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# The impact of government structure on local public expenditures

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**Abstract** Though the relationship between local government structure and expenditure has received considerable attention, there is little consensus as to how the features of representative government affect local expenditure. An exception is city council size, which has consistently been found to be positively related to spending. Previous results rely on cross-sectional estimation which may be subject to omitted variable bias. This paper analyzes three components of municipal governments—the form of government, the size of the city council, and the election method of city councilors. Once fixed effects estimation is employed, the positive relationship between city council size and expenditure disappears.

**Keywords** Local government · City manager · Law of 1/n · Election method · Council size · Government expenditure

## 1 Introduction

Municipal governments are organized in a variety of ways and provide a wide array of public services. In 2002 local public expenditures approached $367 billion, accounting for approximately 3.5% of gross domestic product or roughly one-fifth of federal government expenditures.[1] While a vast literature on the determinants of public expenditures exists, the link between local government structure and expenditure decisions is still not well understood.

This paper analyzes the impact of three components of government structure on municipal expenditure to determine if altering the form of government, city council size, or the

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[1] Municipal government expenditures are obtained from the 2002 Annual Survey of State and Local Government Finances, published by the Census Bureau (2002). The 2002 federal total government expenditure is obtained from the Consolidated Federal Funds Report for Fiscal Year 2002, published by the Census Bureau. GDP for 2002 is found in the 2003 Statistical Abstract of the United States, published by the Census Bureau. The percentages referenced have been calculated from the figures obtained in the aforementioned publications.

election method of city council members has a clear impact on expenditure levels. Though a number of articles address the impact of government structure on local public expenditures, a consensus has not yet emerged.[2] Previous work also implicitly links expenditure levels and economic efficiency. I attempt to reconcile the divergent findings of previous research and to more accurately determine the effects that local government structure has on public expenditure. Additionally, this paper questions the use of expenditure levels as a proxy for the efficiency of local governments.

This paper makes several contributions to the literature. First, I have compiled a comprehensive dataset that includes demographic, financial, and government structure variables for thousands of U.S. cities from 1980 to 2000. Second, I am able to estimate public expenditure regressions cross-sectionally over multiple time periods. By doing so, I test the robustness of the findings from previous work. Third, the panel nature of the data allows me to identify the effects of institutional change and allows for the use of fixed effects estimation. The use of fixed effects models minimizes bias stemming from unmeasured time-invariant city-specific factors.

Previous work finds that larger city councils are associated with higher levels of public spending. However, results from the fixed effects models show that city council size has virtually no impact on expenditures. This study also finds that expenditures are invariant to the method of election and form of government for all sample sizes and models.

This paper is organized as follows. Section 2 provides some institutional background on the structure of local governments in the United States. Section 3 reviews the relevant literature with an emphasis on the established views pertaining to form of government, council size, and method of election. Section 4 discusses the data and methodology used in determining how these three components of local government structure affect public expenditure. Section 5 discusses and displays the empirical results. Section 6 concludes by summarizing the findings and offering ideas for future research.

## 2 Institutional background

Municipal governments in the United States vary along three dimensions: the assignment of administrative authority, the size of the governing body, and how representatives are elected.[3] Administrative authority is determined by the form of government, which is classified according to five categories: mayor-council, council-manager, commission, town meeting, and representative town meeting. The two predominant forms of government are the mayor-council form and the council-manager form.[4] The mayor-council form of government consists of an elected city council that serves as the legislative body and a separately

[2] See Table 1 for a description of the findings in the previous work.

[3] "The term municipal governments refers to political subdivisions within which a municipal corporation has been established to provide general local government for a specific population concentration in a defined area, and includes all active government units officially designated as cities, boroughs (except in Alaska), towns (except in Minnesota, New York, Wisconsin, and the six New England states), and villages." See 2002 Census of Governments, "Government Organization." U.S. Census Bureau, 1:1, December (2002).

[4] This analysis is limited to municipalities utilizing either the mayor-council or the council-manager form of government. This is done in order to facilitate comparisons between this research and previous work. I exclude municipalities that utilize commissions, town meetings, and representative town meetings as their form of government. This exclusion is reasonable in that these three other types are rare and they are subject to some strange anomalies. For instance some New England towns utilizing the representative town meeting form report their city councils as including around 450 members.

elected mayor who holds administrative authority or executive powers. The council-manager (also referred to as the city manager or professional manager) form consists of an elected city council that appoints a city manager. In this form of government the city manager acts as the administrative head of the city. A distinguishing feature between the two types of government is who selects the administrative head—the voters or the council members.

According to the International City/County Management Association (ICMA) (2004), the council-manager form of government is the fastest growing form for U.S. municipalities. ICMA encourages cities to hire professional managers in an effort to enhance the responsiveness and efficiency of local governments. City managers are trained in administering local government programs and may have experience in managing a number of different cities throughout their careers.[5] This would lead us to believe that managers' expertise would result in provision of public services that more closely satisfies productive efficiency.

The city manager argument focuses on productive efficiency, which in terms of expenditure, is reached when a given level of service is provided at the lowest possible cost. However, this definition of efficiency ignores the selection and distribution of city services. Another component of efficiency, allocative efficiency requires that the 'correct' or desired level of services be provided as accomplished by equating citizens' marginal valuations with the marginal provision costs. Although city managers may have more administrative expertise than elected mayors, they do not face the electoral constraints that act to limit the behavior of mayors. Managers generally serve at the pleasure of the city council and are somewhat insulated from the preferences of voters. In contrast mayors face re-election and thus may be more responsive to voter preferences. It may in fact be the case that mayors are more in tune with citizen preferences and are thereby more likely to achieve allocative efficiency by providing the desired level of service. A limitation of expenditure analysis is that the level of public expenditures does not provide a direct measure of either productive or allocative efficiency.

Whether the form of government is mayor-council or council-manager, an important component of the government is the council. City councils are governing boards that are typically composed of five to seven elected members who set city policy.[6] In addition to setting policy, city councils also approve the annual budget and determine city services. Though the responsibilities of the council members may differ from city to city, a majority of the tasks performed by the council are consistent across municipalities. The council members appoint the city manager (if the city has one), the city attorney, municipal court judges, the city auditor, and the city secretary. Councils may also be responsible for setting the tax rate, selling municipal bonds, and approving ordinances and resolutions.

