983 through to 1990. Throughout the period, we observe 43 different councils being capped on a total of 96 occasions according to the standard criteria, of which 18 were capped more than once. A total of 413 councils were never capped during this period.

Whether capping effectively restricted the spending of capped councils and/or affected the spending patterns across various services is clearly an empirical issue, which we address in the following section.

### 3. Modelling Local Council Spending under Capping.

We stated earlier that there is very little evidence of the effect of capping on local council's spending using data from the United Kingdom<sup>3</sup>. Most of the empirical literature relates to the United States. This is neatly summarised in by the Advisory Council on Intergovernmental Relations (1995). Broadly, the US empirical literature has found that expenditure or tax limitations do have a negative impact on expenditure by local jurisdictions. In particular, Preston and Ichniowski (1979), using a panel

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<sup>2</sup>Appendix Table 3 provides information on which councils had their expenditure capped in each year.

<sup>3</sup>Duncan and Smith (1995) is the only UK study of note. Their empirical analysis, however, was limited to a single cross section of lower tier district councils.

data set covering municipalities from all 50 states, found that limits had a significant negative impact on property tax revenue growth and a smaller, though still significant impact on local government revenue growth. Shannon, Bell and Fisher (1976), using a cross-section of data from all 50 states in 1974, found that per capita expenditure was 6%-8% lower in those states that had some form of local tax rate or levy limit.

This study also looks at the impact on per capita expenditures in the United Kingdom but it adds to this literature further by assessing the impact of capping on spending on individual local services such as education and social services and various possible indicators of the quality of local service provision.

Our starting point is to consider the problem for a median voter who is residing in local authority  $i$  and is assumed to consume a composite private good  $x$  and a locally provided public service  $z$ .  $d_i$  is a vector of characteristics which reflects the demographic composition of the median voter and authority specific tastes. The median voter maximises current period utility with respect to the level of the locally provided public service, i.e.:

$$\max_z U = U_i(x; z; d_i) \quad (3.1)$$

subject to the budget constraint shown in (3.2) where the individual's tax price for a unit of the service is and is assumed to be equal to  $\frac{w_i}{N_i}$  where  $w_i$  is the cost of providing a unit of the service and  $N_i$  is the number of taxpayers in the jurisdiction. Spending on local services per head is accounted for by  $e_i$  which is simply the product of the cost of services,  $\frac{w_i}{N_i}$ ; and the volume of local public service provided by the council,  $z_i$ . The individual's private income is  $y_i$  and the external support per head of population from central government is depicted by  $s_i$ .

$$x_i + \frac{w_i}{N_i} z_i = y_i + s_i \quad (3.2)$$

The local authority budget,  $e_i$ ; is constrained to the expenditure limit,  $\hat{e}_i$ ; if the council has its budget capped as in (3.3). We shall discuss the implications of the factors influencing the decision to cap when discussing endogeneity issues later in this section.

$$e_i \leq \hat{e}_i \quad \text{if the council is capped} \quad (3.3)$$

It follows from the above maximisation problem that the desired level of spending per capita,  $e_i^*$  can be expressed as a function of the characteristics and tax price faced by the median voter, and local incomes. We allow for the possible existence of spillover effects - that local public spending may be more responsive to additional grant income to the local authority than an equivalent amount of additional income to local citizens (see Gramlich, 1977; Fischer, 1982) - by including local personal incomes,  $y_i$ ; and external support,  $s_i$ , separately:

$$e_i^a = \frac{1}{2} D_i(y_i; s_i; \frac{1}{2} d_i) \quad (3.4)$$

We have stated that it is central government that determines whether a local council is capped or not. Clearly, the above equation will be constrained to  $e_i$  if the council is capped. The first question we pose in this study is whether capping made any difference to a local council's spending during the 1980's. In the ideal, we would like to know what the spending of the capped councils would have been if they were left free to determine their own spending levels. To test whether capping did in fact reduce a council's spending compared to what it might otherwise have been we consider the following equation which is an expression for actual local council spending per capita,  $e_{it}$ , in a given period.

$$e_{it} = (1 - \text{Cap}_{it}) e_{it}^a + \text{Cap}_{it} e_i + \pm_{it} \quad (3.5)$$

