

The Effects of Open Space Purchases on Property Taxes in New Jersey

Jim Peterman

The College of New Jersey

I. Introduction

New Jersey, the most densely populated state, is drawing closer and closer to becoming built out. With development accelerating, urban fringe municipalities are feeling more pressure from farm and homeowners to slow development. As a result there has been a great recent push towards permanently preserving farmland and other open space acreage.

Economists have studied and disseminated a great deal of information on open space, ranging from studying an individual's or community's willingness to pay to preserve open space to simpler studies focused on defining open space and deciphering the effects different open space characteristics have (i.e. geographic location). While the literature on the open space theory is expansive it has skirted the issue of property taxes. The oversight is remarkable. Debates about whether to allow development or to preserve a particular land parcel typically center on the impact development will have on the town budget and/or the tax rate. Preservation advocates assert green acres improve property values, adding to local tax revenues. At the same time, development advocates assert acquiring green acres can require extensive funding (Platt, 2000).

II. Background

The literature can be organized under five main ideas: 1.) A definition and summary of open space and its characteristics; 2.) A definition and summary of a property tax; 3.) How development rights should be awarded and transacted; 4.) People and Communities are willing to pay to preserve open space; and 5.) The effects of land on taxes and taxes on land.

Open space is land purchased for the sole purpose of being set aside as non-developable. Open space is in fact a heterogeneous good since it can be distinguished by land use, ownership type, developmental potential, and geographic location (Irwin 2002, 466). However, in past research studies have tended to focus on a particular type of open space or have aggregated the different types of open space into one category. As a result there is little evidence regarding the relative values of the various attributes of open space explained above.

Irwin notes that the spillover effects are significantly greater for preserved open space rather than open space associated with developable forests and farmland. She also explains that her findings shed some light on the specific attributes of open space that are most valued. Her evidence suggests that the public demands open space not for any particular feature of open space landscape but rather for the fact that open space implies no development (2002, 466).

Muller (1988) defines a property tax as a recurrent tax related to ownership or occupation of land and/or buildings. He also further identifies two forms of property taxation: The first is a partial wealth tax, an annual tax on the gross capital value of the different interest in the land and property. The second is a tax on land or property use, which can be approximated by levying a tax on rental income and on imputed owner-occupied income.

New Jersey's property tax is an "ad valorem tax," meaning the tax is calculated according to value. A fixed tax is applied to the assessed value of a given piece of property. The fairness of the tax has been questioned because of the subjective nature

associated with assessing land value. Thus, those with land assessed at a greater value than the owner would ever be able to sell the land for will be paying unfairly high taxes.

Preston (1999) notes that New Jersey, with its long tradition of home rule, has 566 municipalities and the highest property tax in the country, averaging \$4,000. The taxpayers are mostly financing the 21 counties, 188 fire districts and 611 school districts. School funding is solely comprised of state financial aid and property taxes. New Jersey's state revenue covers about 40% of the school costs while the national average for state assistance rests at 50%. The property tax alone makes up the remaining balance.

All of the fifty states have some legislation that favors agricultural or open space use of land through modifications of the property tax (Wunderlich, 1992, 351). The state government grants tax breaks for land that remains undeveloped or in its original farming state. Robinson considers these tax law modifications to essentially be subsidies that maintain agricultural land or slow the pace of transition into other uses. This ideal tax treatment of agricultural land, regardless of its effect on land use, will affect the distribution of wealth among taxpayers and between the public and private interest in land. The value of this preference will be higher in states where pressures to develop are great, similar to what we are seeing in New Jersey (1992, 135).

Of course, we may prevent the transition of agricultural land to other uses by purchasing development rights. However, such purchases are costly. To reduce the cost of preserving open space, development rights may be transferred instead of purchased outright. Platt explains that a Transfer of Development Rights (TDR) program allows one landowner to sell development rights to a municipality or other entity. He adds that these rights must be carefully incorporated into development and open space planning for

any policy to be effective (2000, 8). In the TDR program the zoning authority has limited the allowed development density targeted for higher-density development and then sells zoning variances to developers. The revenue goes to purchase development rights in areas zoned for preservation. Since the value of the right is the difference between the land's value in developed and undeveloped uses, compensation reduces opposition from the owners of land zoned to remain undeveloped (Thorsnes 1999, 256).