Councilors are either elected at-large or by district. District elections require the municipality to be divided geographically into wards or districts. Voters can cast ballots only for a candidate running to fill the seat assigned to represent their geographic region. In contrast, with at-large elections, all voters in the city are eligible to cast a ballot for the candidate of their choice. In many cities a mixed system is used, with some councilors elected by district and others elected at-large.

[5]ICMA "The Council-Manager Form of Government: Answers to Your Questions" p. 2 from http://www.icma.org/upload/library/IQ/114238.htm.

[6]ICMA, *The municipal yearbook* (2004).

## 3 Literature review and hypotheses

Established theories in public choice economics suggest expected effects of council size, election method, and government form on municipal expenditures. Weingast et al. (1981) assert that as the number of districts increases, spending will also increase. Known as the "Law of 1/n," their theory rests on the assumption that a city-wide tax is used to finance a project in a specific district.[7] Thus as the number of districts increases, the cost share of a particular district decreases and therefore larger and more expensive projects will be approved and undertaken by the municipality. If all city councilors are elected at large then the push to approve many large and expensive projects would be muted since the councilors are no longer pandering to the whims of specific geographical regions within the city.[8]

Buchanan and Tullock (1962, p. 121) state that "the rational participant will recognize the time sequence of political choice. Moreover, this will cause him to seek 'gains from trade,' when possible, by exchanging his vote on one issue for reciprocal support of his own interest by other participants on other issues." Vote trading (i.e., logrolling) likely increases when the costs of the projects seem slight or difficult to measure (ibid). Vote trading is nearly inevitable when majority votes must be obtained in order to pass legislation. Logrolling may play a large role in determining the effect of council size on expenditures. Presumably, as the size of the city council increases (and it becomes more important to trade votes to get a project passed), there will be an increase in the number of projects approved. With more projects receiving approval, expenditures will likely rise in order to fund them.

Table 1 highlights some of the previous research on the relationship between government structure and the level of municipal expenditures, including the relevant findings and study characteristics.

Notice that most of the previous work utilizes cross-sectional analysis with population thresholds and somewhat small sample sizes. More importantly, most studies treat the structure of local government as exogenous. But if the local government structure produces "inefficient" expenditure choices, we would expect that the government structure would eventually change. Two mechanisms can stimulate such change: either people will Tiebout (1956)-sort away from municipalities that possess "inefficient" government structures, or direct voter control will put pressure on cities with inefficient structural characteristics to make the necessary changes.

Sass (1991) and Fahy (1998) address the possibility that the constitutional structure of voting organizations is endogenous. They focus on the difference between representative and direct democracies and find that once endogeneity is controlled for, there are no longer differences in the expenditure levels of the two government forms.

When focusing solely on city manager and mayor council governments, theory suggests that city managers would be more cost-effective at providing public services and therefore they would have a negative impact on expenditures. Booms (1966) explained this result with the idea that city managers are less responsive to special-interest lobbying because they are appointed and therefore unconcerned about getting reelected. Deno and Mehay (1987) argue that mayor-council cities may be more likely to have a negative effect on expenditures

[7] The same logic might apply to councilors who represent/identify with specific constituencies.

[8] Note that it is possible for candidates elected at large to favor a particular district or even a particular constituency group. For instance, some cities require councilors to reside within specific districts or to run for a specific seat within a city. However, this favoritism should be less likely from at-large elections given that the councilors need to be reelected on a city-wide basis. If they pander solely to a particular region or group of constituents they are likely to lose votes from all other regions or groups within the city.

**Table 1** Previous studies of government structure and local public expenditures

| Study | N | Year(s) | Min. pop. size | Time series/ cross section | Mayor effect | District election effect | Council size effect |
|---|---|---|---|---|---|---|---|
| Booms (1966) | 73 | 1960 | 25K | CS | + | | |
| Morgan and Pelissero (1980) | 11 | '48–'73 | 25K | TS | 0 | 0 | |
| Mehay and Seiden (1986) | 152 | 1982 | 50K | CS | 0 | | |
| Deno and Mehay (1987) | 191 | 1982 | 25K | CS | 0 | | |
| Zax (1989) | 1,305 | 1982 | * | CS | | | + |
| Farnham (1990) | 735 | 1981 | 10K | CS | 0 | 0 | |
| Reid (1991) | 58 | 1980 | * | CS | 0 | 0 | |
| Langbein et al. (1996) | 185 | 1980 | 25K | CS | | 0 | + |
| Southwick (1997) | 1,757 | 1986 | 10K | CS | | + | |
| Baqir (2002) | 1,972 | 1992 | 10K | CS | 0 | 0 | + |
| Bradbury and Stephenson (2003) | 154 | '92–'97 | ~ | CS | | 0 | + |

*indicates that it is unknown as to whether a population threshold was included

~indicates that a population threshold was not imposed

primarily because the mayor is elected separately from the council. They argue that the separation of powers allows the mayor to keep the expenditure decisions of the council in check. However, most empirical research finds that expenditures are not significantly different between the two forms of government.[9]

For the most part, results indicate that the method of electing city councilors also does not affect expenditures. However, Southwick (1997) finds a positive district election effect. Zax (1989), Langbein et al. (1996), and Bradbury and Stephenson (2003) all find that council size is positively related to expenditure. In fact, the only robust finding arising from previous work is the council size result. The positive association between the number of city councilors and government expenditures supports the existence of logrolling. Additionally, there is state-level and cross-country evidence supporting the law of 1/n. Gilligan and Matsusaka (2001) focus on the 48 contiguous states to determine if the law of 1/n played a role prior to World War II. Studying the state legislatures from 1902 to 1942, they find that legislature size has a positive impact on state and local expenditure. Bradbury and Crain (2001) look at this relationship across 35 countries. Their results also demonstrate a positive relationship between legislature size and expenditures—with the effect being stronger in countries with unicameral legislatures. Effectively, Bradbury and Crain determine that a bicameral legislature lessens the spending bias described by the law of 1/n.

