New Jersey has the highest property taxes in the US and the largest number of municipalities per square mile. Two hundred ninety seven of the 565 municipalities are smaller than 5 square miles and 172 of these are smaller than two square miles. Yet there has been only one significant merger of New Jersey municipalities in the past half century despite a number of state programs to subsidize or otherwise encourage consolidations. Either residents of smaller municipalities question the potential for cost savings and property tax reductions from consolidations and/or value close-to-home rule over any efficiencies that might be realized. In this research I have found that there is a premium in residential real estate as exemplified by three bedroom home values in smaller New Jersey municipalities as measured by population. These findings are from regression models that explain three bedroom home sales values in the spring of 2022 in New Jersey places, taken from Zillow public use data files. I conclude from these results that sentiment towards consolidation among New Jersey residents of smaller municipalities is not likely to emerge anytime soon.

Keywords: municipal consolidation, New Jersey, home values

JEL codes: R50, R21, H70, H73

Douglas Coate
Dept. of Economics
Rutgers Univ., Newark
dccoate@gmail.com
August 2022
Housing values in New Jersey and the Prospects for Municipal Consolidation

Introduction

New Jersey has more municipalities per square mile than any other state in the US. Two hundred ninety seven of its 565 municipalities are smaller than 5 square miles and 172 of these are smaller than two square miles.¹ It is also characterized by the highest property tax rates and the highest property tax revenue per residential parcel of all the states, each figure roughly 10 percent higher than for Illinois, the second most heavily property taxed state. The 2.5% property tax rate in New Jersey generated $5400 per residential parcel in 2019. The same figures for Illinois were 2.3% and $4900.²

The combination of geographically small municipalities and high property taxes has led to frequent calls for the merger of municipalities in the state to reduce the cost of local government services.³ State government legislation was enacted in 1917 that first set forth procedures for municipal consolidation. As early as 1977, the state government provided funds to facilitate consolidation among municipalities.⁴ Governor Corzine went one step further in 2008, floating a proposal to cut off state funds to every town with less than 5,000 people and to cut state aid in half to towns with 5-10,000 people that did not merge with adjacent municipalities.⁵ The state legislature, however, was not supportive. Apparently, their reading of the public mood was that New Jersey
residents of population smaller municipalities valued local control over potential economies from consolidation.

The theoretical arguments for decreases in municipal service costs per capita with increases in population size come from economic theory. Economics of scale in the economics textbooks result in part from spreading the fixed costs of production over more units of output. Fixed costs are costs that do not vary with output. In terms of the provision of municipal services examples of fixed cost might be the salary of the town clerk or the police chief. Increases in variable inputs as output (municipal services) expands can also lead to lower unit costs as scale enables their use to become more specialized. The average cost of the provision of municipal services should decrease initially as population size increases and fixed costs are shared by more taxpaying units. Then, at some population size, municipal government costs per capita may turn up as inefficiencies in the management of variable costs offset the gains from specialization in the use of variable inputs and as reductions in fixed costs per capita become smaller and smaller.

State government subsidy and theoretical arguments aside, there have been only three mergers of municipalities in New Jersey, and only one of significance, in the past 50 years. In 1997, Pahaquarry, with six residents, merged with Hardwick, with approximately 1500 residents. In 2013, Princeton Township, population 16,000, and Princeton Borough, population 12,000, merged (after fifty years of conversations).
Pine Valley (yes, that Pine Valley with the perennially rated number one golf course in the US), with 21 residents, merged with Pine Hill, population 11,000, in 2021.

In this paper I examine the effects of municipal population size on three bedroom home sale prices in the spring of 2022 in New Jersey. I find home values are inversely related to municipality population size, other variables constant, across different samples stratified by population. The effect is stronger, the smaller the population grouping. These estimates indicate a shift in sentiment towards municipal consolidation among residents of smaller municipalities in New Jersey may still be a long time coming.