However there is an alternative to the TDR programs: a marketable development rights program (MDR). The idea is rather simple. First you must define and equitably allocate the rights to develop an agreed upon proportion of land within a jurisdiction, and let the market allocate those rights among landowners. Under the right conditions the MDR allocates land to undeveloped uses efficiently; i.e., it maximizes the total value of land in the jurisdiction.

For example, a farmer has marketable development rights to an acre of land. He values the land based on the level of crops he can harvest and sell, say \$100. Local residents and potential builders also place a value on that farmland. Perhaps Acme sees the land as a great location for their next store and places a value of \$300 on the property. The state, in the interest of the taxpayers, also values the land. They wish to see the land remain as farmland and are willing to purchase the land for \$400. Under MDR the property rights will surely move to the party that values them most. In this case the farmer will most likely sell the rights to the land to the state. The MDR program fails when a party with the highest attached value to a parcel of land can't acquire the property rights.

In addition the MDR program distributes the benefits and costs of land preservation equitably (Thorsnes 257). That is the owners of land that receive the benefits of preservation compensate the owners of the preserved land through purchase of development rights.

Much research has been conducted proving that individuals are willing to make onetime payments in order to preserve open space. Halstead (1984) and Beasley, Workman, and Williams (1986) estimate that households' willingness to pay to preserve an acre of average quality farmland increases from \$50 to \$150 per household when the replacement for agriculture will be high-density rather than low-density development. Other studies (Bergstrom et al. 1985) have also demonstrated a positive willingness-to-pay for farmland preservation as a means to preventing development.

Breffle et al. (1998) estimated a neighborhood's willingness to pay for preservation. Outside Boulder, Colorado pressures to develop unused portions of land within the city limits have conflicted with an adjacent neighborhood's strong preferences to preserve their scarce remaining open space. A household can enjoy preserved open space in a couple of ways. Only a household located on a property very close to the preserved open space can enjoy a use value. For example, obtaining the use benefits from hiking requires that one be on the site. Passive values, on the other hand, can be enjoyed by households regardless of their proximity to the preserved land. For example, the pleasure one enjoys from knowing that fish live in a quality habitat does not require one to visit the stream (Breffle et al. 1998, 715,716).

Use values have the potential to be capitalized into land prices, while passive use values cannot because individuals can realize them without residing near the property

(716). Understanding the effects open space has on the value of different properties should provide some insight on any relationship found between the level of open space and property tax rates in that area because higher land values imply that a given rate will raise more revenue.

Lastly, the valuations of open space defend the idea that property, public or private, can be thought of as a blend of interests. There is some public interest in all private property. Wunderlich explains that public interest in property may be as remote as escheat or as large as government ownership. The public's interest may be as apparent as a chain link fence with a warning to keep out or as a regulation to control weeds, prohibit livestock, or restrict billboards (1992, 352).

Land represents the ultimate property tax base. Fixed in location and supply, land as a base for taxation offers elements of stability and neutrality. Increasing the tax burden on land could generate substantial revenues without producing economic distortions. Higher taxes on land might also promote more rational land-use decisions and fairer distribution of the benefits of landownership. Placing taxes on land rather than buildings has been advocated as a means of influencing land-use patterns (Robinson 1992, 130). That is, a heavier tax on land will spur more intensive and rapid development, whereas a lighter tax rate on land will slow down development and preserve open space (135).

Platt reveals many of the open space incentives behind the property taxing system. He notes that many states, New Jersey included, grant property tax credits to property owners who donate land for open space purposes. However, these contracts typically last 10 to 20 years and must be renewed. In addition some federal tax policies

encourage open space protection. For example, the IRS allows for deductions for bona fide contributions to permanent open space. Also municipalities may issue bonds to invest in revitalizing a district. This revitalizing may include the purchase of open space. As a result the value of the property within the district goes up and a hike in property taxes ensues. The increase in tax revenues then repays for the bonds previously issued (Platt 2000, 11).