Baqir (2002) also finds a positive effect from council size. Baqir's finding motivates this paper. Baqir's results are interesting because he utilizes a larger sample than previous studies and he also controls for additional government structure characteristics. Baqir's model is

[9] See Morgan and Pelissero (1980), Mehay and Seiden (1986), Deno and Mehay (1987), Farnham (1990), and Reid (1991).

represented by:

$$\ln(\text{EXP}) = \alpha + \beta \ln(\text{CNC}) + \delta \ln(\text{POP}) + \gamma(\text{INC}) + \eta(\text{RACE}) + \lambda(\text{INEQUALITY}) + \rho(\%\text{BA}) + \mu$$

He models the log of per capita public expenditures as a function of the logs of council size (CNC) and population (POP). Additional covariates include per capita income (INC), racial heterogeneity (RACE), income inequality (INEQUALITY), and educational attainment (%BA). Income and education are likely determinants of the demand for public services. Population is included to control for possible economies of scale in providing public services while income inequality controls for the redistributive pressures that may arise in the presence of inequality. Race is measured as an index of heterogeneity. Alesina et al. (1999) finds that public service expenditures for state and local governments are negatively related to the area's ethnic fragmentation.[10]

There are two concerns that arise from the previous results. First, perhaps the previous results are specific to the samples used. Table 1 indicates that most of the authors exclude smaller cities from their analyses. Since the majority of U.S. cities are small, omitting these smaller sized cities may have a large impact on the results. Second, there is a potential endogeneity problem: if government structure and expenditures are both affected by unmeasured factors such as citizen attitudes toward the role of government, previous researchers may have reported biased estimates as a result of omitted variables. If the omitted variables are correlated with the regressors, the regressors are no longer independent of the error term. This dependence between the regressors and the errors leads to biased parameter estimates and higher variance (Studenmund 1997). The first two tasks are to allow population size and year to vary to determine the robustness of the results. The potential omitted variable problem, as well as the wide variation in the magnitudes of the council-size coefficients across studies, motivate the robustness checks.

To date, only a few studies have attempted to deal with the possible bias resulting from endogeneity. Morgan and Pelissero (1980) utilize time series data to help address this issue; however, with a sample size of 11 cities, the robustness of their results is uncertain. By analyzing specific cities over time, time series analysis mitigates the endogeneity problem through the use of first differencing.

Another method for eliminating the potential endogeneity problem is to employ fixed effects estimation—the method I use in this paper. Fixed effects models de-mean the data to eliminate all time invariant city-specific factors. This is especially useful when some of these factors are not measurable. For instance, citizen attitudes toward the role of government cannot be systematically measured.[11] Assuming that the endogeneity stems from factors like citizen preferences, which can reasonably be assumed to be time invariant, the use of fixed effects effectively eliminates bias that could be attributed to these factors.

Baqir (2002) utilizes an instrumental variables approach to deal with the omitted variable problem. Baqir uses 30-year lagged council size as an instrument for current council size and

[10] Additionally, Luttmer (2001) finds that individuals favor increased welfare spending as the number of recipients within their own racial group increases.

[11] Ideally, I would like to be able to control for partisan effects. For instance, Reed (2006) finds that state-level tax burdens are larger when the state legislature is under Democrat control. Unfortunately, reliable city-level political party variables do not exist for the majority of the cities in my sample. However, if we can assume that cities don't change drastically from year to year as far as the political ideology of its residents is concerned then the city fixed effects minimize the need for such a measure.

obtains results similar to those from an ordinary least squares regression. Unfortunately, the data on prior council size is limited to only 465 cites, reducing his sample size by about three-fourths.

The existing literature relating government structure to municipal expenditures fails to account for the possibility of endogeneity, omitted-variable bias, or both. My work fills this void. Using multiple time periods in the analysis allows for robustness checks as well as for inclusion of structural change. Previous results have relied on the strong assumption that government structure is immutable. However, as highlighted in Table 4, changes in government form, council size, and election method do occur over time. Additionally, the comprehensive nature of the dataset I employ, which includes thousands of U.S. cities, mollifies concerns that the results are specific to a geographic region.

## 4 Data and methodology

In order to facilitate comparisons with previous studies, I extend Baqir's public expenditure model by including additional covariates and a time dimension. The basic model is represented by:

$$\ln(\mathrm{EXP}_{it}) = \alpha + \beta \ln(\mathrm{CNC}_{it}) + \delta \ln(\mathrm{POP}_{it}) + \gamma(\mathrm{G}_{it}) + \eta(\mathrm{X}_{it}) + \lambda(\mathrm{YEAR}) + \mu_{it}$$

where $\mathrm{EXP}_{it}$ represents per capita government general expenditure at time $t$ for city $i$. $\mathrm{CNC}_{it}$ indicates the number of city councilors at time $t$ for city $i$, and $\mathrm{POP}_{it}$ measures the population for each city $i$ at time $t$. $\mathrm{G}_{it}$ represents a vector of additional government structure components at time $t$ for city $i$ and $\mathrm{X}_{it}$ represents a vector of demographic and income information describing city $i$ at time $t$. YEAR is a vector of indicator variables for each of the years included in the data. The year dummy variables are applicable for the fixed effects estimation.

To test the robustness of Baqir's estimates, I utilize comparable regressors. Table 2 defines the variables and Table 3 displays summary statistics for the variables by year.

Income and education are likely positively associated with the demand for public services. Population is included to control for possible economies of scale in providing public services while the inequality measure is included in case redistributive pressures arise in response to the presence of income inequality.

The data are derived from multiple sources. Demographic data were collected from the 1980, 1990, and 2000 decennial censuses. Since the analysis focuses on municipalities, place-level census data from the Summary Tape Files 1a and 3a for 1980 and 1990 and Summary File 3 for 2000 have been utilized. The demographic Census data for each municipality were matched to expenditure data from the Annual Survey of State and Local Government Finances.[12] By utilizing municipality-level finance data from 1982, 1987, 1992, 1997, and 2002, a more complete survey of local governments is captured as those dates correspond to Census of Government survey years.[13] Municipal retail sales figures were obtained from the 1987, 1992, 1997, and 2001 Economic Censuses.[14] Retail sales have been included to help

[12] In order to match demographic data to 1986 and 1996, the census data were linearly interpolated according to $\mathrm{X}_{1986} = \mathrm{X}_{1980} + 6/10(\mathrm{X}_{1990} - \mathrm{X}_{1980})$.

[13] The choice of years corresponds to the fiscal year following the year in which government structure data were collected. For example, the ICMA surveyed city governments in early 1991. Presumably the council in place during 1991 drafted the budget for fiscal year 1992.

