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Growth and Fiscal Health in Wisconsin Cities

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Introduction

Strong national and localized economies have meant significant growth in terms of population, property values, and per capita income for nearly all of Wisconsin's cities over the last ten years. In addition, the environment in which local governments operate has undergone significant changes over the same period. First, services expected from local governments have grown at a rapid rate. Citizens expect access to not only higher quality public schools, but also police and fire protection, transportation services and health care services, and protection of the environment to name a few. While many of these new expectations are from wealthier and more informed local citizens, several services are now provided in response to direct mandates imposed from federal and state governments, such as those that follow from the Safe Drinking Water Act.

Second, the structure of the economic base in which local governments operate has undergone basic change. In more rural areas of Wisconsin, for example, agriculture is playing a significantly smaller role, while many forms of tourism and other non-extractive economic activities are assuming a dominant role. The ability of local governments to develop sufficient revenues to continue to support traditional services and establish new programs has been altered. The limited ability to raise sufficient revenues to maintain an aging physical infrastructure is but one example of the complications facing local officials.

Finally, the changing relationship between federal, state and local governments has created significant uncertainty at the local level. The current era of devolution has seen a transfer of responsibility for key programs passed from the federal to state and local levels. At a time when local governments are being asked to do more, the resources from higher levels of government are dwindling. These factors, coupled with a host of others, have created a difficult situation for many local governments. Local government officials, faced with increased local resistance to higher taxes, increasing expenditure needs, and weakening financial support from higher levels of government, have expressed concern over the long-term sustainability of their fiscal health.

This concern is particularly troublesome for communities that are experiencing high levels of growth. For rapidly growing communities, the idea of existing service congestion compounds the stress of providing new previously non-existing services. Notions of limited local public capacity to satisfy greater demand imply a structural relationship between local fiscal health and levels of growth.

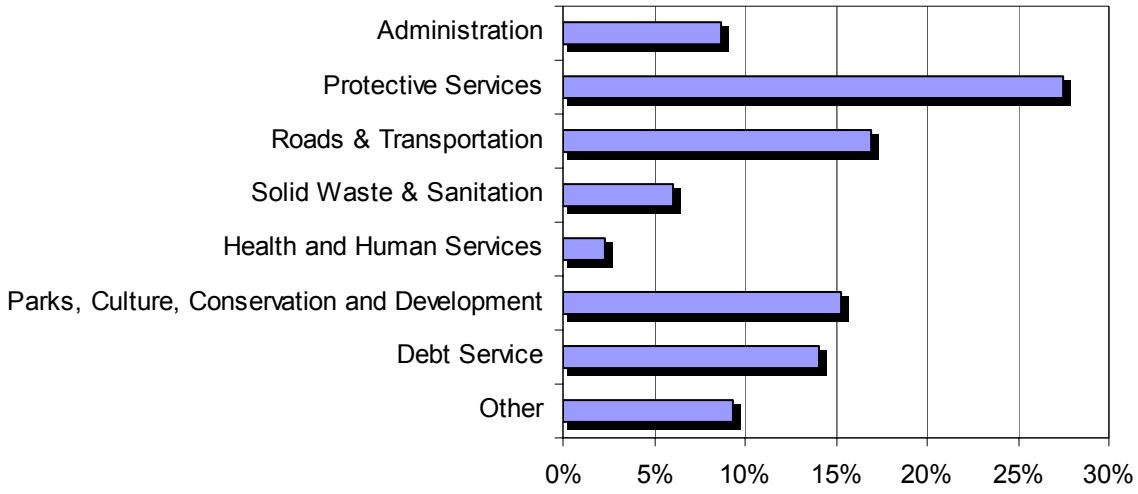
The intent of the applied research reported in this paper is to examine the relationship between growth and the fiscal health of a subset of local governments (incorporated cities) over the last decade. While any number of researchers has raised this question, the literature has tended to focus on larger urban areas during economic downturns. Ladd's (1994) most recent research looking at the fiscal effects of growth has become perhaps the most influential in this line of work. Ladd's research, however, is limited in that she focused on per capita spending, a variable of interest in itself and because it can be conceptually linked to service quality and tax burden. While the data used in her analysis do not reflect a period of economic downturn, the data are for large counties from across the U.S.

The analysis presented in this paper is intended to explore of the impact of growth on the fiscal health of smaller local governments. Annual data for Wisconsin cities from 1991 to 1998 are analyzed in this study. Six measures are used to capture different aspects of fiscal health. Changes in these measures in relation to changes in population, property values, and income are evaluated through a series of tests of subsample equivalence and regression analysis.

City Governments in Wisconsin

In Wisconsin, city governments are primarily responsible for providing for urban services such as public safety, roads and transportation, sanitation, and human enrichment as well as managing development and land use for the city. The distribution of expenditures acts as a proxy to demonstrate the relative level of services provided by Wisconsin cities (Figure 1).