Breffle et al. (1992) considers the idea of financing district revitalization via issuing a bond with the Boulder, Colorado property experiment. In order to preserve the property as open space they suggest that a bond be issued that would increase every household's property taxes one time by the median neighborhood willingness to pay. Since willingness to pay diminishes with distance they concluded that more money could be raised if the tax varied with the proximity of the taxpayer to the open space property. That is, those closer to the property would pay a higher tax and those farther away a lower tax. They also found income to be a significant determinant of a household's willingness to pay. Therefore, it may be necessary to exempt low-income households in order to pass a bond issuance (Breffle et al. 723,724).

Acquisitions of open space acreage in the state of New Jersey are on the rise. In order to restrict urban sprawl and to slow development the state is purchasing undeveloped land. The immediate result from a higher level of open space is an increase in value of developed (and developable) space. That is, homes and businesses in close proximity to open space are highly valued by developers. And, as open space continues to rise, land farther from the open space will be considered more valuable (also as there is more open space it becomes more likely that any parcel of land will be located adjacent

to open space). If a higher level of open space creates more valuable developed land then a given tax rate on such land will raise more revenue. For example, my land is assessed to be worth \$100. A 5% tax rate levies a \$5 tax. However, with open spaces secured around my property, my land is now valued at \$200. At this point the same state can generate that original \$5 tax with a smaller rate, here, 2.5%. However, such acquisitions are also financed to some extent out of local tax revenues. The first effect will tend to lower tax rates while the second effect tends to raise them. Coughlin and Kawashima (1973) contend that as open space increases and there is a higher valuation of the remaining land that the property tax rate will fall. Because the developable land is more valuable the same tax rate will generate a higher level of property taxes. Thus, the tax rate may either rise or fall as a result of more open space. Using regression analysis I hope to draw some conclusion as to the relationship between open space and the property tax.

A second theory defending a fall in the property tax relies on the infrastructure of each municipality. It is argued that as open space increases there is less land for residential development, thus population density for the area will remain somewhat constant or fall. A smaller population density puts less stress on the municipalities' infrastructure, such as public roadways and sewage systems. The end result should be a lower tax reflecting the greater efficiency with which the district will operate at.

On the other hand more open spaces may cause the property tax rate to rise. Coughlin and Kawashima (1973) and Fearfield (1999) disregard the financial significance of open space. Preventing urban sprawl and residential development through open space purchases is a costly procedure. In such circumstances New Jersey would

have to purchase the land for an amount that exceeds the valuations of various land developers. These significant open space purchases must be financed. The most common financing route would be through increases in the property tax. Under this method, those benefiting most from the open space purchases (thus, their property values increase) will be responsible for higher tax payments.

A second argument defending a tax hike as the result of more open space purchases can be introduced by Charles Tiebout (1956). Tiebout remarks, "The consumer is, in a sense, surrounded by a government whose objective it is to ascertain his wants for public goods and tax him accordingly. To use Alchian's term, the government's revenue-expenditure pattern for goods and services is expected to 'adapt to' consumers' preferences (417)." Open space does meet the strict requirements for being considered a public good. That is, it is non-depletable and non-excludable. For example the state can purchase property that is later converted into a public park. One person's use of the park does not in anyway take away from another's enjoyment of the park (non-depletable).

Tiebout suggests that the tax rate can be thought of as a component of the total value of the property. If I attach a high value to a candy bar I will be willing to pay a higher sales tax for the good. However, if I do not place much value on the candy bar I will not be willing to incur any sales tax, thus no purchase will take place. I think the same theory holds true with property and the property tax. Those with highly valuable land will be more willing to pay a higher imposed tax. If the tax is too steep for the present homeowners then they will sell their land to an individual who places a higher value on the property, consequently one who is willing to pay the higher tax.

Tiebout's essay approaches the issue more generally. He saw each governed district as a supplier of a bundle of goods, such as the presence of a fire and police department, or the reputation of the schooling system, or the level of taxes. From there, individuals would choose to live in a community that best fit their desires, maximizing their utility.