[14] Unfortunately, I could not easily obtain access to this data for 1982.

**Table 2** Variable definitions

| | |
|---|---|
| [EXP]: Government expenditures | |
| Gov't expenditure per capita[15] | Direct general expenditure per person (in $1,000s). General Expenditure consists of all expenditure excluding intergovernmental, liquor store, utility, or insurance trust expenditure.[16] In Tables 5–6 these numbers exclude direct expenditures on education |
| Core gov't expenditure per capita | Total expenditure per person (in $1,000s) on commonly provided services–fire protection, police protection, waste management, parks and recreation, sewerage, and roads and highways |
| [G]: Government structure | |
| Council size | Number of city council members. As the size of the city council increases, we expect logrolling to increase which will lead to higher per capita expenditures |
| Council heterogeneity | Racial/Ethnic diversity on the city council ($= 1 - \Sigma s_i^2$, where $s_i$ = share of race/ethnicity $i$ on the council). Thus a value of 1 denotes complete heterogeneity and 0 denotes complete homogeneity |
| Fraction district | Percentage of council seats elected by ward or district. As the fraction of council seats elected by district increases, the Law of $1/n$ is expected to play a role in increasing expenditure |
| Initiative/referendum | Dummy variable indicating that the municipality has provisions for either initiatives or referenda. A measure of voter control, the expected sign of this variable is ambiguous—larger citizen influence could be associated with more projects being approved. However, citizens could also choose to eliminate some projects or demand that they be subjected to a popular vote. This could have the effect of making the city manager responsive to voters |
| Council-manager | Dummy variable indicating that the municipality has a council-manager form of government. A 0 indicates that the city utilizes a mayor-council government |
| [X]: Demographic information | |
| Income per capita[17] | Income per person. Higher incomes are correlated with larger/more expensive homes and therefore these areas should also have larger tax bases. Presumably, the larger tax base allows for higher public service expenditures |
| Income inequality | Mean household income divided by the median household income. The larger this ratio is, reflects more income inequality |
| Population heterogeneity | Racial diversity in the city ($= 1 - \Sigma s_i^2$, where $s_i$ = share of race $i$ in the municipality) |
| Population | Number of people. As city population increases, the number of people receiving public services increases and likely the amount provided also increases |
| Retail sales per capita | Retail sales per person in $1,000s. Retail sales include "merchandise sold for cash or credit at retail and wholesale by establishments primarily engaged in retail trade." Sales amounts do not include taxes paid on the items purchased[18] |

[15] In the fixed effects models, the expenditures are converted to real values expressed in 2001 dollars

[16] Detailed expenditure categories are found in the "Government Finance and Employment Classification Manual" and Technical Documentation from the 2002 Census of Governments published by the U.S. Census Bureau

[17] Per capita income is converted to real terms expressed in 2001 dollars for the fixed effects estimation

[18] Detailed information on retail sales can be found in the 2002 Economic Census

**Table 2** (*Continued*)

| [X]: Demographic information | |
|---|---|
| NAICS interaction | Dummy variable indicating that the North American Industry Classification System (NAICS) codes are used for determining retail sales amounts. With 0 indicating the use of Standard Industrial Classification System (SIC) codes. This dummy variable is then interacted with the retail sales per capita[19] |
| Percent local | Local government's share of state and local expenditure in the state. Constructed as local government expenditure/state and local expenditure |

[19]Prior to 1997, the Standard Industrial Classification (SIC) codes were used to determine which industries/retailers were included in the measure of retail sales. In 1997, the classification system changed to the North American Industry Classification System (NAICS). With this change, some industries/retail establishments were shifted around and as a result the retail sales figures prior to 1997 are not perfectly comparable to those in 1997 and 2001. In order to account for this, I have included an interaction term using a NAICS dummy variable and the per capita retail sales. The NAICS dummy variable takes the value of 1 for the years when the retail sales figures use the NAICS codes (i.e., 1997 and 2001) and equals 0 for the years utilizing SIC codes. More information can be obtained from the U.S. Census Bureau's "Bridge between NAICS and SIC" http://www.census.gov/epcd/ec97brdg/

account for the fact that some cities are major tourist attractions. These tourist destinations may require greater public services or they may be able to effectively export the taxes to tourists, thereby making it cheaper to the city to provide a given level of service. Additional expenditure data for calculating the local governments' share of state and local spending were collected from the 1982, 1987, 1992, 1997, and 2002 Census of Governments, v4 Government Finances, n5 *Compendium of Government Finances*. These expenditure figures were used to account for systematic differences in state/municipal responsibilities across states.

The representation and election method data come from ICMA's Municipal Form of Government Surveys for 1981, 1986, 1991, 1996, and 2001. These datasets provide information on government form, election procedures, as well as the number and characteristics of council members. Also, the 1991 ICMA data are supplemented with data from the 1992 Census of Governments, Government Organization File.[20]

Table 3 illustrates that the average council size holds steady over time at roughly 6.4 members. The fraction of council members elected by district ranges from 0.26 to 0.36 over the five time periods. The percentage of council-manager cities ranges from about 46% to 58% with the number of council-manager cities tending to increase over time.

Table 4 displays the changes in form of government, council size, and election method that have occurred throughout the 20-year panel. Though in any given year the probability of a change in the structure of government is low, over time substantial change does occur, as is shown in Table 4. In order to capture a change it is necessary that the municipality is included in the data at least twice. For example, in column 1 the figures reported show the percentage of cities that appear in both the 1981 and 1986 ICMA surveys and also experienced a government-structure change during that five-year period. Similarly, columns (2)–(5) report changes that occurred during the specified five-year period for cities that appear during both of those survey years. However, the final column which displays changes from 1981 to 2001, reports changes that have occurred any time over the 20 years for all cities that appear in the data at least twice.

[20]The last Census of Governments to include data on popularly elected officials is the 1992 census.