FIGURE 1: WISCONSIN CITY EXPENDITURE SHARES



Source: Wisconsin Department of Revenue

The largest single category of expenditures is protective services (police and fire) accounting for 27 percent, or $322 dollars per person in 1998. Transportation services, in particular road maintenance, account for about 17 percent of all expenditures, about $198 per person. Cultural services, such as parks, conservation and development efforts, and libraries represent just over 15 percent of total expenditures at $179 per person. Payment for debt, which is used to smooth the cost of providing public services over time, accounts for a substantial 14 percent of total expenditures, or about $165 per person.

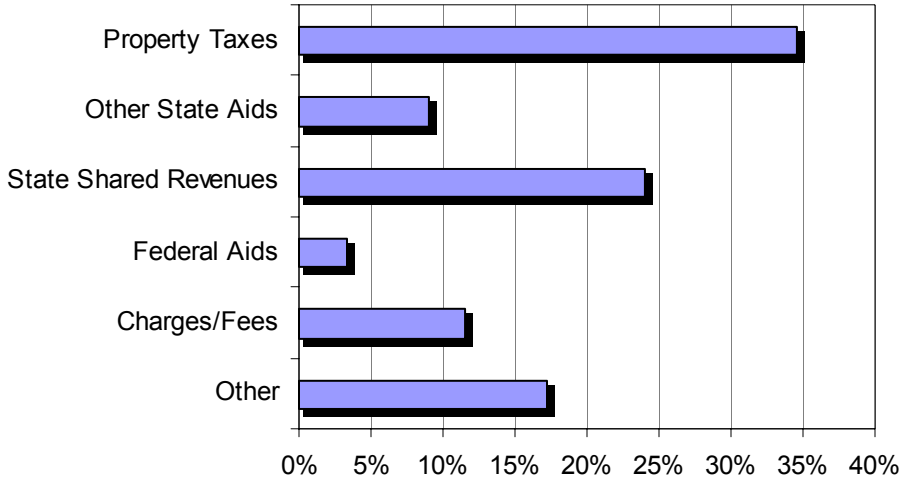
The level and mix of public goods and services that local governments can provide in response to demand is constrained in part by the revenues available, or fiscal capacity, to meet those demands. At the city level in Wisconsin, general state non-targeted aids and property taxes are the primary sources of revenue. Together they accounted for nearly 60% of total revenue in 1998 (Figure 2). In Wisconsin, aids take two forms, general targeted aids, such as road maintenance aids, and general non-targeted aid in the form of state shared revenues. The latter aid follows the model of the old Federal Revenue Sharing program of the 1970s and 1980s. In essence a direct transfer from the state to local government is made with “no strings attached.” Wisconsin’s state revenue program is one of the most generous aid programs in the U.S. and accounts for 24 percent of all revenues for Wisconsin cities, about $220 per

person. While the Wisconsin state shared revenue program is distributed based on individual municipal population, spending, and property values, it has the potential to be strategically manipulated. However, because the amount of aid to be distributed is fixed, the aid received by an individual community also depends on population, spending, and property values of other municipalities. Thus nearly all city governments treat this significant source of revenue as something beyond their control. This leaves the property tax as the primary tool left under the control of city government for generating revenue.

User fees have recently emerged as an important tool for generating revenue. User fees are a politically popular way of maintaining non-essential public services through requiring the users of those services to pay for them. For Wisconsin cities, user fees and charges account for about 12 percent of all revenues, or $106 per person. While for many services, user fees and charges are attractive, Wisconsin law limits the level of revenue generation to the recoupment of capital costs under specific criteria. In other words, fees and charges cannot be set by what the market will bear and act as a potential excess revenue generator.

Another significant source for paying the cost of public goods and services provided by city government is debt. Debt is primarily used to smooth the payment for large capital expenditures over time and to allow future users of the capital item to pay for services that flow from the item. Unfortunately, there is often a mismatch between when the cost of growth and development is incurred by city governments and when revenues generated from the growth are realized. Debt can help fill that gap.

FIGURE 2: WISCONSIN CITY REVENUE SHARES



Source: Wisconsin Department of Revenue

Measuring Fiscal and Economic Health

The literature contains a wide array of methods for assessing the social, fiscal, and economic conditions of a community. Indicators used will vary depending on who is developing the measure, who will be using it, the data available to develop an indicator, and what is being analyzed. This study will focus on how cities respond to changes in demand in relation to growth. Six indicators are used to address this aspect of fiscal health:

1. Expenditures per Capita
2. Revenue per Capita
3. Intergovernmental Aids/Total Revenue
4. Property Taxes/Total Revenue
5. Debt/Total Revenue
6. Property Taxes/Equalized Assessed Value

Changes in per capita expenditures are used to reflect changes in consumer demand, or fiscal need as described in the literature. It should be recognized that this is not a perfect measure. Expenditures may also be a function of capacity levels, resource availability, service quality, and cost. However, expenditures reflect the most commonly available and most commonly used proxy for demand.

