The Impact of an Aging Rural Population on Local Tax Structures

Timothy W. Kelsey, Stephen M. Smith, and A.E. Luloff

The growing American retired population increasingly is viewed for its economic development potential. The relationship between the elderly and local taxes may have a critical effect on this potential, however. This paper examines the local tax implications of an increasing elderly population in communities prohibiting tax referenda. In such communities, citizens have no direct role in tax decisions. The elderly's attitudes towards different local taxes are examined using telephone survey data, before using aggregate data to investigate the relationship between the elderly and the specific taxes used in communities. The results suggest that a high proportion of elderly do not affect the mix of local taxes, but that an increasing proportion does have an influence.

The growing American elderly and retired population increasingly is viewed for its economic development potential. Advocates of retirement-based economic development argue that retirees are an attractive base upon which to build or diversify an economy. In-migrant elderly are particularly attractive, as they are relatively young (between 55 and 65), purchase housing, deposit money in local banks, and contribute to the local economy without demanding many services in return. In addition, they argue, whether the retirees are in-migrants or aging-in-place, retirement incomes are relatively stable, contrary to incomes in much of the private sector.

A growing elderly population may also affect the ability of local governments to levy taxes. If a growing elderly population hinders local governments' abilities to raise taxes at the same time it increases the demand on public services, the net fiscal impact may be negative. Earlier studies have looked at the relationship between the elderly and local taxes, generally by examining the elderly's support for local tax referenda or bonds. Most such studies have suggested that the elderly are not supportive of increasing taxes, with consequent implications for local jurisdictions. These results may not hold true in states where tax levies are not subject to voter approval, however. The impact of a growing elderly population in such areas may be entirely different than when citizens vote directly about tax issues.

This paper examines the local tax implications of the elderly population in Pennsylvania, a state which does not allow local referenda. It first considers attitudes towards local taxes in case studies of four rural Pennsylvania counties, with attention to the influence of in-migrant vs. aged-in-place status on those attitudes. The paper then takes a broader focus by examining whether a large and growing elderly population affects annual tax levies, using secondary data for all municipalities in Pennsylvania. The impacts considered include whether specific taxes are levied, and the relative importance of those taxes.

Impacts of the Elderly

Many recent studies suggest that elderly in-migrants have positive economic impacts on their destination rural communities (Haas and Serow, 1988; Longino and Crown, 1990; Siegel and Leuthold, 1992; Hodge, 1991; Sastry, 1992; Wiseman, 1991; Summers and Hirschl, 1985). These impacts include direct impacts from the elderly's expenditures (Longino and Crown, 1990; Summers & Hirschl, 1985; Watkins, 1990; Siegel and Leuthold, 1992), and indirect economic impacts through multipliers (Haas and Serow, 1990; Hodge, 1991; Sastry, 1992; Summers and Hirschl, 1985; and Wiseman, 1991). Recent experience demonstrates the potential economic development

The authors, respectively, are Assistant Professor, Associate Professor and Professor, Department of Agricultural Economics and Rural Sociology, The Pennsylvania State University.

The authors acknowledge the helpful comments of three anonymous reviewers.

This project was made possible in part by a grant from the Center for Rural Pennsylvania, a legislative agency of the Pennsylvania General Assembly.

role that these impacts can play. During the 1980's, retirement counties had greater real income and employment growth than any other type of county (Drabenstott and Welch, 1991). Employment increases between 1980 and 1986 were more than four times greater in retirement counties than in manufacturing counties, which had the second largest increases (Glasgow, 1990).

Most of the positive benefits of migration result from the newly (or "young") retired. This is during what Litwak and Longino (1987) define as the first of the three general stages of elderly migration. These stages include amenity migration, moves to be closer to friends and family primarily due to declining health, and institutionalization (Litwak and Longino, 1987). Individual-level factors are the strongest predictors of migration, but contextual factors, such as amenities, are important (Kallan 1993). Older migrants are more attracted to amenable locations than are working-age migrants (Clark and Hunter, 1992). Capitalization of these amenity values into wages (as opposed to land prices) makes communities more attractive to the elderly (Graves and Knapp, 1988). Lower costs of living also help attract elderly migrants (Fournier, Rasmussen and Serow 1988; Rasmussen, Fournier and Charity, 1989; Kallan 1993).

