An Efficiency Comparison of City Managers and Elected Mayors*

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Abstract

Previous research has concluded that there are no efficiency differences between elected mayor-council (EMC) and council-manager (CM) city governments. What remains then, is a puzzle as to why so many cities are switching from an EMC form to a CM form. This paper provides an alternative method of testing the relative efficiency of the two forms of government. Relying on capitalization theory of local public services and taxes, I develop a hedonic price model for home sales occurring in the six largest Ohio metropolitan areas. Results show that houses within a CM city have a pricing premium that can be attributed to the greater efficiency of the CM form of government.

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I. Introduction

Historically, the majority of U.S. city governments have adopted either an elected mayor-council (EMC) form of government or a council-manager (CM) form. Several economists and political scientists have attempted to find efficiency differences between these two competing forms of city government. The hypothesized difference is based on the theory that a professionally trained city manager has an efficiency advantage over a popularly elected mayor in administering city taxes and producing local public goods. However, past studies that analyze different cities' common government expenditures have found no significant differences in the two forms of government. The analysis of "common" governmental expenditures refers to the fact that the studies limited their analysis to only expenditures that comprise significant portions of almost all city spending, which generally included expenditures on police protection, fire protection, and refuse collection.

The finding of no difference in efficiency is surprising given the current trend toward cities adopting the CM form of government. As reported by the International City/County Management Association (ICMA), the CM government is currently the fastest growing form of U.S. city government. According to the ICMA, an average of 67 U.S. cities per year have adopted the CM form of government since 1981, while the EMC form of government lost an average of 20 cities per year. The city governments making the transition from the EMC form to the CM form have to receive some kind of benefits from the transition, or else, there would be no reason to make the switch.

The purpose of this paper is to use a different methodology to search for efficiency differences between the two forms of government in order to provide one

possible explanation for the recent trend towards adopting the CM form of city government. In order to build upon the previous literature's use of common government expenditures, and account for the other services offered by a city government, this paper relies on the theory that local public services, and the taxes to finance them, are capitalized into housing prices. This paper contends that the common expenditures alone are not adequate enough to fully capture the differences in the spending patterns of the two competing forms of government. Rather, analysis of city taxes and production of local public goods will better capture the scope of the cities' public service capabilities, and help reveal efficiency differences in the two forms of government, if they exist.

House-selling prices for 1991 home sales were analyzed for the six largest metropolitan areas in Ohio. Specifically, house-selling prices for homes located in the metropolitan areas of Akron, Cincinnati, Cleveland, Columbus, Dayton, and Toledo, (including both central cities and several surrounding cities) were estimated using a log-linear hedonic technique. Results show that houses within a CM city have a pricing premium that can be attributed to the relative efficiency advantage of the CM form of government. Furthermore, houses within a metropolitan area, which has a CM central-city government, have a pricing premium that can be attributed to the relative efficiency of the CM form of government.

The set up of this paper is as follows. Section-II will further characterize the two forms of city government, with emphasis on the position of city manager in the CM form, and mayor in the EMC form. Section-III will present the previous city government research. Section-IV will highlight the current trend towards adopting the CM form of government in the United States and Ohio. Section-V will set up the hedonic price model

to be estimated and describe the data incorporated in the estimation process. Section-VI will outline the estimation results. Finally, Section-VII will present concluding remarks on the implications of the estimation results.

II. Characteristics of City Managers and Elected Mayors

The major distinction between the two forms of government is who controls the power to make decisions about city budgeting and basic day-to-day city government operations. Generally, the city manager in the CM form, or the mayor in the EMC form, controls the day-to-day administering of the city operations. Typically, these two city officials have different educational backgrounds, occupational experiences, and political motivations, which should influence the way city taxes are levied and local public services are produced by each form of government.

The CM government consists of a city council, a city manager, and a ceremonial mayor. The city council is comprised of elected officials and is responsible for general city policy making. However, the city council hires a professional city manager that provides policy advice, conducts the daily city government operations, hires and fires city personnel, and is responsible for the city budget preparation. The mayor of the CM government is often selected from within the council members or is popularly elected by the city residents, and is reserved for only ceremonial purposes with no regular administrative responsibilities.[1]

[1] Svara (1987) noted that the role of a CM mayor has often been overlooked in past research, and argued that this practice should not persist. The author used data from several interviews with mayors, council members, and city managers to argue that CM mayor's conduct in office can significantly influence how well a CM government performs. The author noted that cooperation between the CM mayor and the city manager can produce significant improvements in governmental performance.

The CM form of government was a product of the progressive government reform movement that started in the early 1900s in response to corruption and inefficiencies that were becoming apparent in major eastern U.S. cities.[2] As stated by White (1927), city managers have a deep obligation to conduct the affairs of the city with integrity and efficiency, without acting in a partisan manor. Clearly, the movement envisioned professional, nonpartisan, political administrators that would efficiently run the day-to-day operations of the city. Professional city managers are typically hired based on their educational background, experience, and administrative ability, without regard to their political views.[3]

The city manager position was also envisioned as a way to ensure that public policies would be designed to promote long-term city growth and development. This can be seen in the fact that city managers are not legally limited in the number of years they can serve a given city. As long as city mangers appease their city council members, their terms of city services can be quite prolonged.[4] This will allow the city manager to enact tax policies and expenditure schemes that promote long-term efficiency in the production of local public services.