**Table 3** Summary statistics

| Variable | Year | N | Mean | Std dev | Min | Max |
|---|---|---|---|---|---|---|
| Council heterogeneity | 1981 | 3,001 | 0.070 | 0.142 | 0 | 0.64 |
| | 1986 | 3,067 | 0.084 | 0.154 | 0 | 0.64 |
| | 1991 | 3,687 | 0.101 | 0.168 | 0 | 0.67 |
| | 1996 | 2,911 | 0.109 | 0.175 | 0 | 0.64 |
| | 2001 | 2,613 | 0.114 | 0.179 | 0 | 0.78 |
| Council size | 1981 | 3,001 | 6.53 | 2.117 | 3 | 36 |
| | 1986 | 3,067 | 6.49 | 1.933 | 3 | 25 |
| | 1991 | 3,687 | 6.40 | 1.878 | 3 | 30 |
| | 1996 | 2,911 | 6.40 | 1.898 | 3 | 50 |
| | 2001 | 2,613 | 6.42 | 1.689 | 3 | 25 |
| Fraction district | 1981 | 3,001 | 0.263 | 0.405 | 0 | 1 |
| | 1986 | 3,067 | 0.264 | 0.403 | 0 | 1 |
| | 1991 | 3,687 | 0.272 | 0.408 | 0 | 1 |
| | 1996 | 2,911 | 0.362 | 0.436 | 0 | 1 |
| | 2001 | 2,613 | 0.337 | 0.425 | 0 | 1 |
| Gov't exp. per capita | 1982 | 3,001 | 0.378 | 0.760 | 0.02 | 38.22 |
| (in $1,000s) | 1987 | 3,067 | 0.494 | 0.480 | 0.00 | 12.19 |
| | 1992 | 3,687 | 0.681 | 0.758 | 0.01 | 24.83 |
| | 1997 | 2,911 | 0.812 | 0.619 | 0.02 | 10.62 |
| | 2002 | 2,613 | 1.061 | 1.263 | 0.05 | 48.68 |
| Income per capita | 1979 | 3,001 | 0.754 | 0.275 | 0.27 | 3.51 |
| (in $10,000s) | 1986 | 3,067 | 1.140 | 0.524 | 0.30 | 5.85 |
| | 1989 | 3,687 | 1.403 | 0.698 | 0.38 | 7.87 |
| | 1996 | 2,911 | 1.822 | 0.884 | 0.53 | 9.41 |
| | 1999 | 2,613 | 2.127 | 0.995 | 0.70 | 10.49 |
| Initiative/referendum | 1981 | 3,001 | 0.790 | | 0 | 1 |
| | 1986 | 3,067 | 0.920 | | 0 | 1 |
| | 1991 | 3,687 | 0.729 | | 0 | 1 |
| | 1996 | 2,911 | 0.471 | | 0 | 1 |
| | 2001 | 2,613 | 0.968 | | 0 | 1 |
| Council-manager | 1981 | 3,001 | 0.498 | | 0 | 1 |
| | 1986 | 3,067 | 0.466 | | 0 | 1 |
| | 1991 | 3,687 | 0.502 | | 0 | 1 |
| | 1996 | 2,911 | 0.583 | | 0 | 1 |
| | 2001 | 2,613 | 0.584 | | 0 | 1 |
| Income inequality | 1979 | 3,001 | 1.187 | 0.116 | 0.94 | 2.11 |
| | 1986 | 3,067 | 1.243 | 0.129 | 0.99 | 2.25 |
| | 1989 | 3,687 | 1.242 | 0.150 | 0.95 | 2.69 |
| | 1996 | 2,911 | 1.283 | 0.133 | 1.03 | 2.32 |
| | 1999 | 2,613 | 1.279 | 0.145 | 1.02 | 2.43 |

**Table 3** (*Continued*)

| Variable | Year | N | Mean | Std dev | Min | Max |
|---|---|---|---|---|---|---|
| Population | 1980 | 3,001 | 27,709 | 153,636 | 2,502 | 7.07M |
| | 1986 | 3,067 | 24,335 | 67,309 | 2,108 | 1.73M |
| | 1990 | 3,687 | 23,714 | 78,631 | 2,489 | 3.49M |
| | 1996 | 2,911 | 24,230 | 95,553 | 2,265 | 3.55M |
| | 2000 | 2,613 | 25,834 | 59,390 | 2,187 | 1.11M |
| Pop. heterogeneity | 1980 | 3,001 | 0.1438 | 0.159 | 0.0 | 0.66 |
| | 1986 | 3,067 | 0.1798 | 0.169 | 0.0 | 0.71 |
| | 1990 | 3,687 | 0.1953 | 0.174 | 0.0 | 0.72 |
| | 1996 | 2,911 | 0.2312 | 0.176 | 0.0 | 0.75 |
| | 2000 | 2,613 | 0.255 | 0.180 | 0.0 | 0.75 |
| Core gov't exp | 1982 | 3,001 | 0.1981 | 0.145 | 0 | 3.98 |
| per capita | 1987 | 3,067 | 0.2643 | 0.175 | 0 | 4.63 |
| (in $1,000s) | 1992 | 3,687 | 0.3583 | 0.248 | 0 | 6.72 |
| | 1997 | 2,911 | 0.4404 | 0.255 | 0 | 4.18 |
| | 2002 | 2,613 | 0.5039 | 0.385 | 0 | 12.8 |
| % Population 65+ | 1982 | 3,001 | 0.1312 | 0.061 | 0.01 | 0.69 |
| | 1987 | 3,067 | 0.1421 | 0.059 | 0.01 | 0.65 |
| | 1992 | 3,687 | 0.1493 | 0.062 | 0.01 | 0.59 |
| | 1997 | 2,911 | 0.1505 | 0.059 | 0.01 | 0.63 |
| | 2002 | 2,613 | 0.1475 | 0.058 | 0.01 | 0.58 |
| Retail sales per capita | 1987 | 3,067 | 9.047 | 6.966 | 0.00 | 120.02 |
| (in $1,000s) | 1992 | 3,687 | 11.420 | 8.992 | 0.00 | 102.21 |
| | 1997 | 2,911 | 14.165 | 11.631 | 0.00 | 120.84 |
| | 2002 | 2,613 | 16.000 | 13.445 | 0.11 | 139.62 |
| Percent local | 1982 | 3,001 | 0.5937 | 0.065 | 0.36 | 1.00 |
| | 1987 | 3,067 | 0.5943 | 0.065 | 0.38 | 0.71 |
| | 1992 | 3,687 | 0.5660 | 0.065 | 0.22 | 0.65 |
| | 1997 | 2,911 | 0.5658 | 0.060 | 0.35 | 0.65 |
| | 2002 | 2,613 | 0.5483 | 0.063 | 0.32 | 0.65 |