Glasgow (1990) found evidence that metropolitan-to-nonmetropolitan migrants are less satisfied with services than are long-term elderly residents. The local governments of destination communities may be little prepared or able to respond to the in-migrant elderly's heavier demands. Also, the elderly have a higher demand for specialized health services, potentially increasing the burden upon the local public sector (Fournier et al. 1988).

These service demands can create fiscal strains for local governments, reducing the fiscal benefit of attracting retirees. During the early 1980's, Glasgow (1990) found that retirement destination counties experienced increases in per capita revenue effort (the percent of local income levied in taxes and user fees) even though it would be expected that growth in local income would reduce revenue effort. Biggar et al. (1980) found that elderly in-migrants broaden the tax base, but other studies suggest that the elderly may provide little support for increasing the property tax to pay for services (Deller and Walzer, 1993; Tripple et al. 1988). Reeder and Glasgow (1990) found that a concentration of elderly in a community restrains funding of public education and highways, and other researchers also note that the elderly are less likely to support public school tax referenda (Button, 1992; Button and Rosenbaum, 1989; Hamilton and Cohen, 1974; Piele and Hall, 1973). In contrast, one study suggested that the elderly do not affect school bond referenda (Deller and Walzer, 1993).

The influence of the elderly in the absence of local tax referenda is less clear. Without a direct vote on tax decisions, the elderly can only affect local decision-making insofar as local officials are influenced by citizen opinions. Furthermore, the choice of *which* local taxes to levy and rely upon also is of critical importance because it determines how the tax burden is distributed within the community. For example, the elderly may be supportive of more public spending, but only when taxes are generated from a predominantly non-elderly tax base. A mix of local taxes with dissimilar incidence may allow the elderly to shift the tax burden onto others.

The choice of which local taxes to levy also affects the relative desirability to the elderly of retirement-destination communities, and the impact of in-migration on current residents. This can be a significant factor. The Tiebout model suggests that taxpayers "vote with their feet," moving to or from jurisdictions on the basis of the level of local taxes and spending. Simply analyzing the elderly's support for a single tax can miss these potential local tax interactions.

Pennsylvania provides a good location for examining these issues. The Commonwealth as a whole has a higher percentage of elderly than any state except Florida (Blair, 1989). Several counties in the state have experienced high in-migration of retirees, and they are also among the most economically dynamic in the state. Local tax decisions are made entirely by local officials because referenda are prohibited. Furthermore, the Commonwealth's local tax codes provide a wide variety of local taxes with dissimilar incidence on the elderly and non-elderly.

Taxes and the Elderly

Local government and school district officials in Pennsylvania have a mosaic of taxes they can use. The choices of which taxes to implement and tax rates to levy are important decisions which affect local governments' and school districts' abilities to generate sufficient revenue, determine how effectively the local tax base is utilized, and control how the tax burden is distributed among members of the community. Local taxes in Pennsylvania are shown in Table 1. Most of the local taxes in Pennsylvania have state-imposed millage limits. The real property and earned income tax are the most important local taxes in Pennsylvania, although in

some municipalities the other taxes provide the majority of tax revenue.

Decisions about which taxes and tax rates to levy are made solely by the elected municipal officials. Real property tax millage rates generally are adjusted to balance local budgets. The other taxes generally are levied at the state limit, leaving only real property tax rates flexible enough to change. Usually the major local tax issue revolves around the setting of the real property tax millage rate. Other issues generally concern whether or not certain taxes will be levied.

The incidence of these taxes on different age groups varies. The earned income tax, for example, primarily falls upon working people because it exempts the elderly's main sources of income. In addition, the elderly are effectively exempt from certain other local taxes because of their work and income status. Most retirees do not pay the occupation and occupational privilege taxes, for example, because they do not work. The dissimilar incidence of taxes in Pennsylvania means the choice of taxes and millage rates affects the distribution of the tax burden across community members.