Previous research

Caprio and Pfeiffer (2014) studied the municipal merger issue in New Jersey. They provided three explanations for why more mergers have not occurred. 1. Many New Jersey residents of small municipalities consider their neighborhood/community and their municipality to be one in the same. They are reluctant to put their community social capital at risk by a merger with another municipality. 2. Residents of small municipalities fear a cost and/or tax shift from merger that may not be favorable to them. 3. Any cost savings that could be achieved through consolidation can be or already has been realized through shared service agreements or contracting. These agreements maintain political boundaries and do not threaten local control or the provision of locally tailored services.
Caprio and Pfieffer concluded that there was little potential for cost savings through merger of municipalities in New Jersey in any case. Their calculation of the costs of municipal government services per capita in New Jersey in 2011 across 10 population size categories, ranging from less than 2,000 to over 40,000, showed little variation in the cost of municipal services.

The limited potential for cost savings from consolidation also receives support in the extensive literature reviews of Swianiewicz and Lukomska (2017), Miyazaki (2017), and Drew, McQuestin, and Dollery (2018), and from their own research findings. Miyazaki (2018) reported an increase in expenditures per capita after municipal consolidation in Japan and Swianiewicz and Lukomska found potential economies of scale in the provision of administrative services but not in the delivery of other categories of local government expenditures in Poland. Drew, McQuestin, and Dollery (2018) analysis of Australian data showed participation in shared service agreements increased local government service costs per assessment unit by eight percent. Brazilian data do tell a different story. Bernardelli, Kortt, and Dollery (2021) found evidence of “considerable scale economies” for municipal expenditures there. Per capita expenditures were 50 percent lower in municipalities over 50,000 population as compared to municipalities under 2500 population, and 30 percent lower as compared to municipalities in the 2500–5000 population range.
Data and Methods

To undertake this research, I take advantage of the Zillow public use data on monthly home sale values by municipality in the US. I use a hedonic regression approach to analyze, for New Jersey municipalities, the relationship between population size and three-bedroom home values. Three-bedroom homes are the most common home size in the United States.

I specify monthly three bedroom average home sale values in New Jersey municipalities in March, April, and May, 2022 to be dependent upon population, average family income, levels of education, effective property tax rates, race and ethnicity, and distance from New York City, a major employment and cultural center for many New Jersey residents. The population, income, and education variables are from the American Community Survey, 2015-2019, for census designated places. In addition to convenience to New York City, the distance variable also captures changes in the characteristics of three bedroom homes that may vary with distance from the City, such as newer construction, more bathrooms, larger rooms, and larger lot sizes. The property tax rate variable is percent of market value as calculated in the state government equalization process. It is not the local government rate which applies to assessed property values that are often well below market values to discourage homeowner challenges to local assessment. Lower property tax rates should mean higher home values assuming similar levels of public services because tax payments are capitalized in home values. The square of distance from New York City is also
included in the regression models to allow for nonlinear effects; namely, the effects of
distance from New York City may decline at a diminishing rate with distance from the
city.

This regression approach enables the testing for population size effects on home
values, while holding constant other characteristics of the municipality that may impact
home values and be correlated with population. In table 1, summary statistics are
presented for the variables detailed above for New Jersey places. In table 2, regression
results are presented for the three bedroom sales values occurring in March, April, and
May, 2022. Two regressions are presented, the first for the full sample of municipalities
and the second restricted to municipalities under 30,000 population. The second
regression is an example of estimates realized when different samples, stratified on
population, are used, as are presented in table 3. The table 3 results show that
population coefficients grow in absolute value in the three bedroom sales value
equations as the samples become more restricted in terms of population size. The
population coefficients for the full sample of New Jersey municipalities and for the
samples restricted to population sizes less than 50,000, less than 30,000, and less than
10,000 are -.4, -1.3, -3.0, and -6.9, respectively. These effects are consistent with a
preference for residency in population smaller municipalities by New Jersey homeowners
that becomes stronger relative to housing supply as population size decreases. Using
these point estimates, in the less than 10,000 populated municipalities, a 5,000
population difference would translate into a $34,500 difference in values (6.9*5000) in
Table 1: Variable names, variable definitions, data sources, and means and standard deviations for variables used in the analysis of 3 bedroom home values, New Jersey municipalities, 2022