## 5 Results

Table 5 reports cross-sectional estimates using a dependent variable, defined as direct general expenditure less expenditures on education and intergovernmental grants, and including additional control variables. When a more appropriate dependent variable is used and these additional explanatory variables are included (i.e., a measure of direct democracy, a dummy variable indicating the city manager form of government, the fraction of councilors elected by district, the percentage of the population over 65, the racial/ethnic heterogeneity of the council, retail sales per capita, and the local governments' share of state and local

**Table 4** Changes in government structure over time

| Variable | 1981–1986 | 1986–1991 | 1991–1996 | 1996–2001 | 1981–2001 |
|---|---|---|---|---|---|
| % Change in council size | 17% | 21% | 21% | 17% | 35% |
| number of cities | 3,373 | 4,419 | 4,195 | 2,610 | 6,856 |
| % Change in fraction elected by | 15% | 15% | 16% | 11% | 25% |
| district number of cities | 3,196 | 4,233 | 4,013 | 2,390 | 6,593 |
| % Change in form of government | 6% | 17% | 22% | 22% | 25% |
| number of cities | 3,431 | 4,336 | 4,131 | 2,651 | 7,049 |
| | (1) | (2) | (3) | (4) | (5) |

expenditure), Baqir's results are fairly robust.[21] In particular, the council size variable is still consistently positive and significant across all five time periods.

The additional explanatory variables control for other potentially important determinants of public expenditures. By including a city manager indicator variable, I can determine if there are expenditure differences between the two types of government. Seemingly, during the 1980s managers exert a positive impact on expenditures in comparison to mayors, but that impact is not seen in later years. The fraction of councilors elected by district is expected to yield support for the "Law of 1/n," with district elections associated with higher expenditures. However, the results presented in Table 5 provide no support for the "Law of 1/n"; throughout all five cross-sections district elections are insignificant. A large percentage of the population over 65 may increase or decrease expenditures, since the elderly may be a successful lobbying group given their lower opportunity cost of time. A more mature population may just prefer expenditures on different programs and these programs could conceivably be less expensive than programs advocated by younger residents. As the elderly population increases, so do expenditures in all 5 cross-sections. This result certainly points to the effectiveness of the elderly as a lobbying group. If racial/ethnicity differences among city councilors lead to differences in opinion concerning projects that should be undertaken, a more diverse council may engage in more logrolling to come to an agreement and therefore have higher expenditures. Council heterogeneity is associated with higher expenditures in all time periods except 1982 and 1997. A racially heterogeneous city council may have competing desires and thus result in higher expenditure levels. However, this effect does disappear once the fixed effects models are utilized.

In order to minimize potential endogeneity bias, I estimate fixed-effects models; these results are displayed in Table 6. By utilizing fixed effects panel estimation I am able to eliminate endogeneity bias stemming from any city-specific unmeasured time-invariant factors that influence both government structure and city expenditures. Table 6 shows that the positive relationship between council size and expenditures no longer holds when panel estimation is used and unmeasured time-invariant factors are controlled for. This is a particularly striking finding in that the positive council size result was the only robust result from the expenditure literature. District elections and form of government (i.e., city managers) have no noticeable impact on expenditure. While not reported here, when the analysis is

[21] Though not reported here, I have attempted to reproduce Baqir's results across all five cross-sections. These results are available upon request.

**Table 5** OLS estimates of the determinants of per capita expenditures, 1982–2002

| | 1982 | 1987 | 1992 | 1997 | 2002 |
|---|---|---|---|---|---|
| ln(Council size) | 0.2319** | 0.1443** | 0.1360** | 0.1594** | 0.2259** |
| | (4.56) | (2.91) | (2.92) | (3.05) | (4.04) |
| ln(Population) | 0.1467** | 0.1592** | 0.1346** | 0.0871** | 0.0768** |
| | (9.58) | (10.48) | (9.11) | (5.65) | (4.92) |
| Pop. heterogeneity | 0.0256 | −0.1344 | −0.0320 | −0.1030 | −0.0462 |
| | (0.20) | (1.31) | (0.31) | (0.95) | (0.43) |
| Income per capita | 0.1017 | 0.2190** | 0.1017** | 0.0734** | 0.0695** |
| | (1.74) | (4.34) | (4.66) | (4.27) | (4.56) |
| Income inequality | 0.6435** | 0.2958* | 0.3212** | 0.6434** | 0.4335** |
| | (4.19) | (2.49) | (2.61) | (5.77) | (3.85) |
| Fraction district | 0.0324 | −0.0344 | −0.0058 | 0.0191 | −0.0099 |
| | (0.87) | (0.98) | (0.17) | (0.59) | (0.30) |
| Council manager | 0.0539 | 0.0614* | 0.0154 | −0.0121 | 0.0325 |
| | (1.82) | (2.26) | (0.55) | (0.42) | (1.19) |
| Initiative/referendum | −0.0062 | 0.0379 | −0.0121 | 0.0307 | 0.0497 |
| | (0.16) | (0.74) | (0.39) | (1.24) | (0.77) |
| Pop > 65 | 1.0325** | 1.1894** | 0.8747** | 1.1274** | 0.8555** |
| | (3.56) | (4.65) | (3.78) | (4.75) | (3.74) |
| Cnc heterogeneity | 0.1501 | 0.3321** | 0.2590** | 0.1095 | 0.2334** |
| | (1.37) | (3.44) | (2.97) | (1.08) | (2.65) |
| Retail sales | | 0.0165** | 0.0169** | 0.0083** | 0.0116** |
| | | (6.17) | (8.51) | (5.74) | (8.28) |
| Percent local | 0.0501 | 0.0331 | 0.1892 | 0.4242* | −0.1772 |
| | (0.22) | (0.16) | (0.91) | (1.99) | (0.84) |
| Constant | −4.0479** | −3.5821** | −3.0575** | −2.9385** | −2.2600** |
| | (15.56) | (15.90) | (13.18) | (13.20) | (9.97) |
| N | 1,385 | 1,402 | 1,613 | 1,341 | 1,302 |
| $R^2$ | 0.17 | 0.21 | 0.16 | 0.16 | 0.19 |

Note: The dependent variable is ln(government expenditures per capita). Direct government expenditures excludes expenditures on education and excludes intergovernmental transfers. Only cities with populations of at least 10,000 are included. An * indicates significance at the 5 percent level and ** indicates significance at the 1 percent level in a two-tailed test. Absolute values of the Huber-White corrected *t*-statistics appear in parentheses

restricted to cities without city expenditures on education, the results are qualitatively the same.[22] Across both specifications and sample sizes, the council size remains positive but insignificant.[23]

[22] Additional population thresholds were explored and council size remained insignificant across all samples, including those which included only smaller cities such as with population < 10,000, population < 25,000, and for population < 50,000. Interestingly, when results are restricted to the smaller cities, population becomes negative and significant.