The above indicates that a council will only deviate its spending from its desired level if it is capped, i.e.  $\text{Cap}_{it}=1$  or otherwise  $\text{Cap}_{it}=0$ , or if there is some shock the size  $\pm_{it}$ . We use the empirical specification in (3.6) as the basis for our analysis of the impact that a council being selected for capping has on a local council's real expenditure per head in period  $t$ ,  $e_{it}$ :  $n\text{Cap}_{it}$  is a term which picks up the number of times a local authority's budget has been capped,  $\beta_i$  represents any time-invariant specific effects on local spending such as historical and cultural differences between councils,  $\zeta_t$  picks up any uniform stochastic shocks which impact on council spending in particular years. During this period, variations in the tax base and in the variable costs of providing services between councils were fully compensated through a comprehensive system of equalising grants. As a result, the tax price does not enter our equation.

$$e_{it} = \alpha + \mu n\text{Cap}_{it} + \beta y_{it} + \gamma s_{it} + \delta d_{it} + \zeta_t + \beta_i + \epsilon_{it} \quad (3.6)$$

In order to control for the effect on expenditure of unobserved time-invariant factors that are likely to be correlated with the observed time-varying influences we estimate our model in first differences form.

$$\Delta e_{it} = \mu \Delta \text{Cap}_{it} + \beta \Delta y_{it} + \gamma \Delta s_{it} + \delta \Delta d_{it} + \Delta \zeta_t + \Delta \epsilon_{it} \quad (3.7)$$

The above variables are all in per capita terms.  $e_{it}$  is the log of per capita council spending financed out of local taxes and general grant support from central government. It is this definition of council spending that was capped by central government. Unfortunately, reliable district level information on incomes does not exist in the UK so we have used county level information on incomes ( $y_{jt}$ ) where the  $i$ th district is covered by the  $j$ th county. We have also controlled for the influence of various other locally varying economic variables such as the proportion of the population who are unemployed ( $u_{it}$ ) and the number of firms registered for Value Added Tax per capita

( $v_{it}$ ); which may proxy for changing patterns of business activity within a local area. We include in  $d_{it}$  the proportion within each 7-year age group from under 7 to over 80 ( $a_{it}$ ): This is particularly important since education and social services account for a large proportion of council spending and these budgets are focused on the young and the elderly. We exploit a range of information on political influences on the local council such as whether the council is controlled by the right of centre Conservative party ( $C_{it}$ ) and the share of the seats on the council held by both the Conservatives ( $CS_{it}$ ) and the left of centre Labour party ( $LS_{it}$ ). We also include information on which councils face elections in each year ( $E_{it}$ ) and a set of time dummies, ( $\pm_t$ ): Thus, the form of the equation when estimating the expenditure equations throughout this study is the following:

$$\Phi_{e_{it}} = \mu Cap_{it} + \hat{A}\Phi y_{it} + \tilde{A}u_{it} + !v_{it} + \circ\Phi s_{it} + \hat{1}\Phi C_{it} + \hat{2}\Phi CS_{it} + \hat{3}\Phi LS_{it} + \hat{4}\Phi a_{it} + \pm_t + \Phi''_{it} \quad (3.8)$$

One issue which arises in the estimation of our model in first differences is the possible endogeneity of the capping dummy. This is because a council may be capped in year  $t$  if its absolute level of spending in year  $t-1$  in relation to both central government's estimate of its spending need in year  $t-1$ , and the percentage change in its expenditure since year  $t-2$  has been deemed "excessive". This clearly violates the assumption that the explanatory variables should be orthogonal to the residual term when we estimate the model in first differences form. To address this issue, we propose instrumenting the capping dummy, using the other explanatory variables as in the main regression, which we denote  $X_{it}$ ; together with an indicator of the level of the council's spending (relative to central government's assessment of its spending needs) lagged two years,  $OVERSPEND_{itj-2}$ ; and an indicator of whether the local council was capped in previous years (since the rules were tougher for serial offenders)<sup>4</sup>. Thus, the form of our first round regression is :

$$Cap_{it} = \hat{1}Cap_{itj-1} + \hat{2}Cap_{itj-2} + \hat{3}OVERSPEND_{itj-2} + \hat{4}X_{it} + u_{it} \quad (3.9)$$

Identification is achieved by assuming that the variables excluded from the main regression (3.8) are orthogonal to the error term  $\Phi''_{it}$ <sup>5</sup>: To correct for the endogeneity of the capping dummy variable, a generalised residual is calculated and entered, along with the actual value of the capping dummy, in our main regression<sup>6</sup>. Since

<sup>4</sup>We easily reject the null of instrument irrelevance at any reasonable level of significance.