Changes in total revenue per capita reflect the overall ability of cities to meet changes in demand. If revenues are not growing at a rate equal to or greater than expenditures, a city may be in trouble. If a city is unable to adjust its revenues to meet changes in expenditures, it may be unable to maintain existing levels of services.

Even if a city is able to adjust revenues to meet demand, how it adjusts revenues is also important. If a city is relying heavily on sources beyond its control, it will be vulnerable if those sources aren't flexible. A city's dependence on outside aid as a resource for meeting demand is measured by the proportion of total intergovernmental revenue to total revenue. If a city is becoming increasingly dependent on outside aid and the amount of available outside aid is reduced, the city may be forced to cut services if it can't find alternative sources of funding.

The flip side of dependency on outside aid is a city's reliance on funds it can control to meet changing demand. The proportion of total revenues attributed to property taxes reflects this aspect of financial health. An increase in this ratio shows an increased reliance on property taxes to pay for expenditures. It means that city residents' ability or willingness to pays for goods and services are more closely matched to its demand for those goods and services.

The amount spent on debt service in relation to total revenues is a critical indicator of financial condition. There is no question that the use of debt to help smooth costs over time can be very beneficial for cities. It provides stability so that cities are not forced to make radical changes in property tax rates from year to year in response to lumpy capital costs. Furthermore, it ensures that future users pay their share of the costs of providing public goods and services. However if the ratio of debt to revenue is increasing over time, and in particular if that ratio grows to exceed 20 percent, a city is probably relying too much on debt and not growing its revenue at a sustainable rate to meet expenditures.

The final indicator is a measure of fiscal effort, or tax burden, with respect to wealth. It is calculated as the ratio of property taxes to total assessed equalized values.

This effective tax rate shows the city's commitment to providing public goods and services. It is the percentage of local capacity actually used to meet fiscal need.

Defining Growth

Growth can be defined in many ways. The most commonly studied measure of growth is population. In total, the population in Wisconsin cities (excluding Milwaukee) grew over 6.5 percent between 1991 and 1998, with positive growth occurring in every year. Within the state, however, not all cities have experienced the same growth pattern. Five cities experienced negative overall population growth during this time period. Sixty-seven cities had growth between 0 and 4 percent, fifty-nine between 4 and 8 percent, and fifty-seven cities grew 8 percent or more.

In assessing the fiscal health of a community, population is especially important because one would expect the demand for public goods and services to fluctuate as the number of residents in the community changes. More people mean more trash to be collected. More people may mean emergencies thus requiring more protective services. So intuitively, population growth means higher expenditures. One would expect a similar pattern with respect to total revenue. However, on a per person basis, theory and intuition do not lend themselves to conclusive results (Ladd, 1994). It is also difficult to predict how the other four indicators of interest in this study may change as population changes. It may be fairly straightforward to predict changes in the numerator or denominator, but theory doesn't provide much in predicting changes in the ratio between them.

Another common indicator for analyzing growth is income. From 1991-1998, real adjusted gross income in cities grew over 31 percent and per capita income grew nearly 23 percent. Across cities however, there is a wide range of growth. Only one city experienced negative growth in real income, both in total and per person. Seventy-seven cities grew between 0 and 30 percent, while 133 experienced per person income growth in that range. Real income grew between 30 and 40 percent in sixty cities, while only thirty-seven cities saw income per person growing that much. And finally per capita income grew 40 percent or more in seventeen cities while total income grew 40 percent of more in fifty cities.

Similar to population, as income levels change, one would expect changes in demand. Persons with higher incomes may demand more public goods and services or a different mix of goods and services (Carlson and Eklund). Alternatively, higher incomes may also mean that cities are faced with paying higher salaries, so the cost of providing goods and services may be higher. Thus it seems logical that income will have an affect on fiscal condition. Expenditures in total and per person will probably increase as income increases. Revenues should also increase as real income grows, in part because the government realizes that residents have more available funds with which to pay taxes and is more willing to increase the tax burden to cover increased expenditures. Aids would be unaffected directly by changes in income, but if spending increases as an indirect result of income increases, the amount of aid could increase as well depending on the levels of spending. Whether the city's dependency on aid changes, will depend on the change in aid relative to the change in total revenue. It is unknown how the other two health variables might change as income changes.

Of significant importance to local units of government is how changes in property values affect fiscal health since they rely heavily on the property tax to meet community needs. The real growth in property values for Wisconsin cities was over 38 percent, or almost 30 percent per person from 1991 to 1998. As was the case with income growth, the range of growth from city to city is wide. No cities experienced a decrease in total

property value and only one decreased on a per person basis. Seventy-four cities saw real growth in equalized assessed value up to 35 percent. Per person, 104 cities had growth up to 35 percent. Property values increased between 35 and 50 percent in fifty-six cities in total and in fifty-seven cities per person. Fifty-eight cities experienced growth rates of 50 percent for total value. Twenty-six saw per person increases in that range.