In contrast to the ceremonial mayor in the CM form of government, the mayor in the EMC form has most of the political authority. The EMC mayor is popularly elected and has the responsibility for day-to-day operations, hiring and firing department heads, and preparing and administering the budget. The EMC government has an elected city

[2] According to the IMCA, the first recognized city manager position was instituted in 1908 by Staunton, Virginia, and the first large U.S. city to institute a city manager was Dayton, Ohio, in 1914.
[3] According to the ICMA, *State of the Profession Survey, 2000*, sixty percent of all city managers earned a master's of public or business administration, or other administrative master's degree.
[4] According to the ICMA, *State of the Profession Survey, 2000*, the average tenure of a city manager is currently 17.4 years.

council that performs some legislative duties; however, the authoritative mayor usually limits the council's political power. The EMC mayor's term of service varies in length at the discretion of each city's bylaws (usually two to four years), and the number of terms the mayor can serve may be limited according to the practices of the city.

Theoretically, the professionally trained city manager should provide efficiency gains over a popularly elected mayor. More specifically, the political skills that lead to a mayor's election do not necessarily correspond with administrative abilities. Weingast, Shepsle, and Johnson (1981) have shown that politicians consistently overstate the benefits of a given project, in order to gain popular support for their programs. The altering of the cost-benefit accounting of government projects, drives the political process away from efficiency. The inefficient cost-benefit behavior is brought on by the fact that politicians are vote maximizers and only care about the issues that are currently relevant to their jurisdictions. In this respect, the CM government may prove to be more efficient than the EMC form because the city managers are trained in public administration and are not directly subject to the voting pressures that lead to the administrative inefficiencies.

Also, the fact that the average city manager's tenure is quite prolonged shows that they are removed from the "short-sighted" political pressures to temporarily appeal to voters. The prolonged service to a given city allows the city manager to direct the city towards long-term efficiency, growth, and development, which contrasts the political motivation of mayors to produce short-term benefits with unclear future costs. Despite the hypothesized efficiency advantage of city managers, past studies have not found any significant differences between the two forms of government.

III. Previous City Government Research

Booms (1966) analyzes the determinants of per capita city expenditures on police protection, fire protection, highways, sanitation, and public health for cities in Ohio and Michigan. He shows that there are significant differences in the per capita expenditures of CM and EMC cities. Specifically, the CM cities have lower per capita public spending levels than EMC cities. This result would support the hypothesis that CM governments are relatively more efficient than EMC forms. However, Boom's findings have not been supported by more recent empirical analyses.

Deno and Mehay (1987) used a median voter model approach to directly test Booms' (1966) findings. The authors argue that both the mayor of the EMC government and the city council of the CM government have strong incentive to offer public goods in accordance with the median voter's wishes. If the elected officials deviate from the median position, those politicians face the threat of being replaced by candidates who do reflect the preferences of the majority of voters. Since the city council of the CM government is in control of hiring and firing the city manager, the city council will put pressure on the manager to enact policies that are in line with the median voter's preferences. This implies that the median voter model should not find significant differences in the expenditures of the two government forms.

Deno and Mehay (1987) use a similar data set as Booms (1966), including observations only from Michigan and Ohio, and find no significant expenditure differences in the two forms of government. The authors then extend their analysis beyond the two states and include 191 randomly selected US cities. The authors again

find no significant difference in expenditures of the two forms of government.[5] The authors attribute these results to the idea that, regardless of city management structure, both forms of government will have strong incentives to gravitate to the same level of public expenditures: the level most preferred by the median voter.

Modeling city government as a multi-product firm, Hayes and Chang (1990) show that there is no relative efficiency gain associated with CM governments. The government's 'outputs' are the services provided by the city, and the decision maker's objective function is to minimize costs. The authors analyze three services offered by the two forms of city government (police protection, fire protection, and refuse collection) and find no difference in relative efficiency. The authors propose that the city manager, once hired, might not have a strong incentive to improve the efficiency of the city government. Instead, the city manager may only have incentive to please the city council, which controls the longevity of the manager's tenure. This would again strengthen the link between the voters and the city manager, which would cause the CM production of local public goods to correspond closely with the EMC produced local goods.

Davis and Hayes (1993) construct efficiency measures for 141 Illinois municipal police departments based on the costs of producing police protection services and the estimated output of police services generated. The authors use the efficiency measures to test if police department efficiency is influenced by the presence of a city manager. The authors' findings show that the presence of a city manager has no significant impact on

[5] Deno and Mehay (1987) also tested if the city form of government affected municipal wages and compensation levels for all municipal employees, and then more specifically for police and fire personnel. The authors concluded that no significant differences could be found in the total labor compensation provided by the two forms of government. Other studies have analyzed the effects of city government structure on wages and have found no conclusive evidence to support differences between the two forms of government; see Ehrenberg (1973), Ehrenberg and Goldstein (1975), Bartel and Lewin (1981), and O'Brien (1992, 1995).

the police department efficiency measures. This result is consistent with the existing literature that finds no efficiency differences between the two forms of government.

IV. The Trend Toward City Managers

[Insert Table 1 about here]

Despite the fact that numerous studies have shown that the CM form of government has no relative efficiency advantage, it is currently the fastest growing form of government in the United States. Table 1 shows a comparison of the percent of US and Ohio cities with CM and EMC forms of government, for selected years between 1976 and 1999. The percent of CM cities has been growing since 1976 for all U.S. cities and Ohio cities, while the percent of EMC cities has been steadily decreasing. As shown in Table 1, the EMC form of government lost fifteen percent of the share of U.S. cities and lost ten percent of the share of Ohio cities, between 1976 and 1999. During the same time period, the CM form of government gained seventeen percent of the share of U.S. cities and gained ten percent of the share of Ohio cities. The fact that the EMC form of government is losing cities while the CM form of government is gaining cities has recently made the CM form the most popular among U.S. cities.

