
ECONOMIES OF SCALE AND THE PROVISION OF PUBLIC GOODS BY MUNICIPALITIES

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ABSTRACT

This paper adds to the literature that examines economies of scale in the provision of municipal services. Private sector economies exist as average costs decline as output expands. Likewise, economies exist in the provision of public services as average costs decline as the number of recipients of the service increases.

A discussion of declining average costs inevitably involves a discussion of municipal consolidation. Proponents of larger local government believe bigger government is more efficient government. Citizens residing in consolidated cities will enjoy quality city services at a lower cost. In addition, consolidated cities are more effective at long range, comprehensive planning which spurs regional economic development.

This study utilizes a sample of municipalities in Alabama to empirically test for economies (or diseconomies) of scale in the provision of public services. A brief history of municipal consolidation is presented in the next section. Section two contains the theoretical arguments for the creation of mega-municipalities and for numerous, fragmented local governments. In section three, a review of the existing literature is presented. Finally, the last section contains the results of this study and some concluding remarks.

BRIEF HISTORY

Consolidating smaller municipalities into a single metropolitan government offers the promise of efficiency to many observers. By ending the duplication of services in nearby cities and taking advantage of economies of scale, lower-cost public services are possible. Centralized government will be attractive to industry and will result in increased economic development.

The notion that bigger local government is better local government is not new. It traces its origins, according to Andrew Sancton (2000), to debates surrounding the consolidation of local governments in the Philadelphia area in 1844. "Eli K. Price, the state senator from Philadelphia, presented one of the first ever projections of financial savings. He claimed that the elimination of 168 tax collectors from the different jurisdictions would save \$100,000 per year" (Sancton 2000:28).

New York City is the product of the consolidation of 15 cities in five separate counties in 1898 (Sancton 2000). Twelve municipalities were merged with Birmingham by the Alabama legislature in 1910. While a metropolitan-wide referendum on the merger passed, a majority in the municipalities being merged were opposed. Sancton (2000:37) points out that since that time, "no solvent American municipality has been forced against its will to lose its incorporated status and join another."

The most recent articulation of the case for consolidation comes from David Rusk, the former mayor of Albuquerque, New Mexico. His book, *Cities Without Suburbs* has successfully placed "the issue of municipal boundaries back on the American agenda" (Sancton 2000:79).

Nevertheless, the issue is typically unpopular with the voters. "Only 20 percent of referenda on consolidation are approved by the electorate (Harrigan and Vogel 2000). To cite a few examples, mergers were defeated in St. Louis, San Antonio, Sacramento, Portland, Charlotte and Knoxville. In fact, Knoxville voters have defeated consolidation plans on four separate occasions (Lyons and Scheb 1998).

A number of notable mergers and consolidations have taken place. The services provided by Dade County (Miami) were extended in 1957.

Nashville and Davidson County were consolidated in 1962, Jacksonville and Duval County were consolidated in 1967 and two years later, Indianapolis and Marion County were merged (Sancton 2000:71). More recently, Louisville and Jefferson County were merged in Kentucky.

THEORETICAL ARGUMENTS

"According to the consolidationists, the primary ills of local government stem from fragmentation and the 85,000 governments and over 500,000 officials that dot America's political landscape. For consolidationists, the solution lies in eliminating independent municipalities within a county and replacing them with a single government" (Savitch and Vogel 2000: 162).

Bigger local government could take advantage of economies of scale by producing on a larger scale. In addition, the duplication of supervisors, administrators and local politicians would bring relief to taxpayers.

Competition between numerous local governments is unproductive as well. Expressing such an idea is Carl Goldenberg, who in 1963 reported to the Ontario government the merits of amalgamated metro-government. "With each municipality seeking to improve its tax base independently, they compete for development and redevelopment projects, which are accordingly dealt with on a piecemeal basis and without regard to sound planning in the overall interests of the area" (Goldenberg 1965: 181-82). By clinging to their own parochial interests, resources are wasted and the 'big-picture' ignored.

Consolidation supports growth and economic development "by enhancing the planning capacity of local government. Comprehensive planning on a metropolitan-wide basis under a single authority is viewed as a necessary condition for attaining coordinated development" (Feiock and Carr 1997:166). Firms seeking to locate in an area with a metropolitan government only have to deal with a single entity rather than numerous officials from several jurisdictions.

On the other hand, convincing arguments can be made which suggest that smaller, independent municipalities deliver superior services at lower costs. Howard Husock, Director of Case Studies at the John F. Kennedy

School of Government, Harvard University, argues "that improvement of ... cities requires not a single, bigger government but increased numbers of smaller ones". Bigger government, according to Husock, is not more efficient government. The basis for his assertion goes back to the work of Charles Tiebout.

Tiebout, in response to those who argued that no mechanism existed to reveal the preferences of consumers for public goods, showed how competition among numerous local governments could achieve a market-like efficiency. When many local governments exist, people can choose to reside in the one that most closely produces the types of public goods they desire.