The fact that property values increase does not necessarily mean that the tax rate or revenues will increase. Cities may choose to reduce the mill rate. However, similar to the case with income growth, it's likely that demand would change as property values change thereby potentially increasing per capita expenditures. In order help compensate for this, a city will more likely adjust the mill rate to a level necessary to meet expenditures. As described earlier, the state shared revenue program is partly driven by property values. Thus, if a city is in aids, it will likely see and increase. Whether the city's dependency on aid changes, will depend on the change in aid relative to the change in total revenue. Again, it is not clear how the other variables might change in response to growth in property values.

Testing for Subsample Equivalence

Tests of subsample equivalence provide a fairly simple method of assessing whether a relationship exists between growth and the measures of fiscal condition of interest in this study. To perform these tests, Wisconsin cities are assigned to separate groups characterized by slow, moderate, or rapid growth based on growth rates in population, income and property values. Test statistics are then computed to evaluate whether changes in the fiscal indicators differ across growth groupings.

Four sets of tests are performed. In the first three, changes in each health indicator are compared on the basis on population, income, and property value growth separately. For groups based on population growth, cities with population growth of less than 4 percent are designated as slow growth. Cities growing 8 percent or more are considered rapidly growing. With respect to income, cities where adjusted gross income grew less than 30 percent from 1991 to 1998 are characterized as slow growth. Income growth between 30 and 40 percent resulted in a city designation of moderate growth. The remaining cities are said to exhibit rapid growth. Slow growth in property values is defined as less than 35 percent. Property value growth from 35 percent through 50 percent indicates moderate growth. The remaining cities are considered to have experienced rapid growth with respect to property values. In the fourth series of tests, groups are determined using a composite index of the three growth indicators created through principle component analysis. A principle component is a linear combination of two or more variables (Hotelling, 1933). Cities are ranked and split into groups based on the estimated composite index.

Five different tests are used to detect differences between the three subsamples with respect to changes in each health indicator. The first test is a standard analysis of variance (ANOVA) using the raw data. This test is used to determine whether the mean percentage change in each health indicator differs significantly between growth groups. It assumes normality. Four nonparametric methods are also used to compare the different groups. Nonparametric tests of subsample equivalence provide a means of testing whether the distributions of two or more independent samples are equal. Instead of using the actual raw data, most nonparametric tests evaluate rank scores of the data. They have an advantage in that no particular distributional form is required, but are sometimes criticized because not all of the available data are utilized (Rice, 1995). The Wilcoxon test, or Kruskal-Wallis test or Mann-Whitney test as it is also called, examines the variance in the sum of rank scores. In median test, or Brown-Mood test,

observations above the median are assigned a score of 1 while all other observations score a 0. Variance in the sum of scores is then analyzed. The Van der Waerden test evaluates the variance in approximated normal scores. The Van der Waerden scores are calculated using the inverse normal distribution and fractional ranks of the observations. The Savage test analyzes scores based on order statistics for the exponential distribution.

Regression Analysis

Regression analysis is used to assess the actual impact of the growth variables on changes in fiscal health as defined by the study indicators. Central to this framework are two hypotheses:

H1: Changes in levels of fiscal health are dependent on initial conditions; and
H2: Changes in levels of fiscal health are dependent on growth rates relative to initial conditions.

For the model, a change in a fiscal health indicator is dependent on initial levels of population, income and property values, and changes in those same economic measures. The function model is:

$$\Delta HI_{t,t+1} = ß_1 + ß_2 POP_t + ß_3 P_1 \Delta POP_{t,t+1} + ß_4 P_2 \Delta POP_{t,t+1} + ß_5 P_3 \Delta POP_{t,t+1} + ß_6 P_4 \Delta POP_{t,t+1} + ß_7 INC_t + ß_8 I_1 \Delta INC_{t,t+1} + ß_9 I_2 \Delta INC_{t,t+1} + ß_{10} I_3 \Delta INC_{t,t+1} + ß_{11} I_4 \Delta INC_{t,t+1} + ß_{12} VAL_t + ß_{13} V_1 \Delta VAL_{t,t+1} + ß_{14} V_2 \Delta VAL_{t,t+1} + ß_{15} V_3 \Delta VAL_{t,t+1} + ß_{16} V_4 \Delta VAL_{t,t+1} + e.$$