Again, the aim of this paper is to use an alternative method of testing for efficiency differences in the two forms of government in order to provide some explanation of why the trend towards the CM form of government is occurring. The city governments making the transition to a CM form have to receive some kind of benefits from the transition, or else there would be no reason to make the transition. The benefits received may be in the form of efficiency gains brought on by the presence of a

professional city manager. Such efficiency gains may have gone undetected by earlier research of local government structure because of the emphasis on analyzing only a limited set of common government expenditures.

The analysis of common governmental expenditures refers to the fact that the studies limited their analysis to only the expenditure categories comprising a significant portion of city spending. Booms (1966) analyzes per capita city expenditures on police protection, fire protection, highways, sanitation, and public health. Deno and Mehay (1987) analyze expenditures on police protection, fire protection, sewerage, highways, interest on local debt, and general administration. Hayes and Chang (1990) analyze expenditures on three city government services: police protection, fire protection, and garbage collection. Finally, Davis and Hayes (1993) analyze the efficiency of local police departments.

This analysis of a limited array of expenditures may not be adequate to fully capture the differences in the spending patterns of the two forms of government. More specifically, by analyzing only a limited array of expenditure types, previous studies may have missed any relative efficiency differences in the two forms of government. The efficiency differences could show up as an increase in the quality of the common city public services. Also, as acknowledged by Hayes and Chang (1990), the efficiency differences may be captured in smaller city budget expenditure areas. Ultimately, the total value of the public services offered by each city needs to be analyzed, along with the taxes that are used to finance the public services. Following this logic, the sum total difference between the two forms of government should be reflected in the house-selling prices of those areas. In other words, the value of the local public goods, the taxes used to

finance those goods, and any efficiency advantages to the CM form of government should be capitalized into the house-selling prices.

In summary, it is variation in the value and efficiency of the public services produced, rather than simply the expenditures on those services, that may show the differences in the two forms of city government. Duffy-Deno and Dalenberg (1990) provides evidence contrary to the popular finding that city form of government does not matter, by analyzing 26 cities' capital usage rates employed to produce local public goods. Although the authors do not directly test for efficiency differences, they show that EMC cities consistently have significantly higher capital-input usage rates than CM cities.

Duffy-Deno and Dalenberg (1990) argue that the institutional differences in the two forms of government cause each to take different views on the role for capital inputs. Specifically, professional city managers may view capital and labor as simply inputs in a production function, while mayors may intend to use the inputs as political assets. Thus, the higher EMC capital-input usage rates are produced by the incentive of mayors to undertake more highly visible public works projects in order to influence public opinion, which may be undertaken in disregard to efficiency accounting criteria. Ultimately, the authors' findings suggest that the manner in which public goods are produced by the two forms of government does matter, and this may have relative efficiency implications. Again, the task of analyzing the manner of producing local public goods will be carried out through the analysis of house-selling prices, which reflect the capitalized value of both the local public goods and the city government taxes that were used to finance the public goods.

V. Hedonic Price Model and Data Description

Generally, the hedonic price model estimates house-selling prices as a function of several characteristics. More specifically, house-selling prices are dependent on structural house characteristics, city characteristics, and governmental influences. The hedonic price model contends that a house-selling price can be estimated as a function of the structural characteristics of the house, city characteristics of the residence location, and the form of city government. The selling price in the hedonic model framework, adapted to include the city form of government influence, generally takes the following form:

$$P_H = P_H (S, C, G)$$

where P_H is the house-selling price, S is a vector of structural house characteristics (such as house size, lot size, and number of bathrooms), C is a vector of city characteristics (such as property taxes and expenditures on local public goods), and G is the city form of government.

The focus of this paper is on the influence that a city's form of government has on selling prices of homes in that jurisdiction. It is hypothesized that the differences in tax policies and variations in the value of local public services may reveal efficiency differences between the two forms of city government, which the hedonic price estimation technique lends itself to directly testing. The hedonic price model analysis imbeds the theory that the value of local public services, and the taxes to finance them, are capitalized into house-selling prices.[6]

[6] For relevant literature on the capitalization of local public services into house values refer to Oates (1969), Rosen and Fullerton (1977), Brueckner (1979), or Yinger (1982).

More specifically, higher property taxes will lead to lower house-selling prices, while improvements in the value (quality or quantity) of local public services offered by a city government will lead to higher house-selling prices. Therefore, the net effect of the two local government functions is what is actually being capitalized into the house-selling prices.[7] In other words, the selling prices pick up the influence of the value of the public services provided, net of the cost of the city property taxes used to finance them.

If the value of the public services outweighs the cost of the taxes, then the net effect of the city government is positive, which shows the city government is operating efficiently.[8] A positive net effect would result in higher house-selling prices, which shows that more efficient city governments will have higher selling prices, ceteris paribus. Following this logic, it is hypothesized that professional city managers will conduct the city government affairs more efficiently relative to the EMC form of government. City managers can achieve this relative efficiency advantage by increasing the value of their public goods, or by decreasing the imposed costs of taxation. For example, city managers may produce more valuable public services given the same costs of taxation of the EMC government. Also, city managers may impose less costs of taxation to produce the same value of public goods as the EMC government.[9] Regardless of the method of producing the CM efficiency gains, if they exist, they will show up as a pricing premium in the estimation of the house-selling prices.

[Insert Table 2 about here]

[7] It should be noted that state government influences are also capitalized into house-selling prices; however, these influences are held constant because all the home sales are from cities within Ohio.

[8] Likewise, if the costs of taxation outweigh the value of the public services, then the net effect of the government influence would be negative, implying that the government is operating inefficiently.

[9] It also is feasible for city managers to produce more valuable public goods while, at the same time, decreasing the imposed cost of taxation, which again would result in a more significant and positive net effect of the city government.