<sup>5</sup>Results for the first round regression are shown in Appendix Table 2. The results are robust to using only  $OVERSPEND$  as an identifying restriction. This does not require any assumptions to be made concerning the dynamics of the underlying error structure.

<sup>6</sup>The generalised residual from the probit is calculated following Gourieroux et al. (1987). The correction for endogeneity then follows the augmented regression approach discussed in Holly (1982) and Pagan (1986).

we have over-identifying restrictions, this can be tested formally using a Sargan test. Throughout this study we assume income, grant and politics to be exogenous.

## 4. Empirical Results.

Here, we present the results using the empirical model in equation (3.7). We estimate a first differences model in which changes in an authority's expenditure are explained by the impact of capping and a range of other influences on local spending such as changes in grant income, local economic and political influences, and whether local councils face an election. We include a full set of year dummies to capture any macro-economic influences which may have impacted on local councils uniformly within particular years. Estimation in first differences controls for any unobservable characteristics of a local council which are invariant over time.

### 4.1. Aggregate Spending Results

Table 2 shows the results of our estimated equations. Using data for English and Welsh local councils during the period from 1983 through to 1990, column 1 shows the results from an OLS regression in first differences which indicates that capped councils may spend 7% less in real terms<sup>7</sup> than councils spending at their desired level. The IV results in column 2 show that once we take into account the endogeneity of the capping decision the reduction in spending increases by a further percentage point to 8%. This figure is reduced to 6% if we include use of reserves in the definition of aggregate council spending, suggesting councils may have avoided some of the consequences of being capped by running down their reserves. Interestingly all of these results are within the 6%-8% range of expenditure reduction found in the empirical literature from the United States.

The other explanatory variables all appear to impact local spending in the direction we might expect. Increases in central government grant and the share of council seats won by the Labour party have a positive impact on spending. The former result suggests that changes in central grant have a greater impact on local spending than on local tax rates. Increases in the Conservative party share of the seats on the council, switches to Conservative party control, and the proximity of local elections all have a negative impact. In the latter case, this accords with evidence that councils maintain spending levels in election years whilst reducing tax rates by running down reserves. We note that spending growth is higher amongst those councils which provide education and social services, the demand for which is likely to have a relatively high income elasticity of demand. The other dummy variables control for shocks to

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<sup>7</sup>Spending refers to spending financed from central government grant and local tax revenues but not from running down reserves.



particular groups of councils in particular years resulting from a reorganisation of the structure of local government in the metropolitan and London areas in the mid 1980's.

#### 4.2. Specific Services

One might expect that the placing of an external constraint on local council spending choices would have a differential impact between services. Indeed, if we were to view the reduction in local council budgets in much the same way as a reduction in local incomes, then we might expect the services which would bear the brunt of the cuts to be those where demand had the highest income elasticity. A limited empirical literature on the impact of expenditure limitations on the composition of local spending already exists. Galles, Long and Sexton (1995) found that education spending was lower as a result of Proposition 13, but this largely reflects decisions made by the state government to apply expenditure limits to school districts. Noam (1979) considered the impact of local spending cuts on the composition of budgets, using referendum data from jurisdictions within the Swiss Canton of Basle. He estimated the elasticity of  $n$ -ve types of spending to increases in spending, finding that all were normal goods, and some evidence that spending on education and social programmes had an income elasticity of greater than one.

One possible complication to such a simplistic model would be the possibilities for local residents to substitute between public and private alternatives for certain services, since capping, if it reduces the budget of the local council by constraining local tax rates, effectively increases the income available to spend on private goods. Many local public services compete directly with private alternatives such as leisure centres. For other services, such as libraries or police services, alternative providers such as book-shops, private security firms or security apparatus also exist. In other local services, cuts in council spending can, at least in part, be substituted by "top-up" funding from users of the service, such as the purchase of school books by parents. Thus, a council faced by an external budgetary constraint might be expected to place the largest burden of any expenditure cuts on services with high income elasticities of demand such as education, or those where the income elasticity of demand for public provision may be tempered by the possibility of substituting for private sector alternatives.

Capping appears to have had a substantial impact on education spending, the most important local service in terms of budget shares. Table 3 shows that capping appears to reduce spending on the three major local services. Using the instrumental variables approach outlined above, we find that capping reduces spending on education and social services by around 4% and on transport by 7%.