III. Data and Analysis

Data on the property tax rate, open space spending, land acquisitions, and state aid were gathered for 50 randomly selected New Jersey municipalities using the official website for the state of New Jersey. The website provides links to all departments within the state, such as the Department of Treasury, the Department of Education, the Department of Community Affairs, and the Green Acres program. Additional data, such as each municipality's population, average property value, cost per pupil and population density, were found in the official Municipal Data book for New Jersey.

We estimate an equation in which that dependent variable, the general property tax rate, is a function of average property values in the municipality, cost per pupil enrolled in the local schools, population density, per capita state aid, the per capita size of the preservation trust fund, and a series of variables designed to capture open space acquisitions. The general tax rate is a multiplier for use in determining the amount of tax levied upon each property. It is expressed as \$1 per \$100 of taxable assessed value for 2003. This rate is used to compute the tax bill.

Example General Tax Rate:	Assessed value:	\$150,000
	X General tax rate	.03758
	Tax Bill	\$5,367

Average Property Value (Avgprop1) measures the mean residential value of land for 2003. The figures are measured in dollars. Average property value was included in the regression because of its relationship with the tax rate. As property values go up the tax rate will most likely fall since a lower rate can generate the same tax bill. Cost per Pupil (Costpup1) is the total cost associated with sending one child to school for the 2001-02 school year. There are different costs for each pupil depending on their grade level. The cost per pupil statistic includes classroom instruction, support services (attendance and social work, health, guidance, child study team, and educational media/school library services), administration, (general, school and business administration and improvement of instruction services), operations and maintenance of facilities, food services, extra-curricular activities, community and services. Obviously, it is more costly to educate a high school student over a first grade student. For this study the all costs per pupil for all grade levels (K through 8, High school etc.) were averaged together. Cost per pupil was included in this regression because it is widely held that the property tax is a chief source for funding education.

Population Density (Popdens1) measures the number (in thousands) of people per square mile within each municipality of New Jersey for the year 2000. The variable was included in the regression because it is thought that where the population density is high there is great stress on the municipality's infrastructure, justifying a higher property tax. State Aid (Stateaidpc1) is the per-capita municipal state aid. As aid goes up the municipality can afford to administer a lower tax rate. State aid data was collected and summed from the year 2000 through 2004.

The Garden State Preservation Trust Fund (Tfundpc1) is the result of a public referendum to preserve one million acres of open space and farmland over ten years. The law provides a sliding scale of payments in lieu of taxation for property purchased by the State to replace the ratable loss absorbed by the local taxing districts. These figures are a sum of the municipality's payments from 1998 through 2003. The more the municipality has paid suggests the greater level of open space within its borders. A resulting higher property tax may be required to finance the green acre expenditures. However, if the property tax falls the municipality's purchases may have been economically sound. The purchases, although costly, created highly valuable residential land, thus lowering the tax rate.

Acquisitions (Acqpc) represent a municipality's open space via state and local spending. The Green Acres State Acquisition and Local Acquisition program recorded each municipality's open space purchases in acres from May, 1997 through June 2002. Over that span only 10 municipalities acquired open space locally and 15 through the state. For this reason I also ran the regression with this variable acting as a dummy (Dacq). Since some municipalities acquired green acres via the state and local purchases there were a total of 22 townships recording an open space purchase between May 1997 and June 2002 (roughly half of the data set). Local Acquisitions (Locacq) is defined as the open space (in acres) purchased at the local municipal level. Here we are ignoring any open space purchases made by the state. Again since there was such a small number of townships recording local open space purchases I followed the same rational as before and ran the regression with this variable acting as a dummy (Dlocacq).

I have four models, all closely related, in an attempt to draw the best results from my main variable in question, open space. Each model maintains the independent variables representing average property value, cost per pupil, population density, state aid, and the Garden State Trust Fund. Each model also includes one variable measuring the level of open space, whether it is local acquisitions, a local acquisitions dummy, total acquisitions (state and local) per-capita, or a total acquisitions dummy. The results of these four regressions can be found on Table 2.

IV. Results

For all four models we found that cost per pupil has a direct relationship with the tax rate. However, in each case the estimate was insignificant. The regressions also show no significant relation between population density and tax rates. Both the state aid variable and the trust fund variable had the expected signs. However once again, the estimates were not significant.