[23] A potential concern arises that the wide range of cities used may lead to biased results since there are large differences in the cost of living across many of these cities. Since there is not a good annual municipal-level

There may be concern that the set of services provided varies substantially across municipalities. If the range of services provided is correlated with covariates in the expenditure model then the results will be biased. Most cities spend in a handful of core areas: police protection, parks and recreation, highways, fire departments, and sewerage. In order to determine if variation in the services provided affects the estimated impacts of government structure on public expenditure I have re-estimated the fixed effects models using these core expenditures as a dependent variable. Table 7 presents the results using this new measure of government expenditure. The results using a more uniform measure of local public expenditure are similar to the fixed effects results using direct general expenditure. Again, the size of the city council is not associated with higher expenditures. This result shows that logrolling is not a critical factor in explaining spending growth. A possible concern may arise that many cities do not themselves provide fire protection. This is certainly true for many cities in California. To address this concern, I have removed fire expenditures from the core and rerun the regressions. Though again not reported here when expenditures on fire are excluded from the core expenditure group, the results are effectively the same.

## 6 Conclusion

Local government structure justifiably has received considerable attention. Despite this interest, there has been little consensus on the impact of local institutions on government expenditure. The one area where there has been consensus is the positive relationship between council size and local public expenditures. Using data that span 20 years, my results indicate that this relationship is not definitively positive, as previous work suggests.

The findings reported here lend credibility to previous research finding that expenditures are invariant to the method of election and form of government. Increases in the fraction of seats elected by district consistently fail to affect local per capita expenditures in all five cross sections as well as in the fixed-effects models when both direct general expenditure and core expenditure areas are used.

Though the cross-sectional results are fairly robust and point to a positive relationship between council size and expenditure, the fixed effect models show that council size is no longer significant for both direct general expenditure and expenditure in core areas. This finding holds true across a wide set of specifications. This main result suggests that, at least for city councils, either logrolling is not prevalent or the presence of logrolling does not significantly increase expenditures. The lack of a significant difference here points to the importance of decision-making costs. Buchanan and Tullock (1969) recognize the direct relationship between group size and decision-making costs. As groups, or in this case, city councils, gain more members, it becomes harder to reach an agreement. If the councils become too large these decision-making costs may become prohibitive, thereby making it harder to effectively trade votes in order to see legislation passed. This suggests that a more appropriate expectation for city councils would recognize that after a certain size has been reached, there would be a decline in their ability to quickly come to agreement and logrolling may become more difficult as more and more votes are needed to ensure that one voting group is decisive. Given that in previous work the size of the city council has repeatedly

cost of living index available I re-estimated the regressions using government expenditure per capita as a fraction of per capita income. Though they are not reported here, these regressions led to similar results—mainly that council size remained insignificant across all specifications of the model. As such, I believe that the city fixed effects do a good job of controlling for the cost of living differences across cities.

**Table 6** Fixed effects models of local expenditures, 1986–2002

| | Pop > 10,000 | Full sample | Pop > 10,000 | Full sample |
|---|---|---|---|---|
| ln(Council size) | 0.0336 | 0.0181 | 0.0438 | 0.0447 |
| | (0.67) | (0.41) | (0.69) | (0.79) |
| ln(Population) | −0.2633** | −0.2752** | −0.2427** | −0.2179** |
| | (6.62) | (8.86) | (5.29) | (6.17) |
| Pop. heterogeneity | 0.0400 | −0.1051 | −0.1545 | −0.1974 |
| | (0.34) | (1.00) | (1.14) | (1.65) |
| Income per capita | 0.1775** | 0.2073** | 0.1001** | 0.1504** |
| | (6.98) | (10.52) | (3.37) | (6.79) |
| Income inequality | −0.3800** | −0.1603* | −0.3237* | −0.1284 |
| | (2.97) | (2.26) | (2.22) | (1.55) |
| Retail sales per capita | 0.0036** | 0.0018* | 0.0038** | 0.0018 |
| | (3.18) | (2.27) | (2.80) | (1.70) |
| NAICS×retail sales per capita | −0.0002 | 0.0001 | −0.0009 | −0.0002 |
| | (0.36) | (0.10) | (1.11) | (0.27) |
| Percent local | 0.4687* | −0.0775 | −0.9527** | 0.4753* |
| | (2.22) | (0.41) | (3.72) | (1.98) |
| Council heterogeneity | | | 0.0024 | 0.0049 |
| | | | (0.05) | (0.13) |
| Council-manager | | | 0.0279 | 0.0254 |
| | | | (1.29) | (1.59) |
| Fraction district | | | 0.0093 | 0.0210 |
| | | | (0.39) | (1.03) |
| Initiative/referendum | | | −0.0108 | −0.0242* |
| | | | (0.79) | (2.08) |
| Percent pop over 65 | | | 1.1002** | 1.3011** |
| | | | (2.68) | (4.34) |
| Year dummies | Yes | Yes | Yes | Yes |
| Constant | 2.1428** | 1.9605** | 1.5680** | 0.9449* |
| | (4.24) | (5.69) | (2.66) | (2.31) |
| N | 6,759 | 14,874 | 5,658 | 12,278 |
| Groups | 2,475 | 5,500 | 2,362 | 5,229 |
| Within $R^2$ | 0.15 | 0.12 | 0.18 | 0.14 |
| Between $R^2$ | 0.02 | 0.01 | 0.01 | 0.003 |
| Overall $R^2$ | 0.004 | 0.003 | 0.001 | 0.000 |

Note: The dependent variable is ln(non-education government expenditures per capita). An * indicates significance at the 5 percent level and ** indicates significance at the 1 percent level in a two-tailed test. Absolute values of the Huber-White corrected $t$-statistics appear in parentheses

