FISCAL IMPACTS OF CHANGES IN POPULATION FOR NONMETROPOLITAN AREAS OF THE NORTHEAST

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ABSTRACT

The recent reversal in the intraregional migration into non-metropolitan areas has generated a great deal of interest in the problems of local government finance. Of specific concern are the changes in local government expenditures and revenues that have accompanied population growth and decline and related shifts in population composition in nonmetropolitan areas of the Northeast. Using a supply and demand framework, it is argued that the approach used in previous studies of examining the relationship between growth rates and various fiscal variables leads to biased inferences regarding the impact of growth. By analyzing the impacts of changes in the socioeconomic make-up of the population which often accompany growth and decline, the study increases the understanding of fiscal strains on local governments resulting from population shifts.

The secular decline of the Northeast and North Central regions of the United States has generated a great deal of interest in the economic impacts of growth and decline. Currently the most outspoken views on the subject focus on sun-belt-frostbelt issues dealing with the causes and results of inter-regional population shifts. However, in addition to this net migration to the sunbelt states, there is an intraregional population shift towards nonmetropolitan areas throughout the country. This shift, documented by Niles Hansen, Calvin Beale and others, has its own economic implications which deserve more attention. This paper is concerned with one aspect of the shift towards nonmetropolitan areas—the fiscal impacts of the recent changes in population distribution on local governments in nonmetropolitan areas of the Northeast.[1]

There are, of course, many interrelated aspects of the local economy which are affected by population shifts. It is not our purpose to suggest that local government issues are more important to community life than, say, the housing market or social change within the community.[2] However, the performance of local governments in providing public services for their citizens is an important determinant of a community's standard of living. Furthermore, the ability to provde for changing needs may become increasingly important as the community undergoes rapid changes in its economic, political and social life brought about by population shifts. A better understanding of the fiscal impact of growth and decline seems essential if local governments and their citizens are to be adequately prepared to meet the demands imposed by the continuing population changes of this decade.

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[1]The Census definition of the Northeast is used in this analysis. The States included are: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

[2]Marion Clawson commented on the range of economic implications of the movement into nonmetropolitan areas.

To date, the published work focusing on the effects of population change on local governments has tended to be concerned with the relationship between population growth rates and changes in various fiscal variables. This is a valid first step, but the results of such analyses may lead to biased inferences regarding the impact of population changes in the future. The impact of population growth or decline on a local government's fiscal position depends upon how population change affects the demand for and supply of locally provided public services as well as on how population change affects the jurisdiction's revenue base. On one hand, a growing area may be expected to increase spending, after some time lag, to retain a fairly constant flow of services to its constituents. At the same time, the area's local governments should normally be able to increase total revenue as their revenue bases expand. On the other hand, along with changes in the size of the population, changes in the composition of the population are likely to have an effect on the demand for and supply of local government services and on local government revenue bases. By basing their analyses solely on changes in the size of the population, previous studies have implicitly assumed that population composition either remains stable or does not have any perceptible impact on the local government's fiscal position. We shall argue that it is not only whether an area is growing or declining that is important in explaining local government fiscal behavior, but also that compositional changes are important.

RECENT RELATED STUDIES

To put the analysis in perspective, it might be helpful to examine some of the changes in population that have occurred since 1960. Between 1960 and 1970, total population in the Northeast increased by 9.7 percent—somewhat below the national average of 13.3 percent. Northeast metropolitan areas grew by 9.9 percent while their nonmetropolitan counterparts grew by 8.4 percent (Hines, et al). Since 1970, the reported figures have told a very different story, however. While the 1960-1970 national growth rates indicated a pronounced continuing shift towards metropolitan America, the figures for the 1970-1974 period indicate a reversal of this trend. While nonmetropolitan counties throughout the nation grew by 5.6 percent over this 4 year period, the metropolitan counties grew by only 3.4 percent (Beale). The figures for the Northeast indicate an even greater movement into nonmetropolitan areas—nonmetropolitan counties grew 6.2 percent between 1970 and 1974 while metropolitan counties declined slightly according to census reports. The adjustments made by nonmetropolitan local governments in the Northeast during the 1960's may well be indicative of the adjustments that nonmetropolitan local governments in the remainder of the country may be undergoing during this decade and in the near future.