The house prices that are estimated were from houses sold in 1991 in the six largest Ohio metropolitan areas, including central cities and several surrounding cities. The six central cities include Akron, Cincinnati, Cleveland, Columbus, Dayton, and Toledo.[10] Analysis of Ohio house sales is beneficial in order to directly compare to earlier studies such as Booms (1966) and Deno and Mehay (1987), which both studied the expenditures of Ohio city governments. Table 2 shows the data distribution among the six Ohio metropolitan areas and the two forms of city government classified by central city. The six central cities are spilt fifty-fifty between the two forms of city government; Cincinnati, Dayton, and Toledo had the CM form of government, while Akron, Cleveland, and Columbus had the EMC form. The house sales are somewhat evenly distributed between the two forms of government, with roughly 40 percent of the house sales occurring in CM cities and 60 percent occurring in EMC cities. This even distribution of house sales across the two forms of government is beneficial in testing for differences in the two forms of government.

The house-selling prices and house structural characteristics are based on the data set used by Haurin and Brasington (1996, 2001) and Brasington (1999, 2000, 2001). The data set includes only single-family detached dwellings. Also, any houses were eliminated that had a lot size greater than two acres to avoid inclusion of farming locations. Next, all houses were eliminated that sold for more than $400,000 or less than $10,000. Houses selling for more than $400,000 were deemed unrepresentative, and houses selling under $10,000 were suspected of being gifts between family members or

[10] The surrounding cities that were included in this study, based on data availability, were the following: Barberton, Brunswick, Cuyahoga Falls, Elyria, Fairborn, Fairfield, Gahanna, Hamilton, Kent, Lorain, Mentor, Middletown, North Olmsted, Reynoldsburg, Stow, and Westerville. These sixteen cities, along with the six central cities listed above, were the 22 cities included in the full sample analysis that follows.

generally uninhabitable. The authors also deflated the house-selling prices according to constructed metro area deflators.

There are two different samples of house sales that are estimated. First, a full sample of house sales occurring in 22 Ohio cities, as described earlier, is estimated. There were 37,441 home sales used in the estimation of the full sample, and the mean deflated house-selling price was $69,312. Second, a set of regressions was run that only included home sales in the six central cities. This analysis serves to check the robustness of the findings from the full sample estimation process. There were 31,274 home sales used in the estimation of the central-city sample, and the mean deflated house-selling price was $69,243.

[Insert Table 3 about here]

Table 3 presents summary statistics, definitions, and sources for the dependent and independent variables used in the estimation process. The structural house characteristics follow closely what has been used in previous hedonic price model analysis. There are dummy variables included in the estimation process to account for the CM form of government. By testing if the CM dummy variables are significant after controlling for city-specific influences such as public expenditures and taxes, the current study can provide evidence on whether the influence of the CM form of government is more highly valued in the housing market. Any such capitalization will capture the difference between the two forms of government, and therefore, reflect the value that residents place on the relative efficiency of the CM form of government.

Specifically, two different CM dummy variables were included in the full sample estimation to capture both city and central city effects.[11] The CM city government dummy variable is equal to one if the house is located in a city with the CM form of government and is used to test the relative efficiency advantage of being in a CM city over an EMC city. The CM city dummy variable will be significant and positive if professional city managers offer local public services that are valued more than those offered by EMC mayors, net of the tax burden for each form of government.

The performance of the central-city government should not only influence the selling prices of homes located in its borders, but also the selling prices of the homes located within the metropolitan area. This comes from the fact that many residents of the surrounding cities work or recreate in, or travel through, the central city. The CM central-city government dummy variable is equal to one if the house is located in a metropolitan area where the central city has a CM form of government, and this variable is used to test the relative efficiency advantage of being in a CM-run metropolitan area over an EMC-run metropolitan area. Again, the CM central-city dummy variable will be significant and positive if professional city managers offer local public services that are valued more than those offered by EMC mayors, net of the tax burden for each form of government.

City-specific measures of property tax rates, total government expenditures, unemployment rates, and housing unit growth are used to control for the city-specific influences affecting house-selling prices in each regression. The property tax rate and the total government expenditure are included to directly control for the finances of each city. General capitalization theory states that higher property tax rates result in lower house-

[11] Only one city form of government dummy variable is included in the estimation of the central-city sample of house-selling prices, which is equal to one if the central-city has a CM form of government.

selling prices, while greater public expenditures results in higher house-selling prices. This generalization comes from the notion that the property taxes are a cost imposed on the city residents, while the public goods, produced by government expenditures, are a benefit received by the residents. Thus, the property tax rate is expected to carry a negative sign and the total government expenditure is expected to carry a positive sign.

The city unemployment rate and housing growth variables are included to better characterize each city's economic activity. The city unemployment rates are included to directly control for the level of job availability (capacity) in each city. Cities with lower unemployment rates, or higher job availability, are relatively more attractive to live and work in than those cities experiencing high levels of unemployment, or lower job availability. Thus, the unemployment rate is expected to carry a negative sign showing that more job availability (low unemployment) exerts a positive influence on house-selling prices. The growth of housing units is included to directly control for the supply of housing market in each city. The housing growth rate is expected to carry a negative sign because increased levels of supply are typically followed by decreased prices.

Two outcome variables, measuring school quality and police protection, are included in various regressions to serve as robustness checks to the influence that CM governments have on the quality of public goods.[12] As supported by the findings of Brasington (1999), the housing market consistently values proficiency test scores as a measure of school quality. Therefore, the average passage rate of the State of Ohio 9th-grade proficiency test is included in selected regressions to control for school quality, and

[12] Because of the limited degrees of freedom, especially when estimating the central-city only sample, the measures of school quality and police protection are reported at the school-district level. The smaller and more defined measurement area will better characterize the specific-area influences of schooling and policing that affect each house value, while still serving the purpose of controlling for such influences.

is expected to carry a positive sign, showing that increased school quality positively influences house-selling prices. In order to control for the level of police protection, a burglary and larceny crime rate, measured per one thousand residents, is included in selected regressions. Burglary and Larceny crimes are chosen because they are a direct measure of the threat imposed on the protection of the private property of homeowners. The burglary-larceny crime rate should be negatively correlated with house-selling prices, showing that high crime areas have lower house-selling prices.