From a theoretical perspective the effect of open space purchases is ambiguous. Acquisitions raise property values and allow municipalities to finance current operations at lower rates. However, the acquisitions themselves are costly. The results from the multiple regressions clarify the tax rate's response to a rising property value: it will indeed fall as proposed by Coughlin .et all, and Fearfield (1999).

Average property value (Avgprop1) remained a significant factor determining the property tax rate throughout all four regressions. As property values increase the property tax rate will fall. Coefficients for all regressions for Avgprop1 hovered around 0.0075. This implies that for every 100 thousand dollars in property value the tax rate falls roughly .75 points. A municipality with an average property value of 300 thousand

dollars would pay a rate three times lower than a municipality with an average property value of 100 thousand dollars. The intercept rests around 4.2 points. A municipality with an average property value of 100 thousand dollars will see their property tax rate fall from 4.2 to 3.45 ($4.2 - .0075 \times 100$). Likewise, more affluent municipalities, such as Old Tappan Township where the average property value exceeds 550 thousand dollars (the highest in the study), see a much greater fall in their property tax rate. Old Tappan enjoyed the second lowest property tax of all 50 municipalities in the study at 1.726%, well below the mean of 3.22%.

The second, more relevant results to this topic center on open space. Recall that I recorded green acre purchases made locally and by the state from 1997 through 2002. I ran the regressions with local acquisitions separate from total acquisitions. Total acquisitions per-capita (Acqpc) and the dummy variable for total acquisitions were both reported to be significant. Like the average property value, the increased level of open space depresses the value of the property tax.

Acqpc registers a coefficient of -4.265 from the analysis. In more concrete terms the statistic explains that if the municipality maintains 1 acre per-capita of open space the property tax rate will fall 4.265 points. However, to secure one acre of open space for each person within the municipality is potentially impossible. Most of the municipalities maintain open space per-capita at thousandths of an acre, while more than half of the data set had 0 acres of open space altogether. To capture the impact of the level of open space on the property tax rate assume a municipality achieves securing 0.1 acres of open space for each of its residents. According to the model the property tax rate will fall 0.4265 points (4.265×0.1). West Amwell Township recorded the highest level of open space

acquisitions per-capita at 0.346 acres. Consequently West Amwell enjoys the fifth lowest property tax rate at 1.772%.

Since half of the population does not register any open space purchases over the five year span I also decided to run the regression with total acquisitions as a dummy variable (Dacq). Like the regression above Dacq proved to be significant at the 0.05 percent level. The coefficient for Dacq is -0.7797, again signaling that open space dampens the property tax rate. However, this regression explains that the presence of *any* open space will lower the property in that township. Specifically, municipalities with open space, ranging from as little as 4 acres to as much as 6,600 acres, will have a property tax roughly .78 points lower than townships with no open space purchases. The regression results can be found in Table 2.

I used the same process as above for the regression on acquisitions made locally. We expect that local acquisitions will exert more upward pressure on tax rates because financing occurs at the municipal level (rather than the state level). If acquisitions are financed at the state level, the municipality gains nearly all the benefit while paying only a tiny fraction of the costs. Average property value remained a significant factor in determining the property tax rate; however, any measurement of open space lost any significance. Local acquisitions (Locacq) had a coefficient of -0.0027. As with the total acquisitions variable before the more acquisitions a township purchased the greater the property tax rate would fall. The dummy variable for local acquisitions (Dlocacq) has a similar effect on the tax rate with a coefficient of -0.298. Again, these results are not significant; however, they suggest that even for local acquisitions, spending for open

space will not increase tax rates. This effect likely occurs because the increase in property values from open space is sufficient to offset the increase in spending.

If local acquisitions were to significantly reduce the property tax rate the municipality could easily defend their green acre spending. That is, the money spent on acquiring open space would sufficiently raise property values so that the township could reduce the tax rate, while still generating enough revenue to cover open space spending. In this case, municipalities would be making economically wise decisions in purchasing open space while also controlling urban sprawl and creating a greener environment.