The relationship between change in population size and local government fiscal behavior is revealing in one respect. It

TABLE 1.

Mean Percentage Change in Major Fiscal Variables for Growing and Declining County Areas, 1962-1972[a]

Revenue and expenditure categories	TOTAL VALUES		PER CAPITA VALUES	
	Growing counties N=90	Declining counties N=26	Growing counties N=90	Declining counties N=26
	Percent			
General revenues	164	138*	137	151#
Own source revenues	149	106*	123	118
Intergovernmental revenues	210	208	177	226#
Direct Federal transfers	1934	3314	1823	3456
Direct expenditures	161	112*	134	124
School expenditures	169	116*	140	127
Current expenditures	162	120*	135	131
Capital outlays	314	118*	278	132
Long-term debt outstandings	119	303*	195	332#
Long-term school debt outstanding	156	920*	123	1003

Sources for all tables: United States Census of Governments 1962 and 1972; United States Census of Population 1960 and 1970.

[a]Growing and declining according to change in population.

*Significantly different mean growth rate of total spending and revenue categories at 90 percent confidence level for increasing versus decreasing population counties.

#Significantly different mean growth rate of per capita spending and revenue categories at 90 percent confidence level for increasing versus decreasing population counties.

has been argued that the growth process is not symmetrical—growth and decline do not necessarily elicit adjustments in opposite directions from each other. Essentially, the argument rests on the belief that supply conditions such as bureaucratic resistance to cutbacks, recognition and response time lags, and the inflexibility of fixed capital inputs delay downward adjustments in spending when population declines. This view is generally supported by the results reported (Table 1).

Both the growing and the declining areas had fairly high mean percentage increases in expenditures and expenditures per capita. As has been reported elsewhere, on the average growing areas increased their total expenditures and spending per capita at a faster rate than declining areas.[3] Spending adjustments in response to population decline evidently take the form of slower growth rates rather than lower spending levels in an absolute sense.

As would be expected, total revenues increased faster in growing areas than in declining areas. However, in per capita terms, general revenue and intergovernmental aid increased significantly[4] faster for declining areas while revenue from own sources increased at a slower rate in declining areas. The

[3]See Thomas F. Stinson. However, in a static comparison of large city governments, Thomas Muller found that declining cities spent more per capita than growing cities. This was also reported by Theresa Lucas. Since our analysis deals with growth rates, the results reported do not necessarily conflict with those of Muller and Lucas.

[4]Statistical significance throughout the paper is derived using t-tests of the difference between two sample means. Use of statistical tests for analyzing census data is sometimes questioned. For predictive rather than descriptive purposes, however, statistical tests are appropriate because the data represent a sample of government behavior over time. An analogy would be the widely accepted use of tests to determine the significance of coefficients in regression equations which are based on Census data.

growth in intergovernmental revenue was due more to very low aid levels in 1962 than to dramatic increases over the decade. Taken together, the trends in per capita intergovernmental aid and revenue from own sources indicate that local governments and the citizens of declining areas may be facing less fiscal strain than might have been expected. The significantly higher growth in long-term debt outstanding per capita for declining areas has the opposite implications, however. If their population loss is not reversed, these local governments could find themselves saddled with an uncomfortably high ratio of fixed obligations to general revenue in the form of debt service in the future.