VI. Estimation Results

The log-linear hedonic price function was estimated using least squares regression analysis. The hedonic price function relates the house-selling price to the structural characteristics of the home, the city characteristics of the residence location, and the form of the city government. The econometric model can be written as follows:

$$\ln P_{Hi} = \beta_0 + \sum_{m=1}^{M} \beta_m S_{m,i} + \sum_{n=1}^{N} \beta_n C_{n,i} + \beta_p G_{p,i} + \varepsilon_i$$

where, $\ln P_{Hi}$ is the natural log of the selling price for house *i*, $S_{m,i}$ is the measure of the m^{th} structural variable for house *i*, $C_{n,i}$ is the measure of the n^{th} city characteristic for the residence location of house *i*, and $G_{p,i}$ is the city form of government for the residence location of house *i*.

[Insert Table 4 about here]

The log-linear hedonic price estimates for the full sample of Ohio cities are presented in Table 4. The house structural characteristics all have signs and significant levels that are generally supported in the hedonic house price literature. The city

characteristics (property tax rate, total government expenditures, unemployment rate, and housing growth) all had the expected signs and remained significant throughout the four specifications. Also, the outcome variables (school quality and police protection) had the expected signs and remained significant in the regressions that they were included in.

The focus of this paper is primarily on the differences in the two major forms of city government. Thus the variables that are of particular interest to test for relative efficiency differences are the two CM dummy variables. These two dummy variables are designed to test the effect that CM governments have on house-selling prices relative to the influence of EMC governments. After controlling for city taxes and expenditures, along with other city characteristics and outcome variables, the two CM dummy variables remain significant and positive throughout the four regression specifications.

The finding of positive and significant coefficient estimates for the CM dummy variables imply that there is a positive net effect of the CM form of government relative to the EMC form. In other words, professional city managers offer local public services that are valued more than EMC mayors, net of the tax burden of each form of government. The results support the hypothesis that the presence of a city manager produces a relative efficiency advantage for the CM form of government over the EMC form. In other words, adopting a CM form of government increases the house-selling price of homes located in CM cities, or CM-run metropolitan areas, relative to those located in EMC areas, which can be attributed to the efficiency gains produced by the professional city manager.

In order to serve as a final robustness check the same regressions were run using only data from the six central cities. Also, in comparing the magnitude and significance

of the two CM dummy variables, both city and central city, the metropolitan area CM dummy seems to exert a stronger influence on the house-selling prices. Implying that the central-city government form may matter more than the form of government of the surrounding cities. Likewise, there may be a stronger CM influence on the houses located within the central cities. Estimating just the house-selling prices occurring in central cities will reveal if the CM effect on house-selling prices is more or less pronounced in the central cities of the metropolitan areas.

[Insert Table 5 about here]

The estimation results for the central-city sample of home sales are reported in Table 5. The only structural difference is that only one CM dummy was needed to test for relative city form of government efficiency differences. The results do not differ substantially from those reported for the full sample estimation. All variables retained their expected signs and most retained significance throughout all four regressions. The one striking difference is the coefficient estimate on the CM dummy variable, which appears significantly larger than the estimates from the full sample. This reveals that the presence of a city manager has a stronger affect in central cities.

The percent effect of the CM government's influence on house-selling prices cannot be directly interpreted by the coefficient estimates appearing in Tables 4 and 5 because of the semi-logarithmic nature of the hedonic regression technique. Following the approach of Halvorsen and Palmquist (1980), the percentage effect that the CM form has on house-selling prices can be calculated as follows:

$$\alpha = [\exp(\beta) - 1] * 100$$

where, α is the percent effect of the CM form, and β is the coefficient estimate of the council-manager dummy variable. Calculations of the percentage effects were performed for the four regression specifications, for both the full and central city samples, and are presented in Table 6.

[Insert Table 6 about here]

Looking at the calculated percent effects for the full sample of Ohio cities shows that the CM central-city government form does exert a stronger impact on house-selling prices then the CM city government in three of the four regressions. The CM central-city government impact ranges from a low of 3.87% in specification [d] to a high of 5.05% in specification [a]. While, the CM city government impact ranges from a low of 2.24% in specification [a] to a high of 4.11% in specification [d]. These two dummy variables capture the separate effects of (1) a house being located in a CM city relative to an EMC city, and (2) a house being located in a CM-run metropolitan area relative to an EMC-run metropolitan area. However, they do not capture the combined effect of being in a CM city that is located in a CM-run metropolitan area. In order to capture the combined impact, the two coefficient estimates were combined and then used to calculate the percent effect (also presented in Table 6).[13] The combined effect of a house located in a CM city and CM-run metropolitan area ranged from a low of 7.41% in specification [a] to a high of 8.14% in specification [d].

Looking at the calculated percent effects for the sample of Ohio central cities shows that the CM city government form does exert a strong impact on house-selling

[13] To get the combined percent effect the following calculation was used: $\alpha = [\exp(\beta_1 + \beta_2) - 1] * 100$, where β_1 is the coefficient estimate of the CM city dummy, and β_2 is the coefficient estimate of the CM central-city dummy.

prices. The percent effects ranged from a low of 16.08% in specification [a] to a high of 18.79% in specification [d]. Again, these percent effects are the impact of the CM form of government relative to the EMC form, after controlling for several city-specific influences and outcome variables that have traditionally been shown to affect house-selling prices. The fact that the percent affects are positive, significant, and quite large shows that the city form of government does matter. Specifically, CM governments outperform EMC governments, which results in a significant pricing premium for houses located in those areas.