Thus far the model has concluded two things: 1.) as the average property value increases the property tax rate will fall, and 2.) as the level of open space increases the tax rate will again, fall. The model has simply defined a positive or negative relationship between these variables; it has not purported that one variable indeed causes the other. Thus far I have assumed that the average property value and the level of open space affect the tax rate. But what if, in fact, the falling property tax actually causes the relative property values to increase, or if the falling property tax is conducive for greater open space spending?

The first of these two scenarios is certainly plausible. That is, as the townships lower their tax rate, the property values may rise. Individuals will notice a lower property tax rate and migrate to that area placing a higher valuation on the property (along the lines of Tiebout's theory). As a result the property value will increase with the lowering of the tax rate. The second of these two scenarios is certainly not plausible. That is, lowering the tax rate will not induce the township to spend more money on open space. Thus we can eliminate any two-way causality based theory opposing my

conclusion that a higher level of open space will lower the property tax rate. However, a two-way causality problem, although weak, does exist between average property value and the property tax rate.

While the cause and effect relationship between the average property values and the property tax rate in a given township is questionable, there is a strong argument behind open space's direct effect on the property tax rate. Of the two significant variables found in the regression, open space spending can be soundly defended as a significant cause of changes in the level of property taxes.

V. Conclusion

New Jersey, as the most densely populated state, has a significant interest in purchasing open space and any resulting economic impact. One of the most important impacts open space acquisitions has, as proven by this study, is on the level of property taxes within the same municipal boundaries. The model demonstrated that both the average property value and the amount of open space in a given township will inversely affect the property tax rate.

Previously I explained that while I was certain more open space would increase the surrounding property values I was unsure of the final impact on the tax rate. Perhaps open space spending would require a tax hike, or perhaps the higher property values would eventually cause the tax rate to fall since equal tax bills could be generated with a lower tax rate. The regression has demonstrated the latter of the two scenarios to result. That is the state and municipalities together are making open space purchases that are economically sound. Green acre purchases, while primarily curbing urban sprawl and preserving natural environmental beauty, are also leaving the respected township in a

better financial position. Acquisitions, even at the local level, do not raise property taxes. Instead, we see higher property values and lower tax rates in municipalities that have made open space purchases.

Table 1. Means and Standard Deviations

Variable	Mean	Standard Deviation	Minimum	Maximum
Tax	3.22	1.56	1.36	9.35
Locacq	22.40	62.94	0.00	291.30
Stateacq	337.46	1137.10	0.00	6599.57
Acqpc	0.034	0.081	0.00	0.346
Dlocacq	0.20	0.40	0.00	1.00
Dacq	0.44	0.50	0.00	1.00
Population	13987.16	14540.29	534.00	69965.00
Avgprop1	179.07	107.43	41.61	566.68
Costpup1	8.70	2.31	0.00	15.08
Popdens1	2.71	4.61	0.012	30.14
Stateaidpc1	2.62	3.92	0.27	18.65
Tfundpc1	1.146	1.689	0.00	8.248

Tax: General property tax rate expressed as \$1 per \$100 of taxable assessed value.

Locacq: Green acre acquisitions made at the local level expressed in acres.

Stateacq: Green acre acquisitions made at the state level expressed in acres.

Acqpc: Per-capita local and state level acquisitions.

Dlocacq: Dummy variable noting the presence or absence of local green acre acquisitions.

Dacq: Dummy variable noting the presence or absence of either local or state level acquisitions.

Population: Number of residents within each municipality.

Avgprop1: Average property value measured in thousands of dollars.

Costpup1: Average cost per pupil measured in thousands of dollars.

Popdens: Population density measured in thousands of people per one square mile.

Stateaidpc1: Per-capita state aid measured in thousands of dollars.

Tfundpc1: Per-capita Garden State Preservation Trust Fund measured in hundreds of thousands of dollars.

Table 2. Regression Results for Tax Rate.