OTHER DETERMINANTS OF FISCAL BEHAVIOR

Hidden within the broad classification of growth and decline are other important determinants of local government fiscal behavior. The variation in spending growth rates within these categories is partly due to variations in other socioeconomic considerations to which we shall now turn. As was stated earlier, the fiscal impact of growth and decline can be traced back to demand and supply considerations. Demand for local government services should change with population shifts for two reasons: (1) as population changes, aggregate demand for local public services will increase or decrease to retain a fairly constant flow of services to the jurisdiction's citizens and (2) as population composition changes, the demand for local public services will increase or decrease to reflect changing preferences within the community. The first effect of population change may be viewed as causing a movement along the demand curve for local public services while the second effect leads to a shift of the demand curve itself. To a certain extent,

TABLE 2.

Mean Percentage Change in Major Fiscal Variables by Changes in Proportions of School Age Population for Growing and Declining County Areas, 1962-1972[a]

Revenue and expenditure categories	GROWING COUNTIES		DECLINING COUNTIES	
	Increasing percentage of school age children N=47	Decreasing percentage of school age children N=43	Increasing percentage of school age children N=4	Decreasing percentage of school age children N=22
	Percent			
General revenues	174	153*	139	138
Own source revenues	155	143	103	107
Intergovernmental transfers	223	195	184	213
Direct Federal revenues	3243	502*	371	3849
Direct total expenditures	175	146*	124	110
Nonschool direct expenditures	166	163	179	101*
School expenditures	188	147*	96	119
Current spending	177	146*	130	118
Capital spending	232	404*	78	125

[a]Proportion of school age population is defined as the percentage of population 19 and under.

*Significantly different mean growth rate at 90 percent confidence level for increasing versus decreasing proportion of school age children and significantly different mean growth rate in per capita values at 90 percent confidence level for increasing versus decreasing proportion of school age children. Per capita growth rates are not reported in their table.

the same may be said with regards to supply considerations. As population size changes, supply conditions will change due to economies of size; as population composition changes, supply conditions will change to reflect changing input prices within the community.[5] In the analysis which follows, emphasis will be placed primarily upon demand considerations since logic suggests that population composition changes will have the most direct impact on demand.

Demand will be related to growing or declining populations to the extent local government services are not pure Samuelsonian public goods (although the price effect could cause more of a pure public good to be consumed as population increases) and to the extent population concentration creates externalities which require more local services. Yet changes in the age and income make-up of the population may cause demand shifts which result in greater or lesser changes in fiscal strain than changes in population size alone would indicate. This section examines the impact on local government finances of socioeconomic transformations which often accompany growth and decline.

School Age Shifts

Changes in the school age fraction of the population may effectuate adjustments in the mix and overall demand for local services. Demand for services like education and police protection is likely to rise with increases in the relative proportion of the school age population, without a corresponding decrease in demand for other services. Empirically this proposition may be examined by separating both the growing and declining counties into groups according to whether the school age fraction of population is rising or falling. Shifts in demand

for services may be evaluated by determining whether growth trends for revenues and expenditures are greater where school age is rising. Table 2 presents the data on total revenue and expenditure growth rather than per capita growth rates.

Greater demand for a variety of services can be inferred in growing counties with rising school age (Table 2). Total direct expenditures grew more rapidly, although this can basically be attributed to greater education expenditures. Current spending was relatively greater while capital spending fell. It appears that rather than building schools to accommodate the new students, the greater demands for education were met with current expenditures. These results suggest that where population is growing, if school age also increases the county's local governments can expect roughly the same demand for non-education expenditures as other county areas, but higher demand for education.

To provide for increased service levels, local revenues have risen relatively faster in higher school age counties. Generally these revenues have come from local sources, although federal grants have increased somewhat more rapidly. An examination of Table 1 suggests that growing county areas are not suffering severe budgetary problems in general. However, higher demands for services (even on a per capita basis) causing greater presure on local tax revenues means that strained government budgets are more likely to develop in rising school age counties.

Among declining counties, larger nonschool expenditures arising largely from capital purchases took place in rising school age counties. In general, however, revenues and spending in declining counties did not vary with changes in school age. Inability to find a difference in demand for declining counties may be a result of the small number of county areas (N=4) with increased school age. Alternatively, this finding may reflect changing supply conditions as governmental units, with existing capital stocks and bureaucratic structures, attempt to adjust to declining demands for services.