The calculated percentage effects were used to calculate the marginal implicit price (pricing premium) of adopting a CM form of government. Calculations of the marginal implicit price of the CM government, evaluated at the mean house-selling price, are produced using the following formula and are also presented in Table 6:

$$\rho = \alpha \cdot \bar{P}_H$$

where, ρ is the marginal implicit price of the CM government, and $\bar{P}_H$ is the mean house-selling price of the sample.

The marginal implicit price of the CM government is essentially the pricing premium that home owners would be willing to pay to live in a house located in a CM city, or CM-run metropolitan area, relative to living in the same house in a EMC area. The implicit prices from the full sample of Ohio cities show that residents would, on average, pay about $2,000 more to own a house in a CM city and about $3,000 more to own a house in a CM-run metropolitan area, relative to owning a house in a EMC area. Also, the results show that residents would, on average, pay over $5,000 to own a house in a CM city located in a CM-run metropolitan area. When considering the central-city

sample of house sales, results show that central-city residents would, on average, pay around $12,000 to own a house in a CM central-city relative to an EMC central-city. Again, the pricing premiums can be attributed to the fact that professional city managers offer a superior basket of local public goods relative to EMC mayors, net of the tax burden created to finance the production of the local public goods.

VII. Concluding Remarks

The majority of U.S. city governments have adopted either an EMC form of government or a CM form. Several studies have attempted to find efficiency differences between the two competing forms of city government, where the hypothesized difference is based on the theory that a professional city manager has an efficiency advantage over a popularly elected mayor in the production of local public goods. However, past studies have shown no significant differences in the two forms of city government, which is surprising given the current trend of U.S. cities adopting the CM form of government.

This paper used an alternative method of testing for city government efficiency differences and showed that efficiency differences do exist between the two forms of government. This finding provides some insight into the growing trend towards adopting the CM form of city government. More specifically, to build upon the use of common government expenditures and account for the total value of public services offered by a city government, the alternative method relies on the theory that local public services and taxes are capitalized into housing prices. It is hypothesized that analysis of all the public goods and services offered by a locality will better capture the scope of the cities expenditures, and help reveal differences in the two forms of government. Where, if the

efficiency advantages exist, they will show up in a pricing premium. Results show that houses within a CM city, or CM-run metropolitan area, have a significant pricing premium that can solely be attributed to the relative efficiency of the CM form of government over the EMC form.

These results contribute to the literature in that they are the first results since Booms (1966) that point to significant efficiency differences in the two forms of city government. Booms (1966) findings are supported in the fact that the CM form of government has a relative efficiency advantage over the EMC form. The efficiency advantage can also be used to explain the current U.S. trend towards adopting the CM form of city government. The cities making the transition to the CM form of government have to receive some benefits from the change, and the benefits may come in the form of efficiency gains. Finally, the alternative methodology employed to show the CM government's relative efficiency advantage sheds some doubt on the use of common government expenditures to test for differences in city forms of government. The results point to the fact that variations in the total value of the public services produced, and the efficiency of the manner in which they were produced, may be better suited to reveal differences in the two forms of city government.

Table 1: Percent of U.S. and Ohio City Governments Having Each Form of Government, 1976-1999

	1976	1981	1986	1991	1996	1999
U.S. Total						
Elected Mayor-Council	58%	57%	55%	53%	49%	43%
Council-Manager	32%	34%	35%	37%	42%	49%
Ohio Total						
Elected Mayor-Council	80%	79%	78%	76%	74%	70%
Council-Manager	20%	21%	22%	24%	26%	30%

Note: Percentages may not sum to 100 because of omitted forms of government.
Source: ICMA, *The Municipal Year Book*, (1976-1999).

Table 2: Data Distribution Among Ohio Cities and Forms of Government

Metropolitan Area	Central City Form of Government (a)	Number of Observed House Sales (b)	Percent of Total Observed House Sales
Akron	Elected Mayor-Council	4,078	11%
Cincinnati	Council-Manager	6,520	17%
Cleveland	Elected Mayor-Council	11,866	32%
Columbus	Elected Mayor-Council	6,272	17%
Dayton	Council-Manager	5,743	15%
Toledo	Council-Manager	2,962	8%

Sources: (a) ICMA, *The Municipal Year Book*, (1991); (b) Amerestate, *Pace Net Data Set*, (1991).