Small communities can offer differing packages of services and amenities and we can vote with our feet as to which ones we prefer. Moreover, even when they offer the same sorts of services, they compete as to which can deliver them more efficiently. The town which offers the package of services most like that which you want and delivers at the lowest tax rate will get your vote, in effect. You'll move in. If things change, you may well move out. We know that competition disciplines the private marketplace; so, too, does it discipline the public one (Husock 2001).

Numerous local jurisdictions provide choices for consumers and citizen mobility promotes efficiency. As Tiebout predicted, differing policies among jurisdictions has been shown to significantly influence migration (Reschovsky 1979).

Other local jurisdictions also provide a basis for comparison. Thus, citizens in one municipality can compare the set of services offered and the costs of such services with other municipalities and protest - at the ballot box - if the comparison is unfavorable. Comparison shopping is more difficult with metropolitan governments.

Large consolidated cities are monopoly providers of services and, so the argument goes, suffer from all the inefficiencies inherent with this market structure. "We should no more worry about too many municipalities than we should worry about too many firms involved in the retailing of groceries. Just as different grocery stores provide different levels of selection, quality and price, so too do municipalities. Having one municipality responsible for

providing all the municipal services in a city-region makes as much sense as having one monopoly grocery firm" (Sancton 2000:74).

The question of whether economies exist in the provision of services by municipalities is an empirical one. Before empirical evidence is presented, however, the existing literature regarding this subject will be examined.

LITERATURE REVIEW

Researchers have sought to identify the efficiency gains associated with larger municipalities. Sjoquist (1982) found that numerous small jurisdictions resulted in lower costs of services. Benton and Gamble (1984) examined both expenditures and taxation in pre- and post-merger Jacksonville, Florida and found that both increased after consolidation. Gustely (1977) showed that expenditures for services provided by Metro Miami government rose after consolidation. Another study commissioned by the National Research Council (1999) concluded that rather than a method of reducing costs, consolidation resulted in increased local expenditures. Desbiens (1999) found that diseconomies of scale are present even when jurisdiction with as few as 2000 inhabitants are merged - a result suggesting that extremely small municipalities are the most efficient.

Weicher (1970) examines four subcategories of spending; namely police protection, fire protection, sewers and sanitation and highways. Evidence of economies of scale is only present with fire protection. In another study examining Miami-Dade County, Becker and Dluhy (1998) find no evidence of economies when focusing on aggregate expenditures but when specific services are examined, they find some, limited evidence for lower costs with larger jurisdictions. Fire and rescue services, library services and planning services demonstrated economies of scale while police protection, waste management, recreation services and public works showed "either negligible or marginal economies (or diseconomies) of scale" (1998:85).

A study of the Pittsburg (Allegheny County) area for the U.S. government's Advisory Council on Intergovernmental Relations (ACIR)

found that, despite the fact that "there were more than 100 separate police departments [in Allegheny County], costs ... were below the average for other American areas on similar size" (ACIR 1992:78). A separate ACIR study (1988) investigated the St. Louis area. Researchers found evidence of "slight economies of scale ... in larger police departments (ACIR 1988: 76). The St. Louis study examined another issue; are larger areas better able to attract industry and jobs. The authors found no relationship between the number of municipalities in a region and the number of jobs created.

The notion that larger local government will eliminate duplication and result in lower administrative costs was explored by Bish (2000). The cost associated with 88 elected officials and their staffs in 13 separate jurisdictions were compared with those of 23 elected officials and their staffs in a merged city of the same population. Bish found that per capita costs were practically identical.

The quality of services provided by large cities and by numerous smaller governmental units has also been examined. Ostrom and Parks (1973) asserted that smaller, unmerged police departments are more trusted by citizens, know more about their communities and respond to the citizen needs more quickly. Likewise, Hoxby (1997) found that students in areas with numerous school districts performed better on math and reading examinations than did students from areas with large unified districts. The costs of providing education were significantly lower with more numerous districts as well.

MODEL AND EMPIRICAL EVIDENCE

The present study tests for economies of scale from a sample of Alabama cities prepared by the Public Affairs Research Council of Alabama (PARCA), a nonprofit research organization housed at Samford University. The sample includes Alabama's 25 largest cities ranging in population from 18,497 in Mountain Brook to 252,997 in Birmingham. The data in the report are derived from city financial reports for fiscal year 1998 (October 1998 through September 1999), and have been adjusted so that the data are comparable from city to city. For example, solid waste collection is included

but sewage treatment facility expenditures and the expenditures associated with operating a landfill are omitted.