[5]The available empirical evidence suggests that for the provision of local government services, economies of scale are exhausted at a fairly small population size. See Luther Tweeten and George L. Brinkman, p. 428.

TABLE 3.

Mean Percentage Change in Major Fiscal Variables by Changes in Proportion of Retirement Age Population
for Growing and Declining County Area, 1962-1972[a]

| Revenue and expenditure categories | GROWING COUNTIES | | DECLINING COUNTIES[b] |
	Increasing percentage of retirement age N=58	Decreasing percentage of retirement age N=32	Increasing percentage of retirement age N=26
		Percent	
General revenues	159	174	138
Own source revenues	145	158	106
Intergovernmental revenues	213	204	208
Direct Federal revenues	901	3805*#	3314
Direct total expenditures	153	176*	112
Nonschool direct expenditures	155	183*	113
School expenditures	165	176	115
Current spending	152	181*#	119
Capital spending	365	223	118

[a]Proportion of retirement age population is defined as the percentage of population 65 and over.

[b]There were no declining counties with a decreasing percentage of retirement age population.

*Significantly different mean growth rates at 90 percent confidence level for increasing versus decreasing population proportion of retirement age population.

#Significantly different mean growth rates in per capita values at 90 percent confidence level for increasing versus decreasing proportion of retirement age population. Per capita growth rates are not reported.

Retirement Age

Modification in the proportion of retirement age people to total population may also produce changes in the mix and overall demand for services. Demand differences will result from different tastes and the general decline in demand which may follow the lower income in retirement areas. For example, greater demand for hospitals and health may be expected along with lower demands for education. Only growing counties were examined to determine if retirement age population differentials effect local spending; every declining county had rising retirement age, so contrasts were not possible.

Decreased demand for services accompanied a greater retirement age, though surprisingly this cannot be significantly attribute to education (Table 3). In fact, demand seems to fall the most for current, nonschool type services. This peculiar reduction in demand may emanate from an income effect and the decreased externalities (for example less crime) accompanying an older population.

Federal grants-in-aid are higher for low retirement age counties, but for no other revenue category was there a significant difference. Again, the revenue and expenditure growth rates suggest that in growing areas, government units with a younger population are likely to experience the greatest strain on their budgets.

Income

Local governmenr services have generally been found to be somewhat income inelastic (Borcherding, p. 899). Nonetheless, we would expect, other things being equal, to observe greater spending for many local government goods in high income communities. Also, higher income may reflect higher input prices for the local government so the increased supply price for government services may force greater expenditures on rapidly growing income communities. Growing counties with rapidly growing incomes had higher expenditures, particularly for education (Table 4). Counties were divided by average income growth rates, however, so variations in spending caused by income differentials have been substantially minimized in the reported results. As would be expected, own source revenues are also higher in rapidly growing income communities.

The problems of falling relative incomes may be greater than those associated with declining populations. Failure of expenditures to decline significantly because of fixed costs and bureaucratic structures at the same time that lower incomes are available to provide tax revenues can mean severe financial strain. This is demonstrated by the greater debt which was issued in slow rising income, declining, counties, even though these counties received higher intergovernmental aid. Apparently these counties have found it necessary to begin using debt to finance some expenditures which were previously paid with current revenue.

Number of Family Units

The taxpaying unit is often defined as the family. Declining populations with a somwhat constant number of families may mean the same number of taxpaying units with lesser demands for public services. In the short run, at least, this set of considerations may mean reduced strain on local government budgets. Growing populations with the same number of family units, on the other hand, may mean even tighter fiscal circumstances for local governments.

TABLE 4.