Table 3: Summary Statistics, Definitions, and Sources for Variables

Variable Name (definition) (source)	Mean	St. Dev.
Dependent Variables		
House-Selling Price (Deflated house transaction amount, full sample, 1991) (a)	69,311.81	41,571.95
Log Price (Natural log of the deflated house transaction amount, full sample, 1991)	10.97	0.61
House-Selling Price (Deflated house transaction amount, only MSA central cities, 1991) (a)	69,243.14	43,137.42
Log Price (Natural log of the deflated house transaction amount, only MSA central cities, 1991)	10.96	0.63
Independent Variables		
Council-Manager City (Dummy =1 if CM form of city government in 1991) (b)	0.44	0.49
Council-Manager Central City (Dummy =1 if CM form of MSA central-city government in 1991) (b)	0.41	0.49
Property Tax Rate (Residential property tax millage rate net of tax reduction factors, 1991) (c)	51.89	6.48
Total Government Expenditures (City government expenditure in ten millions of dollars, 1990-1991) (d)	36,6713.85	20,1874.90
Civilian Unemployment Rate (Civilian labor force percent unemployed, 1991) (d)	7.29	1.93
Growth of Housing Units (Percent change of housing units from 1980-1990) (d)	2.41	12.20
9^{th}-Grade Proficiency (Average passage rate of the State of Ohio 9^{th}-grade proficiency test, 1990-1991) (e)	33.86	18.49
Burglary and Larceny Crime rate (Number of burglary and larceny crimes per thousand population, 1991) (f)	7.77	23.55
Air Conditioning (Dummy =1 if the house has central air-conditioning) (a)	0.34	0.47
Fireplace (Dummy =1 if the house has a fireplace) (a)	0.37	0.48
Lot Size (Size of the lot in thousands of square feet) (a)	9.75	8.34
Age (Age of the house in years) (a)	45.16	23.98
House Size (Size of the house in thousands of square feet) (a)	1.43	0.49
Garage Size (Size of the garage in thousands of square feet) (a)	0.32	0.19
Full Bathrooms (Number of full bathrooms) (a)	1.27	0.48
Part Bathrooms (Number of partial bathrooms) (a)	0.31	0.48
Unenclosed Porches (Number of unenclosed porches) (a)	0.79	0.74
Enclosed Porches (Number of enclosed porches) (a)	0.16	0.39
Patio (Dummy =1 if the house has a patio) (a)	0.20	0.40
Deck (Dummy =1 if the house has a deck) (a)	0.10	0.30
Pool (Dummy =1 if the house has a pool) (a)	0.01	0.11

Note: The mean and standard deviation values reported for the independent variables are for the full sample of Ohio cities.
Sources: (a) Amerestate, *Pace Net Data Set*, (1991); (b) ICMA, *The Municipal Year Book*, (1991); (c) Ohio Department of Taxation, *Property Tax Millage Rates*, (1991); (d) U.S. Census, *County and City Data Book*, (1994); (e) Ohio Department of Education, *Ohio 9^{th}-Grade Proficiency Test Passage Rates* (1990-1991); (f) Office of Criminal Justice Services, State of Ohio, *Crime by County 1993*, (1994).

Table 4: Log-Linear Hedonic Estimates of Ohio Metro Area House-Selling Prices (Full Sample), 1991
37,441 Observed House Sales (Absolute value of t-stats)

	[a]	[b]	[c]	[d]
Council-Manager City Government	0.0222*	0.0280**	0.0344**	0.0403***
	(1.67)	(2.12)	(2.46)	(2.90)
Council-Manager Central-City Government	0.0493***	0.0438***	0.0436***	0.0380***
	(3.58)	(3.19)	(3.02)	(2.65)
Property Tax Rate	-0.0033***	-0.0032***	-0.0063***	-0.0061***
	(7.60)	(7.30)	(13.76)	(13.48)
Total Government Expenditures ($10,000,000)	0.0020***	0.0020***	0.0017***	0.0017***
	(15.70)	(15.78)	(13.03)	(13.11)
Civilian Unemployment Rate	-0.0271***	-0.0268***	-0.0421***	-0.0418***
	(15.10)	(14.96)	(22.62)	(22.49)
Growth of Housing Units	-0.0020***	-0.0021***	-0.0025***	-0.0026***
	(6.21)	(6.65)	(7.44)	(7.88)
9^{th}-Grade Proficiency	0.0077***	0.0077***		
	(60.49)	(60.49)		
Burglary and Larceny Crime Rate	-0.0003***		-0.0003***	
	(3.98)		(3.85)	
Air Conditioning	0.1037***	0.1037***	0.1196***	0.1196***
	(20.79)	(20.79)	(22.93)	(22.92)
Fireplace	0.1285***	0.1289***	0.1510***	0.1514***
	(26.78)	(26.87)	(30.14)	(30.22)
Lot Size (1,000 sq. ft.)	0.0111***	0.0111***	0.0191***	0.0192***
	(17.34)	(17.37)	(29.23)	(29.26)
Lot Size Squared	-0.0001***	-0.0001***	-0.0002***	-0.0002***
	(11.29)	(11.35)	(18.48)	(18.53)
Age	0.0025***	0.0025***	0.0014***	0.0014***
	(7.25)	(7.20)	(3.93)	(3.88)
Age Squared	-0.0001***	-0.0001***	-0.0001***	-0.0001***
	(26.43)	(26.37)	(25.10)	(25.04)
House Size (1,000 sq. ft.)	0.4897***	0.4892***	0.4960***	0.4955***
	(25.08)	(25.05)	(24.24)	(24.21)
House Size Squared	-0.0430***	-0.0429***	-0.0376***	-0.0374***
	(7.89)	(7.86)	(6.58)	(6.55)
Garage Size (1,000 sq. ft.)	0.7161***	0.7170***	0.7746***	0.7756***
	(27.77)	(27.80)	(28.69)	(28.73)
Garage Size Squared	-0.6662***	-0.6671***	-0.7259***	-0.7268***
	(17.04)	(17.06)	(17.72)	(17.74)
Full Bathrooms	0.0457***	0.0460***	0.0623***	0.0626***
	(8.18)	(8.23)	(10.65)	(10.70)
Part Bathrooms	0.0749***	0.0752***	0.0906***	0.0909***
	(15.39)	(15.47)	(17.80)	(17.87)
Unenclosed Porches	-0.0039	-0.0040	-0.0081**	-0.0082**
	(1.20)	(1.21)	(2.36)	(2.38)
Enclosed Porches	0.0045	0.0045	0.0101*	0.0102*
	(0.81)	(0.82)	(1.74)	(1.74)
Patio	0.0262***	0.0253***	0.0256***	0.0246***
	(4.80)	(4.64)	(4.48)	(4.32)
Deck	0.0872***	0.0874***	0.1032***	0.1034***
	(12.72)	(12.74)	(14.38)	(14.40)
Pool	0.0399**	0.0394**	0.0363**	0.0358**
	(2.35)	(2.32)	(2.04)	(2.01)
Constant	9.6786***	9.6811***	9.8154***	9.8179***
	(296.58)	(296.66)	(287.76)	(287.83)
R-squared	0.64	0.64	0.61	0.61

Significance levels are represented by: *** 1%, ** 5%, * 10%
Quarter of sale dummy variables were included in each regression, and are available upon request to the author.