The dependent variable, $\Delta HI_{t,t+1}$, is the percentage change in each health indicator between 1991 and 1998. POP_t is population for the 1991 and $\Delta POP_{t,t+1}$ is the percentage change in population, 1991-1998. P_1, P_2, P_3, and P_4 are dummy variables reflecting population size. For cities with a population size less than 5,000, P_1 equals 0. For all other cities, P_1 equals 1. P_2 - P_4 are assigned in similar fashion. P_2 is set to 1 when population is 5,000 or greater up to 9,999. P_3 is relevant for cities of population size 10,000-49,000. Cities with 50,000 or more residents are assigned a 1 for P_4. Similar to the population variables, INC_t is adjusted gross income for the base year and $\Delta INC_{t,t+1}$ is the percentage change in income between 1991 and 1998. Dummy variables for income range from I_t to I_4 with thresholds at $50,000,000, $99,000,000, and $499,000,000. VAL_t is equalized assessed value in 1991 and $\Delta VAL_{t,t+1}$ is the percentage change in equalized assessed value. Four dummy variables, V_1, V_2, V_3, and V_4, are used with breaks at $100,000,000, $499,000,000, $999,000,000,

Base year levels for each growth indicator are included because intuitively, one would expect that the initial size of a city might play a significant role in the health of cities. For example, larger cities may be affected by economies of scale or economies of density that smaller cities may not face. Dummy variables are used to reflect the interaction between size and growth. It seems reasonable to assume that a larger city may be affected differently by a 1 percent change in population than a smaller city.

Statistical and Econometric Results

Sample and subsample means for each grouping are presented in Table 1. In terms of initial levels in each of the fiscal health indicators, there don't seem to be any obvious patterns. The subsample with the highest, middle, or lowest 1991 level varies from grouping to grouping. This isn't surprising since cities were grouped strictly by percentage growth, without respect to size.

Some patterns do begin to emerge in the percentage change variables. For expenditures per capita variable, the slow growth group as determined by population, property values, and the composite index had the largest percentage increase. With respect to dependency on aid, the rapid growth group declined the most regardless of how the group was formed. The effective tax rate declined the most for rapid growth cities when determined by population, property values, and the composite index. Property taxes as a percentage of total revenue increased the most in moderate growth cities based on population, income, and property value, but not with the composite index. Rapid growth cities gained the most. The leaders in growth in revenues per capita were split with two of the groupings showing slow growth (population and property value) as the largest increase and two showing high growth (income and composite) highest. For population and income based groupings, moderate growth cities grew more dependent on aid, while rapid growth cities increased most for groups determined by property values and the composite index.

Statistics from the tests of subsample equivalence are presented in Table 2. Of the six indicators of fiscal health, the subsamples were statistically different (at the 95 percent level) consistently with respect to only one variable: dependency on aid. When groups were determined solely based on population growth, significant differences existed for the change in expenditures per capita. Relaxing the level of confidence to 90 percent, the change in property tax rates becomes significant for groups based on the composite index. In all aspects of fiscal health explored here, these tests to not show a significant difference across different levels of growth as defined in this study.

