# NEW NEIGHBORS, NEW TAXES? THE ESCALATION OF PROPERTY TAXES DUE TO POPULATION GROWTH

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*The authors wish to thank the Southampton College Faculty Research Committee for their support in the development of the research project presented in this article.*

"Those coming in and making vast fortunes developing this beautiful countryside should pay for it, and they are not. They're putting the burden on those already here."[1] So says Mayor Kapp of Flemington, New Jersey, regarding property owners paying higher taxes because of growth in nearby Raritan.

Forty years ago the towns of Flemington and Raritan merged their school districts, and now the taxpayers of Flemington, whose population is stable, are helping to pay for Raritan's rapid growth. The frustration of Flemington's mayor typifies a mood found across the country as long-time property owners are being forced to share the costs of building additional roads and schools to accommodate the new residents.

**Taxpayers React**

Proposition 13, passed by California voters in 1978, was a response to escalating property taxes. It affectively shielded pregrowth property owners from the costs of new schools, roads and other public services. Governments now require the developers to pay for the new infrastructure, and developers, in turn, pass the costs on to the new home owners. The results have been the escalation of new home prices and often the curtailment of services.

Despite the passage of Proposition 13 in California, intuitive arguments still are heard on both sides of the issue. Developers say that additional residents will share in the costs of government and thus reduce the per capita costs. Preservationists claim that increases in population density create a demand for a wider range of services and a burgeoning bureaucracy. This increases the burden on the pregrowth home owner. The debate centers around those local governmental expenditures which have the greatest influence on property taxes. The critical issue is the effect of population increases on these expenditures.

**Local Governmental Expenditures And Revenues**[2]

Governmental expenditures in New York State, excluding New York City, are $31.8 billion or $2,982 per resident.[3] Table 1 lists school expenditures as the largest component of governmental expenditures.

Governmental expenditures are financed through a variety of sources with property taxes being the single largest component. In New York State, property taxes constitute 41.4% of governmental revenues, a total of $12.2 billion.[5] Of the

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property tax revenue, 54.9% ($6.7 billion) is for schools. Of the schools' revenues, property taxes account for 50.1%, with the balance coming mostly from state aid.[6]

**TABLE 1**

Major Categories of Governmental Expenditures.[4]

| | $ in billions | % of total |
|---|---|---|
| 1. Schools | 13.8 | 43.0 |
| 2. Economic Assistance | 3.4 | 10.7 |
| 3. General Government | 2.3 | 7.3 |
| 4. Police | 2.0 | 6.3 |
| 5. Health Services | 1.9 | 6.0 |

Does a larger population require new and/or expanded services for the broader population and thereby increase the per capita tax burden even as the number of people sharing the costs increases?

To answer this, we analyzed governmental expenditure data, county-by-county, for New York State. Segmenting the data allowed for the explicit analysis of growth on school expenditures and non-school expenditures; each regression analysis estimated the impact of population growth on expenditures; and lastly, a simulation table illustrated these results.

### Effect Of Increasing Population On Governmental Expenditures

The regression analysis illustrates that population increases have a significant impact on expenditures. The regression results follow:

*Regression Equation 1:*

Government expenditures = −5484.3 + 2.1 pop + 271.3 pden + 6.3e-07 pops

| | | | | |
|---|---|---|---|---|
| t-statistic | (−0.22) | (10.4) | (6.5) | (3.8) |
| Probability[7] | 17.4% | 99.9% | 99.9% | 99.9% |

Adjusted $R^2$ = 0.9864

pop = population; pops = population squared; pden = population density divided by land area; pdens = population density squared; inc. = median income[8]

All three factors: population size, population density and population squared, had a positive impact on governmental expenditures.[9] As population size and density increase so will total governmental expenditures. The more interesting question is whether per capita expenses will increase? The positive coefficient of the population squared variable indicates that yes, per capita expenses will increase.

Based on this regression equation, the following simulation table illustrates the effect of both a 5% change in population and a 10% change in population on governmental expenditures. The basis for comparison is an average county, constructed using the averages for each variable in the data base.

The simulation illustrates that costs increase by $7 per person for a 5% increase in population.[10] A 10% increase in the county's population results in a $14 increase in per capita governmental expenditures. Per capita expenditure increases because a 5% increase in population results in a 5.3% increase in total governmental expenditures. Similarly, a 10% increase in population results in a 10.6% increase in expenditures.