Table 5: Log-Linear Hedonic Estimates of Ohio Metro Area House-Selling Prices (Central Cities Only), 1991
31,274 Observed House Sales (Absolute value of t-stats)

	[a]	[b]	[c]	[d]
Council-Manager City Government	0.1491***	0.1501***	0.1712***	0.1722***
	(9.58)	(9.65)	(10.52)	(10.59)
Property Tax Rate	-0.0061*	-0.0064*	-0.0124***	-0.0127***
	(1.62)	(1.70)	(3.16)	(3.25)
Total Government Expenditures ($10,000,000)	0.0051***	0.0051***	0.0062***	0.0062***
	(21.57)	(21.55)	(25.04)	(25.02)
Civilian Unemployment Rate	-0.0265***	-0.0272***	-0.0386***	-0.0393***
	(5.26)	(5.42)	(7.34)	(7.50)
Growth of Housing Units	-0.0052***	-0.0054***	-0.0092***	-0.0094***
	(5.35)	(5.56)	(9.09)	(9.31)
9^{th}-Grade Proficiency	0.0075***	0.0075***		
	(54.07)	(54.07)		
Burglary and Larceny Crime Rate	-0.0002*		-0.0002	
	(1.66)		(1.59)	
Air Conditioning	0.1069***	0.1070***	0.1246***	0.1247***
	(19.06)	(19.07)	(21.28)	(21.29)
Fireplace	0.1400***	0.1402***	0.1660***	0.1662***
	(26.14)	(26.18)	(29.76)	(29.80)
Lot Size (1,000 sq. ft.)	0.0098***	0.0098***	0.0181***	0.0181***
	(13.68)	(13.65)	(24.57)	(24.54)
Lot Size Squared	-0.0001***	-0.0001***	-0.0002***	-0.0002***
	(8.80)	(8.80)	(15.65)	(15.65)
Age	0.0042***	0.0041***	0.0028***	0.0027***
	(10.59)	(10.55)	(6.76)	(6.72)
Age Squared	-0.0001***	-0.0001***	-0.0001***	-0.0001***
	(27.54)	(27.50)	(25.84)	(25.81)
House Size (1,000 sq. ft.)	0.4839***	0.4837***	0.5023***	0.5021***
	(22.51)	(22.50)	(22.34)	(22.34)
House Size Squared	-0.0388***	-0.0387***	-0.0369***	-0.0368***
	(6.49)	(6.48)	(5.90)	(5.89)
Garage Size (1,000 sq. ft.)	0.7244***	0.7249***	0.7658***	0.7663***
	(24.76)	(24.77)	(25.04)	(25.05)
Garage Size Squared	-0.6574***	-0.6580***	-0.6982***	-0.6988***
	(14.90)	(14.91)	(15.13)	(15.15)
Full Bathrooms	0.0549***	0.0551***	0.0737***	0.0739***
	(8.72)	(8.77)	(11.22)	(11.26)
Part Bathrooms	0.0834***	0.0837***	0.1014***	0.1016***
	(15.28)	(15.33)	(17.79)	(17.84)
Unenclosed Porches	-0.0059	-0.0058	-0.0063*	-0.0062*
	(1.59)	(1.58)	(1.62)	(1.62)
Enclosed Porches	0.0046	0.0046	0.0101	0.0101
	(0.75)	(0.74)	(1.56)	(1.56)
Patio	0.0248***	0.0245***	0.0303***	0.0301***
	(3.82)	(3.79)	(4.47)	(4.44)
Deck	0.0914***	0.0915***	0.1090***	0.1091***
	(11.69)	(11.69)	(13.33)	(13.34)
Pool	0.0279	0.0274	0.0235	0.0230
	(1.43)	(1.41)	(1.15)	(1.13)
Constant	9.9627***	9.9835***	10.4964***	10.5172***
	(43.16)	(43.31)	(43.52)	(43.67)
R-squared	0.65	0.65	0.61	0.61

Significance levels are represented by: *** 1%, ** 5%, * 10%
Quarter of sale dummy variables were included in each regression, and are available upon request to the author.

Table 6: Percent Effect and Marginal Implicit Price of the Council-Manager Form of Government

	[a]	[b]	[c]	[d]
Full Sample of Ohio Cities $\bar{P}_H$ = \$69,312				
Council-Manager City Government				
Percent Effect (α)	2.24%	2.84%	3.50%	4.11%
Implicit Price (ρ)	\$1,553	\$1,968	\$2,426	\$2,849
Council-Manager Central City Government				
Percent Effect (α)	5.05%	4.48%	4.46%	3.87%
Implicit Price (ρ)	\$3,500	\$3,105	\$3,091	\$2,682
Council Manager City and Central City Government				
Percent Effect (α)	7.41%	7.44%	8.11%	8.14%
Implicit Price (ρ)	\$5,136	\$5,157	\$5,621	\$5,642
Only Ohio Central Cities $\bar{P}_H$ = \$69,243				
Council-Manager City Government				
Percent Effect (α)	16.08%	16.20%	18.67%	18.79%
Implicit Price (ρ)	\$11,134	\$11,217	\$12,928	\$13,011

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