TABLE 2: SAMPLE AND SUBSAMPLE MEANS

		Total Sample	Slow	Moderate	Rapid
Groupings Based on Population Growth					
Expenditures per Capita	% Change	33.8%	48.4%	22.6%	27.1%
	1991 Level	$ 899.17	$ 848.80	$ 958.81	$ 901.07
Revenues per Capita	% Change	33.4%	43.9%	20.8%	33.2%
	1991 Level	$ 931.56	$ 887.63	$ 1,012.95	$ 902.79
Aidable Revenue/Total Revenues	% Change	-7.5%	-4.3%	1.6%	-21.0%
	1991 Level	0.367220	0.429543	0.346751	0.309685
Debt/Total Revenues	% Change	66.0%	44.5%	88.8%	69.2%
	1991 Level	0.135488	0.118059	0.139547	0.153303
Property Taxes/Total Revenues	% Change	21.2%	10.2%	29.6%	26.5%
	1991 Level	0.230668	0.222281	0.229939	0.242016
Property Taxes/Equalized Assessed Value	% Change	-96.3%	-96.1%	-96.0%	-96.9%
	1991 Level	0.007276	0.007854	0.007543	0.006268
Groupings Based on Income Growth					
Expenditures per Capita	% Change	33.8%	33.8%	39.0%	27.3%
	1991 Level	$ 899.17	$ 871.49	$ 884.62	$ 958.76
Revenues per Capita	% Change	33.4%	30.4%	34.3%	36.6%
	1991 Level	$ 931.56	$ 907.36	$ 947.84	$ 946.52
Aidable Revenue/Total Revenues	% Change	-7.5%	-0.9%	-11.8%	-11.9%
	1991 Level	0.367220	0.385325	0.378916	0.325456
Debt/Total Revenues	% Change	66.0%	52.4%	98.4%	45.0%
	1991 Level	0.135488	0.137742	0.123150	0.147945
Property Taxes/Total Revenues	% Change	21.2%	12.5%	27.7%	25.9%
	1991 Level	0.230668	0.226129	0.232353	0.235229
Property Taxes/Equalized Assessed Value	% Change	-96.3%	-96.5%	-96.0%	-96.4%
	1991 Level	0.007276	0.007750	0.007140	0.006747
Groupings Based on Property Value Growth					
Expenditures per Capita	% Change	33.8%	37.5%	30.8%	32.1%
	1991 Level	$ 899.17	$ 944.91	$ 897.47	$ 847.58
Revenues per Capita	% Change	33.4%	36.4%	26.0%	36.1%
	1991 Level	$ 931.56	$ 972.19	$ 931.45	$ 884.56
Aidable Revenue/Total Revenues	% Change	-7.5%	0.9%	-0.1%	-23.4%
	1991 Level	0.367220	0.356617	0.370667	0.376662
Debt/Total Revenues	% Change	66.0%	55.4%	46.5%	93.9%
	1991 Level	0.135488	0.147654	0.129133	0.126636
Property Taxes/Total Revenues	% Change	21.2%	19.9%	23.5%	20.9%
	1991 Level	0.230668	0.232520	0.237809	0.222628
Property Taxes/Equalized Assessed Value	% Change	-96.3%	-95.9%	-96.5%	-96.6%
	1991 Level	0.007276	0.007433	0.007460	0.006941
Groupings Based on Composite Index					
Expenditures per Capita	% Change	33.8%	38.6%	33.8%	29.2%
	1991 Level	$ 899.17	$ 901.53	$ 907.23	$ 888.79
Revenues per Capita	% Change	33.4%	30.0%	32.2%	37.9%
	1991 Level	$ 931.56	$ 953.93	$ 948.21	$ 892.88
Aidable Revenue/Total Revenues	% Change	-7.5%	0.8%	-2.4%	-20.9%
	1991 Level	0.367220	0.403742	0.362900	0.335598
Debt/Total Revenues	% Change	66.0%	52.7%	39.2%	106.1%
	1991 Level	0.135488	0.123302	0.143023	0.139946
Property Taxes/Total Revenues	% Change	21.2%	18.7%	21.0%	24.0%
	1991 Level	0.230668	0.229261	0.232966	0.229755
Property Taxes/Equalized Assessed Value	% Change	-96.3%	-95.6%	-96.5%	-96.8%
	1991 Level	0.007276	0.007868	0.007578	0.006389