**Table 7** Fixed effects models of local expenditures using core expenditure areas

| | Pop > 10,000 | Full sample | Pop > 10,000 | Full sample |
|---|---|---|---|---|
| ln(Council size) | −0.0260 | −0.0306 | −0.0040 | 0.0377 |
| | (0.42) | (0.58) | (0.05) | (0.59) |
| ln(Population) | −0.2455** | −0.2480** | −0.2092** | −0.1701** |
| | (6.02) | (7.02) | (4.48) | (4.45) |
| Pop. heterogeneity | 0.3472** | −0.0079 | −0.0574 | −0.1929 |
| | (2.82) | (0.07) | (0.41) | (1.57) |
| Income per capita | 0.2384** | 0.2639** | 0.0988** | 0.1481** |
| | (8.83) | (11.31) | (3.15) | (5.75) |
| Income inequality | −0.4117** | −0.2438** | −0.3274* | −0.1819* |
| | (3.00) | (3.42) | (2.05) | (2.20) |
| Retail sales per capita | 0.0065** | 0.0028** | 0.0071** | 0.0032* |
| | (3.69) | (2.91) | (3.15) | (2.46) |
| NAICS × retail sales per capita | −0.0011 | −0.0002 | −0.0015 | −0.0004 |
| | (1.27) | (0.25) | (1.49) | (0.39) |
| Percent local | −1.0656** | −1.7609** | 0.1281 | −0.3101 |
| | (4.55) | (8.49) | (0.46) | (1.24) |
| Council heterogeneity | | | 0.0029 | −0.0189 |
| | | | (0.06) | (0.47) |
| Council-manager | | | 0.0310 | 0.0298 |
| | | | (1.29) | (1.78) |
| Fraction district | | | 0.0409 | 0.0282 |
| | | | (1.58) | (1.29) |
| Initiative/referendum | | | −0.0024 | −0.0198 |
| | | | (0.16) | (1.65) |
| Percent pop over 65 | | | 0.9052* | 1.0082** |
| | | | (2.14) | (3.24) |
| Year dummies | yes | yes | yes | yes |
| Constant | 1.7564** | 1.7302** | 0.6777 | −0.0116 |
| | (3.35) | (4.52) | (1.11) | (0.03) |
| N | 6,758 | 14,864 | 5,657 | 12,270 |
| Groups | 2,475 | 5,499 | 2,362 | 5,227 |
| Within $R^2$ | 0.56 | 0.45 | 0.60 | 0.49 |
| Between $R^2$ | 0.02 | 0.002 | 0.05 | 0.03 |
| Overall $R^2$ | 0.10 | 0.05 | 0.15 | 0.11 |

Note: The dependent variable is ln(Core government expenditures per capita), where core expenditures include parks and recreation, police protection, fire service, sewerage and highways. An * indicates significance at the 5 percent level and ** indicates significance at the 1 percent level in a two-tailed test. Absolute values of the $t$-statistics appear in parentheses

been shown to have a positive impact on public expenditure levels, this result strongly points to the presence of omitted variables and endogeneity bias in the cross-sectional regressions.

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## References

Alesina, A., Baqir, R., & Easterly, W. (1999). Public goods and ethnic divisions. *The Quarterly Journal of Economics*, *114*, 1243–1284.

Baqir, R. (2002). Districting and government overspending. *Journal of Political Economy*, *110*, 1318–1354.

Booms, B. H. (1966). City governmental form and public expenditure levels. *National Tax Journal*, *19*, 187–199.

Buchanan, J. M., & Tullock, G. (1962). *The calculus of consent*. Ann Arbor: The University of Michigan Press.

Bradbury, J. C., & Crain, W. M. (2001). Legislative organization and government spending: cross-country evidence. *Journal of Public Economics*, *82*, 309–325.

Bradbury, J. C., & Stephenson, E. F. (2003). Local government structure and public expenditures. *Public Choice*, *115*, 186–198.

Census Bureau (2002). Government organization. Census of Governments.

Deno, K. T., & Mehay, S. L. (1987). Municipal management structure and fiscal performance: do city managers make a difference? *Southern Economic Journal*, *53*, 627–642.

Fahy, C. (1998). The choice of local government structure in Massachusetts: a historical public choice perspective. *Social Science Quarterly*, *79*, 433–444.

Farnham, P. G. (1990). The impact of citizen influence on local government expenditure. *Public Choice*, *64*, 201–212.

Gilligan, T. W., & Matsusaka, J. G. (2001). Fiscal policy, legislature size, and political parties: evidence from state and local governments in the first half of the 20th century. *National Tax Journal*, *54*, 57–82.

International City/County Management Association (2004). *The municipal yearbook*.

Langbein, L. I., Crewson, P., & Brasher, C. N. (1996). Rethinking ward and at-large elections in cities: total spending, the number of locations of selected city services, and policy types. *Public Choice*, *88*, 275–293.

Luttmer, E. F. P. (2001). Group loyalty and the taste for redistribution. *The Journal of Political Economy*, *109*, 500–528.

Mehay, S. L., & Seiden, K. P. (1986). Municipal residency laws and local public budgets. *Public Choice*, *48*, 27–35.

Morgan, D. R., & Pelissero, J. P. (1980). Urban policy: does political structure matter? *American Political Science Review*, *74*, 999–1006.

Reed, W. R. (2006). Democrats, republicans, and taxes: evidence that political parties matter. *Journal of Public Economics*, *90*, 725–750.

Reid, G. J. (1991). Tests of institutional versus non-institutional models of local public expenditure determination. *Public Choice*, *70*, 315–333.

Sass, T. R. (1991). The choice of municipal government structure and public expenditures. *Public Choice*, *72*, 71–87.

Southwick, L. Jr. (1997). Local government spending and at-large versus district representation; do wards result in more 'pork'? *Economics and Politics*, *9*, 173–203.

Studenmund, A. H. (1997). *Using econometrics: a practical guide* (3rd ed.). Reading: Addison-Wesley.

Tiebout, C. M. (1956). A pure theory of local expenditures. *Journal of Political Economy*, *64*, 416–424.

Weingast, B. R., Shepsle, K. A., & Johnsen, C. (1981). The political economy of benefits and costs: a neoclassical approach to distributive politics. *Journal of Political Economy*, *89*, 642–664.

Zax, J. S. (1989). Initiatives and government expenditures. *Public Choice*, *63*, 267–277.