### The Effect Of Increasing Population On School Expenditures

To better understand the various components driving the governmental expenditures, school expenditures were analyzed separately. There is considerable debate on how population growth affects school expenditures. The debate centers on whether or not economies of scale exist.

Economies of scale may occur because a larger district can structure optimally-sized classes, fully utilizing the teachers' time. Additionally, transportation costs per pupil may fall as the population becomes denser. However, as a school district increases in size, it frequently offers a broader spectrum of courses and activities which tend to decrease the potential economies of scale.

The willingness of residents to pay also influences school expenditures. Willingness to pay is associated with ability to pay, therefore the regression equation includes median income to account

**TABLE 2**

Simulation of Population Increase on Governmental Expenditures

| | Total Population | Population Density | Land Area | County Expenditure | Expenditure Per Capita |
|---|---|---|---|---|---|
| Average County | 187,156 | 227 | 823 | $474,625,700 | $2,536 |
| + 5% | 196,514 | 239 | 823 | $499,771,300 | $2,543 |
| +10% | 205,872 | 250 | 823 | $525,025,500 | $2,550 |

**TABLE 3**

Simulation of Population Increase on School Expenditures

| | Total Population | Population Density | Land Area | School Expenditure | Expenditure Per Capita |
|---|---|---|---|---|---|
| Average County | 187,156 | 227 | 823 | $188,504,600 | $1,007 |
| + 5% | 196,514 | 239 | 823 | $197,143,700 | $1,003 |
| +10% | 205,872 | 250 | 823 | $205,904,900 | $1,000 |

for this influence.[11] The school expenditure regression results follow:

*Regression Equation 2:*

sch exp = −124906.7 + 0.55 pop + 7.1e-07 pops −.009 pdens + 6.12 inc

| | | | | | |
|---|---|---|---|---|---|
| t-stat | (−3.6) | (5.5) | (8.4) | (−2.3) | (4.8) |
| Probability | 99.9% | 99.9% | 99.9% | 97.4% | 99.9% |

Adjusted $R^2 = 0.9834$

Here again the population and the population squared both have positive effects on total school expenditure. However, as population grows and the population density increases, there is a negative impact on expenditures. This suggests that as population becomes more concentrated some savings exist, e.g., in transportation. The population's median income also positively affects school expenditures; counties with higher median incomes spend more on education.

Thus, which dominates as the population increases, the saving effect or the spending effect? The results of the simulation below illustrate that while total school expenditures increase, the per capita expenses decrease as population grows.

A 5% increase in population increases total school expenditures by 4.58%, while a 10% increase in population increases school expenditures by 9.23%.

The impact of decreasing expenditures per capita may not relieve the burden of property taxes. The impact depends upon the changes in full value assessment. If total full value assessment for the county increases by less than 4.58%, then the tax rate will go up.

### Increasing Population And Its Effect On Net Governmental Expenditures

To complete the analysis, we examined governmental expenditures excluding schools:

*Regression Equation 3:*

Net Government = 53207.6 + 1.45 pop + 290.96 pden − 3.54 inc

| | | | | |
|---|---|---|---|---|
| t-stat | (0.82) | (18.5) | (7.9) | (−1.5) |
| Probabilities | 58.5% | 99.9% | 99.9% | 87.1% |

Adjusted $R^2 = 0.9748$

In this regression, population and population density both had positive impacts on expenditures. The median income had a negative effect indicating that counties with wealthier citizens require fewer governmental expenditures. As economic assistance and health services comprise 30% of the net expenditures, this income effect is appropriate.

This simulation illustrates that net governmental expenditures per capita increased by $14 when population grew by 5%. Total expenditures grew by 5.96% and 11.52%, respectively, for 5% and 10% population growth.

### Discussion Of Regression Results

For total governmental expenditures, the regression predicts that a larger population is positively correlated with an increase in total expenditures. Per capita expenditures also increase when there is a larger population. When we isolate school expenditures, a major component of governmental expenditures, per capita expenses decrease and economies of scale exist. Thus, the increase in expenditure due to development arises in the non-school categories. These expenditures include economic assistance, general government, police and health services.