Mean Percentage Change in Major Fiscal Variables by Changes in Average Income for Growing and Declining County Areas, 1962-1972[a]

Revenue and expenditure categories	GROWING COUNTIES		DECLINING COUNTIES	
	Rapidly rising per capita income N=47	Slowly rising per capita income N=43	Rapidly rising per capita income N=11	Slowing rising per capita income N=15
	Percent			
General revenues	169	158	142	135
Own source revenues	158	140*	108	105
Intergovernmental revenues	211	208	179	230#
Direct Federal revenues	1588	2312	3863	2912
Direct total expenditures	171	151*	119	107
Nonschool direct expenditures	170	160	113	113
School expenditures	181	155*	120	112
Current spending	169	155	126	115
Capital spending	389	233	114	120
Local school debt outstanding	241	63	−27	1614*#

[a]Counties are divided according to whether their average income growth was faster or slower than the Northeast average.

*Significantly different mean growth rates at 90 percent confidence level for rapidly rising versus slowly rising income.

#Significanlty different mean growth rates in per capita values at 90 percent confidence level for rapidly rising versus slowly rising income. Per capita growth rates are not reported.

Surprisingly, growing counties with decreased number of family units increased spending more than other growing counties (Table 5). Revenues provided by increased federal transfers is one reason. On the other hand, own source revenues, which are the basis for this hypothesis, are higher when the number of family units increases, though the difference is not statistically significant. Another reason for the surprising spending pattern is that the increased spending was all for capital purposes and may result from the sample period chosen. Finally, the number of family units is probably a marginal factor and its effect on spending is only likely to be demonstrated when other factors are held constant.

CONCLUSIONS

Examination of the direction and size of population shifts can be important for providing information about future government finance conditions. The results suggest, however, that total population alone is inadequate to describe the resultant pressure on local government budgets. The changing socioeconomic composition may also have significant impacts on the demand for local services. For example, among growing counties, the proportion of school age children was shown to have an impact on demand for services. Important miscalculations can be expected with respect to pressure on local government budgets if the proportion of school age children changes noticeably with population increases.

Shifts in the proportion of elderly within the population, income, and number of family units were also shown to be important in spending trends. Other demand factors, such as ethnic background and employment characteristics, may also have impacts on the way spending adjusts with changing population, although they were not specifically addressed here.

In this paper we have sought to document the types and direction of biases which may result from only examining only population trends for suggesting impacts on local governments. Only Northeastern counties are included in this sample and the results probably cannot be applied throughout the country. The statistical procedures used above fail to hold constant many things which may vary between counties. Also, we have not discussed such problems as the relationships between demand for local services and imputs on outputs of local services. Yet the empirical results strongly suggest biases from the socioeconomic characteristics discussed above.

The need for a much broader analysis remains. First, the above analysis suggests the importance of defining growth and decline. Different implications may result, depending on whether growth and decline are defined in terms of population, income, employment, economic base, or some other measure. After this issue has been approached a dynamic, theoretical structure of local government behavior, including both supply and demand elements, must be developed before the impact of changing constituencies can be clearly understood. Such a framework must then be estimated to determine the relative importance of the various changes which may accompany growth and decline.

TABLE 5

Mean Percentage Change in Major Fiscal Variables by Changes in the Number of Family Units for Growing and Declining County Areas, 1962-1972

Revenue and expenditure categories	GROWING COUNTIES		DECLINING COUNTIES	
	Increasing number of family units N=80	Decreasing number of family units N=10	Increasing number of family units N=2	Decreasing number of family units N=24
	Percent			
General revenue	164	168#	145	137
Own source revenues	151	133	118	105
Intergovernmental revenues	209	214	173	211
Direct Federal revenues	1188	7902*#	18511	2048#
Direct total expenditures	161	166#	87	114
Nonschool direct expenditures	161	200*#	179	107
School expenditures	170	155	54	121#
Current spending	165	144	90	122
Capital spending	285	553#	60	122

*Significantly different mean growth rate at 90 percent confidence level for increasing versus decreasing number of family units.

#Significantly different mean growth rate in per capita values at 90 percent confidence level for increasing versus decreasing number of family units. Per capital values are not reported.

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