<table>
<thead>
<tr>
<th>Variable</th>
<th>Variable definition</th>
<th>Mean</th>
<th>Std. deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>aveprice</td>
<td>average sales price of three bedroom homes for March, April, and May, 2022. Zillow</td>
<td>503,887</td>
<td>256,173</td>
</tr>
<tr>
<td>population</td>
<td>population of municipality, American Community Survey, 2015-2019</td>
<td>16,303</td>
<td>26,433</td>
</tr>
<tr>
<td>avefaminc</td>
<td>average family income in the municipality, ACS, 2015-2019</td>
<td>143,425</td>
<td>62,865</td>
</tr>
<tr>
<td>pctbatchelor</td>
<td>percent 25 years and older with bachelor degree or higher in the municipality, ACS, 2015-2019</td>
<td>41.6</td>
<td>19.1</td>
</tr>
<tr>
<td>tax rate</td>
<td>property tax as a percent of market value.*</td>
<td>2.66</td>
<td>.91</td>
</tr>
<tr>
<td>distnyc</td>
<td>miles from New York City of the municipality, from Google Maps</td>
<td>59.4</td>
<td>38.4</td>
</tr>
<tr>
<td>pctwhite</td>
<td>percent of the municipal population that is white, ACS, 2015-2019</td>
<td>78.1</td>
<td>18.3</td>
</tr>
<tr>
<td>pctblack</td>
<td>percent of the municipal population that is black, ACS, 2015-2019</td>
<td>8.2</td>
<td>13.7</td>
</tr>
<tr>
<td>pctAsian</td>
<td>percent of the municipal population that is Asian, ACS, 2015-2019</td>
<td>9.7</td>
<td>36.1</td>
</tr>
</tbody>
</table>


Table 2: Results of regressing average three bedroom home sale values in New Jersey municipalities on municipality population and other characteristics, full sample and sample of municipalities with less than 30,000 population, spring of 2022*
Table 3: The relationship between municipality population and 3 bedroom home values by municipality population from regression estimates, selected samples of New Jersey municipalities.*

<table>
<thead>
<tr>
<th>Sample</th>
<th>Population coefficient</th>
<th>Population t-value</th>
<th>N</th>
<th>R**2</th>
<th>Average population</th>
<th>Std.dev. population</th>
<th>Ave. house sale value, 3 bedrooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>full sample</td>
<td>-0.4</td>
<td>-4.5</td>
<td>381</td>
<td>.74</td>
<td>16,303</td>
<td>26,433</td>
<td>503,887</td>
</tr>
<tr>
<td>pop&lt;50,000</td>
<td>-1.3</td>
<td>-3.0</td>
<td>355</td>
<td>.74</td>
<td>10,932</td>
<td>10,591</td>
<td>513,732</td>
</tr>
<tr>
<td>pop&lt;30,000</td>
<td>-3.0</td>
<td>-3.7</td>
<td>329</td>
<td>.77</td>
<td>8,644</td>
<td>6,960</td>
<td>518,796</td>
</tr>
<tr>
<td>pop&lt;10,000</td>
<td>-6.9</td>
<td>-1.8</td>
<td>219</td>
<td>.71</td>
<td>4,616</td>
<td>2,718</td>
<td>523,461</td>
</tr>
</tbody>
</table>

*Population coefficients and their t-values are from estimates of the regression model that explains average three bedroom home sale prices in New Jersey municipalities in March, April, May, 2022. The model is estimated over 4 samples: the full sample, the sample restricted to municipalities with population less than 50,000, then less than 30,000, and then less than 10,000 population. Additional table columns are number of observations, R squared from the regression models, average populations of the municipalities in the samples and standard deviations, and average house values for three bedroom sales in the samples.
In favor of the smaller municipality. These calculations for the other three population categories yield $15,000 (3.0*5,000), $6,500 (1.3 * 5,000), and $2,000 (.4*5,000). Mean three bedroom house sale values in all of the population categories are about $500,000.