Regression	1	2	3	4
Acqpc	-4.265 (-1.69)**			
Dacq		-0.7797 (-1.81)**		
Locacq			-0.00270 (-0.78)	
Dlocacq				-0.29828 (-0.55)
Constant	4.21032 (5.15)***	4.40508 (5.34)***	4.0927 (4.85)***	4.24490 (4.97)***
Avgprop1	-0.000787 (-4.05)***	-0.00708 (-3.59)***	-0.00760 (-3.79)***	-0.00744 (-3.58)***
Costpup1	0.09306 (1.01)	0.06892 (0.77)	0.07327 (0.78)	0.05540 (0.59)
Popdens1	-0.02029 (-0.43)	-0.02476 (-0.52)	0.00027619 (0.01)	0.00292 (0.06)
Stateaidpc1	-0.03855 (-0.75)	-0.04047 (-0.79)	-0.03318 (-0.63)	-0.03692 (-0.70)
Tfundpc1	-0.07823 (-0.60)	-0.00201 (-0.02)	-0.00434 (-0.03)	-0.02395 (-0.18)
R-Square	0.3450	0.3511	0.3115	0.3067
n	50	50	50	50

Dependent variable: Tax, the general property tax rate expressed as \$1 per \$100 of taxable assessed value.

A regression was run with four different Independent Variables measuring green acres within each municipality: Locacq, Dlocacq, Acqpc, Dacq.

t-value in parentheses. ** = significant at 0.05 level, *** = significant at 0.01 level.

Locacq: Green acre acquisitions made at the local level expressed in acres.

Dlocacq: Dummy variable noting the presence or absence of local green acre acquisitions.

Acqpc: Per-capita local and state level acquisitions.

Dacq: Dummy variable noting the presence or absence of either local or state level acquisitions.

Avgprop1: Average property value measured in thousands of dollars.

Costpup1: Average cost per pupil measured in thousands of dollars.

Popdens: Population density measured in thousands of people per one square mile.

Stateaidpc1: Per-capita state aid measured in thousands of dollars.

Tfundpc1: Per-capita Garden State Preservation Trust Fund measured in hundreds of thousands of dollars.

References

- Breffle, William S. Morey, Edward R. Lodder, Tymon S. 1998. "Using Contingent Valuation to Estimate a Neighborhood's Willingness to Pay to Preserve Undeveloped Urban Land." *Urban Studies*. 35, pp. 715-727.
- Fearfield, Megan. 1999. "Residential Property Taxes & The New Jersey Open Space Program." The College of New Jersey.
- Garden State Preservation Trust, 2004. Trenton, NJ. <www.state.nj.us/gsp/index.html>.
- Irwin, Elena G. 2002. "The Effects of Open Space on Residential Property Values." *Land Economics*. 78, pp. 465-480.
- Muller, Anders. 1988. Property Taxation Taxonomy and Country Profiles. Paper prepared for presentation at the Lincoln Institute of Land Policy International Symposium on the Property Tax, Barcelona and Seville, Spain (November).
- Nguyen, Manthi, ed. The New Jersey Municipal Data Book, 2003 Edition. Information Publications Inc., Palo Alto, CA. 2003.
- Platt, Kalvin. "Going Green". Planning. Chicago, Aug. 2000. Vol. 66, Iss. 8; p.8
- Preston, Jennifer. "Whitman Budget Speech Focuses on Property Taxes." The New York Times. Jan. 26, 1999.
- Robinson, Dennis. 1992. "Interactions Between Land Policy and Land-Based Tax Policy." *Property Tax Journal*. 11, pp. 125-145.
- State of New Jersey. Department of Community Affairs, 2003. Trenton, NJ. <www.nj.gov/dca/>.
- State of New Jersey. Department of Education, 2003. Trenton, NJ. <www.state.nj.us/education/index.html>.

State of New Jersey. Department of the Treasury, 2004. Trenton, NJ.

www.state.nj.us/treasury/index.html.

Thorsnes, Paul. Simons, Gerald P. W. 1999. "Letting the Market Preserve Land: The Case for a Market-Driven Transfer of Development Rights Program."

Contemporary Economic Policy. 17, pp. 256-266.

Tiebout, Charles M. 1956. "A Pure Theory of Local Expenditures." *The Journal of Political Economy*, Vol.64, No. 5. pp.416-424.

Wunderlich, Gene. 1992. "Property Tax as a Public Interest in Private Agricultural Land." *Property Tax Journal*. 11, pp. 351-362.