Table 4 shows the estimated impact of the capping arrangements on spending on a range of the minor municipal services such as leisure services, libraries, refuse collection and parks. We have a far greater number of observations for the impact of capping on

some of these services since they are provided by both small district councils in the shire areas as well as the major urban councils within London and the metropolitan areas. We find significant effects of capping on spending for some services such as parks (5%) and libraries (3%) but not for others such as museums or refuse collection, where the coefficient on the capping variable is negative but not significant, although we did not have access to information on which councils had contracted out services such as refuse collection during this period.

### 4.3. Service Quality

Finally, table 5 shows the impact of capping on a limited range of indicators of the standards of service provided by local councils. This suggests that capping a local council may lead to increases in class sizes in both primary and secondary school levels, suggesting that lower education spending has been associated with a reduction in the quality of local services. This is consistent with evidence from U.S. data (Figlio, 1997). The picture on the discretionary provision of free nursery places for the under 5's is less clear, once we use IV techniques. We could not detect any impact on the amount of hours which councils devote to home-help services (caring for typically elderly individuals living at home) although capping did appear to lead to less expenditure on administrative staff. Capping appears to reduce both staffing levels in local libraries and the level of book lending activity.

## 5. Conclusions.

We have presented evidence that expenditure limitation or "capping" has had a significant negative impact on expenditure using data from the United Kingdom over the period from 1983 through to 1990. We found evidence that capping may reduce overall local council spending by close to 8%.

Expenditure limitation appears to have had a differential impact between different types of local services. There is evidence that education, which represents roughly 40% of total council spending, has taken the brunt of the impact of capping. We have some evidence that class sizes were higher than they otherwise would have been in those councils which have been capped.

In addition, we find significant effects of capping on spending for some services such as parks and libraries but not for others such as car parks or refuse collection, although the sign of the coefficient on capping is always negative. We also find that expenditure limitation is associated with reduced levels of both staffing and book lending in local libraries.

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## 7. Appendix

### 7.1. Data Sources

- <sup>2</sup> Details of local councils spending (both total and disaggregated), populations and block grant income came from Finance & General Statistics which is published annually by the Chartered Institute of Public Finance Accountants (CIPFA).
- <sup>2</sup> Indicators of service quality, additional spending data and cost/revenue ratios for certain services came from Local Government Comparative Statistics, published annually by CIPFA.
- <sup>2</sup> Political data was obtained from the Local Government Chronicle Elections Centre.
- <sup>2</sup> Local economic and demographic variables were obtained from the National Online Manpower Information System (NOMIS) and Economic Trends, published by the Office for National Statistics (ONS).
- <sup>2</sup> Details of the councils that were 'capped' in each year came from the relevant Rate Limitation Report or from press releases, published by the Department Of Environment.

### 7.2. Description

A dummy variable was created for whether or not a council was capped in that financial year.

The political variables used in the regressions are the percentage share of the seats on the council for both the Conservative and Labour parties, and a dummy variable for whether the Conservatives held political control of the council. The political data corresponds to control of the council during the period when annual budgets are determined. To control for the effect of elections on spending, a dummy variable was used for whether there was an election in the May following the budget. Any additional effect of this being an all-out election was also controlled for with an additional dummy.

Both expenditure and grant used in the regressions are deflated using a local authority pay and price index to 1990 prices and calculated per capita. Total expenditure is the amount raised from local taxation (domestic and non-domestic rates), and the block grant, it does not include expenditure financed by specific grants, user charges or the use of reserves. The figure for grant is the total unhyphothecated grant received from central government, including the London equalisation grant, and also national non-domestic rates in 1990. Also included in the regressions is an interaction with grant and the dummy variable for those councils providing front line services. This is to pick up the potential of differing effects of grant on expenditure in larger councils.

Unemployment and the number of firms registered for VAT are both converted to per capita terms. The income variable used is average disposable household income,

calculated at place of work. For this reason we use district level data in the metropolitan areas of England, whereas in Wales and shire England the county level figure is used. Income is also deflated to 1990 prices

The effect of the demographic composition of the local area on spending was controlled for using the proportion of the population in each of seventeen age groups (under 5, 5-9, 10-14 through to 75-79 and then those over 80).

A dummy variable was included for councils which provided front line services such as education. This is because it is possible that councils that provide different packages of services (with different income elasticities) to experience different growth in expenditure over time. Dummy variables were used to control for changes in the structure and the responsibilities of local councils. An additional indicator controlled for grant changes in 1990, which largely resulted from changes in the local tax base.

Appendix table 1 shows the mean values of each of the independent variables of interest, and also provides an indication of their distribution between councils.