TABLE 2: SUBSAMPLE EQUIVALENCE TEST STATISTICS

	Anova F (Prob > F)	Wilcoxon X2 (Prob > X2)	Median X2 (Prob > X2)	Van der Waerden X2 (Prob > X2)	Savage X2 (Prob > X2)
Groupings Based on Population Growth					
Change in Expenditures per Capita	5.4248	4.8887	4.3889	6.7985	9.4272
	(0.0051)	(0.0868)	(0.1114)	(0.0334)	(0.0090)
Change in Revenues per Capita	2.5540	2.2090	0.9363	3.5656	4.3886
	(0.0805)	(0.3314)	(0.6262)	(0.1682)	(0.1114)
Change in Aidable Revenue/Total Revenues	5.1463	13.4407	9.1151	12.7395	9.2433
	(0.0067)	(0.0012)	(0.0105)	(0.0017)	(0.0098)
Change in Debt/Total Revenues	0.7279	0.1239	0.1019	0.2233	1.0146
	(0.4843)	(0.9399)	(0.9503)	(0.8944)	(0.6021)
Change in Property Taxes/Total Revenues	1.5534	6.7442	3.2659	7.6911	3.0958
	(0.2143)	(0.0343)	(0.1954)	(0.0214)	(0.2127)
Change in Property Taxes/Equalized Assessed Value	1.8143	5.6382	2.3883	7.0075	4.5152
	(0.1658)	(0.0597)	(0.3030)	(0.0301)	(0.1046)
Groupings Based on Income Growth					
Change in Expenditures per Capita	0.7785	2.4533	8.8879	1.8980	1.2351
	(0.4606)	(0.2933)	(0.0117)	(0.3871)	(0.5393)
Change in Revenues per Capita	0.1773	3.7883	12.1580	1.8078	1.1506
	(0.8376)	(0.1504)	(0.0023)	(0.4050)	(0.5625)
Change in Aidable Revenue/Total Revenues	1.6627	10.3523	7.1825	7.4733	4.0218
	(0.1925)	(0.0056)	(0.0276)	(0.0238)	(0.1339)
Change in Debt/Total Revenues	1.1621	0.0897	0.1090	0.3180	1.1962
	(0.3151)	(0.9562)	(0.9470)	(0.8530)	(0.5499)
Change in Property Taxes/Total Revenues	1.0125	2.0958	0.9934	2.0918	1.5088
	(0.3653)	(0.3507)	(0.6085)	(0.3514)	(0.4703)
Change in Property Taxes/Equalized Assessed Value	0.4890	0.6443	0.3820	0.4159	0.1327
	(0.6140)	(0.7246)	(0.8261)	(0.8123)	(0.9358)
Groupings Based on Property Value Growth					
Change in Expenditures per Capita	0.3369	0.1829	0.1059	0.2447	0.7105
	(0.7144)	(0.9126)	(0.9484)	(0.8848)	(0.7010)
Change in Revenues per Capita	0.5676	0.9616	0.7144	1.0203	2.0584
	(0.5679)	(0.6183)	(0.6996)	(0.6004)	(0.3573)
Change in Aidable Revenue/Total Revenues	7.9016	16.0554	8.5726	16.7873	12.5050
	(0.0005)	(0.0003)	(0.0138)	(0.0002)	(0.0019)
Change in Debt/Total Revenues	0.8717	3.6427	3.3396	3.2545	1.3699
	(0.4200)	(0.1618)	(0.1883)	(0.1965)	(0.5041)
Change in Property Taxes/Total Revenues	0.0417	1.0090	0.1059	1.3201	0.1279
	(0.9592)	(0.6038)	(0.9484)	(0.5168)	(0.9381)
Change in Property Taxes/Equalized Assessed Value	1.4448	1.6655	1.9538	1.4184	1.5945
	(0.2384)	(0.4349)	(0.3765)	(0.4920)	(0.4506)
Groupings Based on Composite Index					
Change in Expenditures per Capita	0.5577	0.6455	0.6010	0.9763	0.7285
	(0.5735)	(0.7242)	(0.7405)	(0.6137)	(0.6947)
Change in Revenues per Capita	0.3035	0.7989	2.5201	0.5659	1.0928
	(0.7386)	(0.6707)	(0.2836)	(0.7536)	(0.5790)
Change in Aidable Revenue/Total Revenues	5.5482	17.6444	12.3029	16.4800	9.4949
	(0.0046)	(0.0001)	(0.0021)	(0.0003)	(0.0087)
Change in Debt/Total Revenues	1.7812	2.8440	3.5935	2.9498	3.2557
	(0.1713)	(0.2412)	(0.1658)	(0.2288)	(0.1963)
Change in Property Taxes/Total Revenues	0.0925	2.7787	2.1167	2.3994	0.8973
	(0.9117)	(0.2492)	(0.3470)	(0.3013)	(0.6385)
Change in Property Taxes/Equalized Assessed Value	3.1026	4.3139	0.8618	5.5682	5.2974
	(0.0473)	(0.1157)	(0.6499)	(0.0618)	(0.0707)

Ordinary least squares (OLS) models were used to sort out the direct affects of a city's size and growth on six measured of fiscal health. Table 3 summarizes the model results. The low adjusted R^2s are indicative that many other factors affect the fiscal health as defined by these variables. Despite this, if the functional form is correct, the results summarize the relationship between growth in population, income, and property values with respect to size on the changes in the sic growth indicators studied here.

Interestingly, the initial levels of population and income have no significant affect (at 95 percent) on changes in any of the dependent variables. Property values are significant with respect to changes in expenditures and revenues per capita, but the coefficients are extremely small. Results from the other variables are mixed and vary by city size. In the largest cities, none of the growth indicators have any effect on changes in the any of the fiscal health indicators.

For small cities, changes in population and income have a significant positive effect on the effective property tax rate while changes in property values have a negative effect. Changes in property values have a significant positive effect on changes in expenditures and revenues per capita. Using a looser confidence interval (90 percent), changes in population have a negative effect on the expenditure variable and a positive effect on the proportion of revenues from property taxes. Changes in income have a positive effect on changes in per capita revenues and expenditures. Changes in equalized assessed property values have a negative effect on aid dependency and a positive effect on the debt to revenue ratio.

Property value changes have similar effects in smaller and larger mid-sized cities. They positively affect changes in per capita expenditures and negatively affect dependency on aid and slightly less significantly negatively affect the tax rate. At a 90 percent level, value growth in smaller mid-size cities positively affects revenues per capita. Population growth has a significant negative effect on expenditures per capita in both sets mid-level cities. In the smaller ones, it also has a negative effect on changes in the revenue variable. In larger ones, population growth positively impacts the effective tax rate. At the lower significance level, population growth has a positive impact on a smaller mid-sized city's dependency on property taxes as a revenue source. Income growth positively affects revenues per capita and property tax rates in those small-medium cities (95 percent level). In the larger cities, income growth doesn't affect any of the health indicators at that level and affects only two, revenues per capita and dependency on aid, in a positive manner at 90 percent.

Summary

Local governments are under increased pressure to "do more with less." During a period of economic expansion, local citizens expect more, and better, service from their local governments, but are often unwilling to pay additional taxes for expanded services. At the same time, the current era of devolution is placing more responsibilities at the doorstep of local governments. Given this environment, local officials and concerned citizens are seeking insights into measures of fiscal health. The intent of this research is to: (1) explore a set of potential measures for Wisconsin municipalities and (2) assess patterns of change in these measures as municipalities grow.