The simulations provide a sense of the distribution expenditures for a given increase in population. For example, if population increases by 5%, per capita school expenditures decrease by $4 and non-school expenditures increase by $11, for a total change of $7. Clearly, the growing expenditures in other categories outweigh the per capita savings in school expenditures.

### Property Tax Implications

How does the increase in governmental expenditure resulting from population growth affect property taxes? This depends on changes in full value assessment for the entire county. If the total full value assessment of the county does not increase sufficiently to accommodate the expenditure increase, existing residents will face higher tax rates.

The following example illustrates this point. If a 5% increase in population results in a 5% increase in expenditures, then per capita expenditures are

**TABLE 4**

Simulation of Population Increase on Net Governmental Expenditures

| | Total Population | Population Density | Land Area | County Expenditure | Expenditure Per Capita |
|---|---|---|---|---|---|
| Average County | 187,156 | 227 | 823 | $283,141,200 | $1,513 |
| + 5% | 196,514 | 239 | 823 | $300,018,300 | $1,527 |
| +10% | 205,872 | 250 | 823 | $315,755,600 | $1,534 |

unchanged. Even with unchanged per capita expenditure, if a county's total full value assessment increases by less than 5%, then the residents' tax rates must increase to pay for the newcomers.

This study shows that a 5% increase in population causes a 5.3% increase in total expenditures, which results in higher per capita expenses. In order for the tax rate to remain the same, the county's total full value assessment must increase by 5.3%. If 5% more houses are built, the full value assessment might not increase by the necessary amount because the vacant land is already on the tax rolls. Only the additional value added by the new house increases the appraised value.

Although we may look for economies of scale in the schools to offset the costs of growth, this may not be the case. While school expenditures fall, per capita total school expenditures rise. If the population grows by 5%, school expenditures increase by 4.58%. If the full value assessment does not rise by 4.58%, then residents will experience a tax increase from the school portion as well as from the non-school portion.

## Conclusion

This study makes clear that the preservationists are correct in terms of governmental expenditures. Even if governments do experience economies of scale in schools, this is outweighed by the diseconomies of scale in other government functions. Population growth increases the tax burden on existing residents, and new residents should expect their taxes to be higher than current taxes.

## Suggestions For Future Research

These results motivate the consideration of a pay for savings program. Under such a program, the government purchases undeveloped land and thereby limits population growth and preserves open space. Frequently pay for saving's schemes do not appear economically viable, but the savings are forever, therefore the payoff period should be similarly long-lived. If there are other benefits to the open land, the purchases are more easily justified. This study projects the costs of growth and provides a minimum on what a municipality might pay to limit development.

## NOTES

1. Robert Hanley, "Explosive Growth Jams Schools in a Jersey Town," *The New York Times*, Nov. 30, 1987, p.B2.
2. The data analyzed in this study is the "financial data for all classes of municipal governments summarized by county." It includes expenditures by the county, cities, towns, villages, fire districts and school districts. The data excludes New York City, joint activities, library systems, community colleges and cooperative and vocational education programs. Office of the State Comptroller, State of New York. *Special Report on Municipal Affairs for Local Fiscal Years Ended in 1990*, 1991, p.421. Hereinafter *Special Report*.
3. *Special Report*, Table 8. p.456.
4. *Special Report*, Table 8. pp. 454-455.
5. *Special Report*, Table 8. p. 452.
6. *Special Report*, Table 8. p. 452.
7. For each t-statistic, we report the probability that the given coefficient is significant, that it is not equal to zero and is correctly signed.
8. Variable List: pop = Population; pops = Population squared; pden = Population density, population divided by land area; pdens = Population density squared; inc = Median income.
9. The model establishes population and population density as important determinants of governmental expenditures. The population squared term enters into the equation because the relationship between expenditures and population is not linear; the squared term improves the predictive power of the model by taking account of the non-linearity.
10. Another measure is the increase in expenditures per acre, as the primary source of revenues is property taxes and the land area does not change. With a 5% increase in population, governmental expenditures increase by $47.74 per acre.
11. Median income data by county is from the U.S. Department of Commerce, Bureau of the Census, *1990 Census of Population and Housing: Summary of Social, Economic, and Housing Characteristics–New York*. p.245.