The coefficients for percent of the population 25 years and older with a four-year college degree, average family income, property tax rate, and the distance to New York City variables are also statistically significant. A one standard deviation change in the first three variables would change home sale values by $31,649 (1657*19.1), $62,908 (1.0*62,908) and $82,666.91 (90,842*.91).

The average effective property tax rate in New Jersey municipalities is 2.6 (table 1), thus, the average property tax bill on a three bedroom house with a market value of $504,000 (the full sample mean from table 1) is $13,104. A one unit change in the tax rate (one percentage point) would change property tax bills by $5,040 (.01*504,000). This value, divided by 90,842, the tax rate coefficient from regression 1 (the effect on sales values of a one unit change in the tax rate) is .055. This gives a "cap rate" of 5.5, approximately equal to the cap rates for apartment buildings in the US.\textsuperscript{13} The impact of distance from New York City on housing values declines at a decreasing rate with distance from the city, becoming negligible at a distance of about 90 miles. The distance variables coefficients indicate three bedroom house sale values 40, 60, 80, and 90 miles from the city, have market values 75 thousand, 124 thousand, 147
thousand, and 148 thousand less than three bedroom sales values 20 miles from the city.

Conclusion

New Jersey has the highest property taxes in the US and the largest number of municipalities per square mile. Two hundred ninety seven of the 565 municipalities are smaller than 5 square miles and 172 of these are smaller than two square miles. Yet there has been only one significant merger of New Jersey municipalities in the past half century despite a number of state programs to subsidize or otherwise encourage consolidations. Either residents of smaller municipalities question the potential for cost savings and property tax reductions from consolidations and/or value close-to-home rule over any efficiencies that might be realized. In this research I have found that there is a premium in residential real estate as exemplified by three bedroom home values in smaller New Jersey municipalities as measured by population. These findings are from regression models that explain three bedroom home sales values in the spring of 2022 in New Jersey places, taken from Zillow public use data files. The population effects are considered holding constant average family income, education levels of adults 25 and over, property tax rates, and race and ethnicity in the municipality, as well as distance from New York City, a major employment and entertainment hub for New Jersey residents. I conclude from these results that sentiment towards consolidation among New Jersey residents of smaller municipalities has yet to emerge.
3 In New Jersey about 50% of property tax revenues finance K-12 education expenditures, about 30% finance municipal government expenditures, and about 20% are sent to the county (Keevey, 2017).
5 “Small Towns in N.J. Told to Merge or Face Cuts” Morning edition, NPR, May 1, 2008. (https://www.npr.org/2008/05/01/90090911/small-towns-in-n-j-told-to-merge-or-face-cuts)
6 Caprio and Pfieffer (2014) and Symons (2021).
9 Sirmans, Macpherson, and Zietz (2005).

10 Twenty six percent of occupied housing units in the US in 2019 were two-bedroom, 39% were three-bedroom, and 17% were four-bedroom. (https://www.statista.com/statistics/206393/distribution-of-housing-units-in-the-us-by-number-of-bedrooms/#:~:text=Distribution%20of%20occupied%20housing%20units%2C%202019%2C%20by%20number%20of%20bedrooms%2C%20had%20three%20bedrooms%20in%202019.) Of the 822,000 single-family homes sold in 2020, 348,000 (42 percent) had three bedrooms. (https://www.census.gov/construction/chars/highlights.html#:~:text=Of%20the%20822,000%20single%20family%20homes%20sold%20in%202020%3A&text=348,000%20had%20three%20bedrooms).

11 The average of sales values for three bedroom homes are reported for each month. I then average the three values for March, April, and May, 2022.
12 Combining Zillow values with data from the American Community Survey, 2015-2019 for census designated places, and using the ACS data for Zip Codes when appropriate to fill in missing values gives 380 observations with complete data.
Bibliography


Keevey, R. 2017. Where the state gets its money. NJ Spotlight News