Municipal expenditures have been divided into a number of categories; namely, public safety, public works and community development, general governmental and social and cultural activities. Public safety expenditures include police, fire, emergency-911, and civil defense; public works and community development expenditures include streets, sanitation, engineering, parking, transit and community development block grants unless allocated to some other function; general government expenditures encompass the mayor and council, courts, finance and economic development; and social and cultural activities include parks, museums, cemeteries, civic auditoriums, libraries, welfare, senior citizen and youth activities, animal shelters and health services.

Public safety expenditures were the largest of the spending categories in 23 of the 25 cities ranging as a percentage of total operating expenditures from a low of 28% to a high of 46% (PARCA Report 2000:5). In the remaining cities, public works and community development was the largest category.

In addition to the spending data, the PARCA Report also includes information that serves as an explanatory variable in this study, TAXBASE. TAXBASE is the amount of per capita money generated by a 1% sales tax. It captures the ability of cities to raise revenue. Sales taxes accounted for the majority of revenue raised in 1998 in 23 of the 25 cities comprising the sample (PARCA Report 2000:2).

Other independent variables entered into the equation are the 1999 median age of the city's residents, the percentage of the city's population in 1999 with college degrees, 1999 per capita income of the city, 1997 property crime (burglary, larceny-theft, motor vehicle theft, arson) per 100,000 residents, 1997 violent crime (murder, non-negligent manslaughter, forcible rape and assault) per 100,000 residents and the percentage of the city's population that is black, in 1999.

Models utilizing total aggregate expenditures, public safety spending, public works spending, cultural expenditures and general government expenditures as the dependent variables are estimated. The results are

presented in Table 1. Seventy seven percent of the variation in aggregate expenditures is accounted for in the first model. The size of the tax base is significantly related to all of the spending categories (including aggregate spending) with the exception of general government and public works expenditures.

Higher per capita income and the amount of property crime are significantly related with public safety expenditures. As the number of college graduates increases, public safety expenditures decrease significantly.

The behavior of the variables of chief interest, population and population squared, indicate that economies of scale are not present in any of the specifications. No evidence for the proposition that big government is efficient government is found. Instead, the results indicate that diseconomies are present in the provision of public safety services and in aggregate expenditures.

CONCLUSION

This study yields no support for the hypothesis that large government takes advantage of economies of scale and avoids wasteful duplication. In fact, diseconomies exist when examining aggregate spending and in the provision of public safety services. Given the overwhelming evidence supporting numerous jurisdictions, Sancton (2000: 75) asserts, "to be intellectually convincing, consolidationists must now specify exactly what it is they expect consolidation to accomplish and why this objective cannot be achieved by following some other course of action."

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| Table 1 | | | | | | |
|---|--------------------|-------------|---------------|--------------|-----------------------|--------------------|
| | Total Expenditures | | Public Safety | Public Works | Cultural Expenditures | General Government |
| | Model 1 | Model 2 | | | | |
| Intercept | -172.2 | -292.6 | 153.7 | 124.0 | -81.1 | 95.01 |
| | (-0.3) | (-0.58) | (1.07) | (0.77) | (-0.75) | (0.89) |
| Popu- lation | -0.0065 | -0.0065 | -0.002 | -0.001 | -0.0004 | 0.000038 |
| | (-1.96)* | (-2.37)*** | (-2.78)*** | (-1.15) | (-0.77) | (0.07) |
| Pop Squared | 0.00000003 | 0.000000028 | 0.000000008 | 0.000000004 | 0.000000003 | 0.000000008 |
| | (2.14)** | (2.58)*** | (2.84)*** | (1.27) | (1.11) | (0.34) |
| Tax Base | 3.5 | 3.6 | 0.87 | 0.39 | 0.414 | 0.186 |
| | (3.54)*** | (4.2)*** | (3.64)*** | (1.53) | (2.42)*** | (1.09) |
| Median Age | 10.13 | 11.42 | -2.83 | 1.37 | 3.69 | -0.31 |
| | (0.66) | (0.79) | (-0.7) | (0.3) | (1.19) | (-0.1) |
| College Grad | 13.82 | 15.46 | -7.04 | -5.1 | 1.15 | -1.74 |
| | (1.18) | (1.43) | (-2.32)*** | (-1.5) | (0.5) | (-0.77) |
| Per Capita Income | 0.002 | 0.002 | 0.011 | 0.004 | -0.0008 | 0.001 |
| | (0.195) | (0.184) | (3.72)*** | (1.14) | (-0.35) | (0.64) |
| Property Crime | 0.04 | 0.041 | 0.02 | | | |
| | (1.53) | (3.16)*** | (4.33)*** | | | |
| Violent Crime | 0.036 | | | | | |
| | (0.42) | | | | | |
| Percent Black | -2.48 | | | | | |
| | (-0.52) | | | | | |
| R ² | 0.77 | 0.76 | 0.79 | 0.37 | 0.42 | 0.27 |
| t-statistics in parentheses * 10% level of confidence ** 5% level of confidence *** 1% level of confidence | | | | | | |