The analyses described here provide mixed results in determining the relationship between growth and fiscal health, as defined by these indicators. Thus more research in this area is warranted. The regressions showed that several aspects of fiscal health are affected by changes in population, income, and/or wealth, but those effects vary depending on city size. In most cases, the groupings of slow, moderate, and rapid growth used in this study were not significantly related those aspects of health.

TABLE 3: REGRESSION STATISTICS

		Dependent Variables					
Independent Variable		**Expenditures per Capita**	**Revenues per Capita**	**Aid/ Total Revenue**	**Debt/ Total Revenue**	**Pr. Taxes/ Total Revenue**	**Pr. Taxes/ Eq. Ass. Value**
1991 Population	Coefficient	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(T-Statistic)	(0.0684)	(0.0275)	-(0.2861)	(0.0932)	(0.0132)	(0.3893)
1991 Income	Coefficient	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(T-Statistic)	-(1.0753)	-(1.2468)	(0.0576)	-(0.2294)	(0.0419)	-(0.7221)
1991 Property Value	Coefficient	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(T-Statistic)	(1.6554)	(1.9315)	(0.2549)	(0.3086)	(0.0108)	(0.8527)
P_1*Population Growth	Coefficient	-1.9128	-1.5553	0.0369	4.5364	2.8034	1.8243
	(T-Statistic)	-(1.3673)	-(0.9469)	(0.0333)	(0.7786)	(1.4505)	(2.0554)
P_2*Population Growth	Coefficient	-2.9758	-3.5223	0.5485	0.0134	2.2764	0.9276
	(T-Statistic)	-(2.4369)	-(2.4568)	(0.5674)	(0.0026)	(1.3493)	(1.1973)
P_3*Population Growth	Coefficient	-2.9552	-1.5663	-0.9295	-4.3627	1.4515	2.2170
	(T-Statistic)	-(1.9239)	-(0.8685)	-(0.7644)	-(0.6820)	(0.6839)	(2.2749)
P_4*Population Growth	Coefficient	-1.0160	-1.9335	-0.3220	-1.4771	1.6130	1.5528
	(T-Statistic)	-(0.3031)	-(0.4913)	-(0.1214)	-(0.1058)	(0.3483)	(0.7302)
I_1*Income Growth	Coefficient	0.3726	0.4328	0.1970	0.9629	0.3449	0.3789
	(T-Statistic)	(1.5657)	(1.5490)	(1.0459)	(0.9716)	(1.0490)	(2.5095)
I_2*Income Growth	Coefficient	0.3567	0.9886	0.2007	-0.7573	0.7674	0.6820
	(T-Statistic)	(0.7977)	(1.8832)	(0.5670)	-(0.4067)	(1.2423)	(2.4041)
I_3*Income Growth	Coefficient	0.3235	0.8162	0.5519	0.9657	0.4468	0.0359
	(T-Statistic)	(0.6360)	(1.3667)	(1.3706)	(0.4559)	(0.6359)	(0.1112)
I_4*Income Growth	Coefficient	-0.8738	-0.7896	0.5920	-0.2419	-0.0180	0.4298
	(T-Statistic)	-(0.5981)	-(0.4603)	(0.5118)	-(0.0398)	-(0.0089)	(0.4637)
V_1*Value Growth	Coefficient	0.8437	0.6609	-0.2967	1.3087	-0.3476	-0.4837
	(T-Statistic)	(3.5151)	(2.3451)	-(1.5613)	(1.3092)	-(1.0481)	-(3.1765)
V_2*Value Growth	Coefficient	0.7649	0.5284	-0.5296	0.4873	-0.1281	-0.3359
	(T-Statistic)	(2.3457)	(1.3802)	-(2.0515)	(0.3588)	-(0.2844)	-(1.6233)
V_3*Value Growth	Coefficient	1.1417	0.4861	-0.7107	0.4288	-0.4584	-0.4527
	(T-Statistic)	(2.1965)	(0.7965)	-(1.7270)	(0.1981)	-(0.6382)	-(1.3727)
V_4*Value Growth	Coefficient	1.5968	1.8588	-1.0077	0.3693	-0.3737	-0.7801
	(T-Statistic)	(1.1265)	(1.1169)	-(0.8980)	(0.0626)	-(0.1908)	-(0.8674)
R^2		0.03726	0.06473	0.096311	0.070123	0.041444	0.129223
Adjusted R^2		-0.040649	-0.010957	0.02318	-0.005127	-0.036127	0.058756
Standard Error		0.062896	0.073846	0.049794	0.261943	0.086897	0.039905
Sum of Squared Residuals		0.684372	0.943408	0.428944	11.870249	1.306347	0.27548
Number of Observations		188	188	188	188	188	188

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