Table 1. Local Taxes Available to Pennsylvania Municipalities

Local taxes in Pennsylvania include:

1. Real Property Tax: levied on the value of real estate.
2. Occupation Tax: levied on the value of residents' occupations, as determined by the county tax assessors office. Assessed values are not based upon income, so all members of the same occupation will pay the same amount of occupation tax even if their income differs dramatically. The occupation tax is collected from residents, without regard to where they actually practice their occupation. Individuals who have no official occupation (such as the retired) do not pay the tax.
3. Per Capita Tax: a flat rate tax, levied on adults who live in the jurisdiction. It is sometimes known as the "head," "poll," or "residence" tax. All adults pay the same amount, regardless of their income level.
4. Earned Income Tax: a tax on residents' earned income (such as wages, salaries, or other reimbursements for work). Unearned income, such as interest, dividends, pensions, and social security are exempt from the tax.
5. Real Property Transfer Tax: a tax on the sale of real property.
6. Mercantile Tax: levied on the gross receipts of local businesses. It sometimes is known as the business gross receipts tax, or business privilege tax. The mercantile tax can be levied on wholesale and retail trade, as well as restaurants.
7. Amusement Tax: taxes the admissions prices to places of amusement, entertainment, and recreation. Amusements can include such things as craft shows, bowling alleys, golf courses, ski facilities, or county fairs.
8. Occupational Privilege: levied on the privilege of working in the municipality. All persons employed in a municipality levying this tax must pay, regardless of whether they are legal residents of the municipality.

Attitudes towards Taxes

Attitudinal differences towards local taxes were examined through a telephone survey in four rural Pennsylvania counties. Two of the counties had experienced growth in the number of elderly between 1980 and 1990, while the number of elderly in the other two counties had remained relatively stable. Sampling was stratified into three different categories: 1) aged-in-place elderly, defined as older than 54 and having lived in the county since before 1980; 2) in-migrant elderly, defined as older than 54 and having moved into the county in 1980 or later; and 3) the general population, defined as being between 18 and 54 years old.

The telephone survey was conducted during the fall of 1992. The final sample of 1,222 was obtained through 6,452 eligible telephone calls, for a response rate of about 19 percent.[1] This response rate is within the range of those reported following most telephone surveys (Frey, 1989; Kviz, 1977). The final sample comprised 462 aged-in-place elderly, 360 in-migrant elderly, and 400 general population respondents.

Respondents' attitudes towards three major local taxes were assessed by positing the following scenarios:

> "If some local taxes were *raised* in order to *lower* other local taxes, without changing the total amount raised, would you lower, raise, or keep the (real property tax; earned income tax; and occupation tax) the same."[2]

The question was asked for each of the three major local taxes. The majority of respondents wanted to lower the real property tax, while keeping the earned income tax and occupation tax the same (see Table 2). Few respondents were willing to raise any of the taxes in exchange for lowering other taxes.

[1] A total of 11,734 telephone calls were made, but 5,282 were non-eligible; they were either disconnected telephone numbers, businesses, FAX machines, no one over age 18 or over 54, wrong county of residence, or over quota.

[2] Concern can be raised about whether or not respondents know their local tax system well enough to accurately answer such a question. The questionnaire was pre-tested, and no confusion was noted. In addition, discussion with the telephone interviewers after the survey had begun also revealed no problems with answering the question. To the extent that confusion or ignorance of local taxes does exist, our concern in this study is with determining respondents' attitudes, as that influences voting and political action, and less with how accurate those perceptions may be.

Responses differed between the aged-in-place, in-migrants, and general population (Table 2). The aged-in-place were the most likely to want to lower the real property tax. Similar to the findings of Deller and Walzer (1993) and of Tripple et al. (1988), the elderly generally were not supportive of increasing the real property tax. The general population was more likely than the other groups to be willing to raise the real property tax, though such responses were relatively infrequent.

The elderly were slightly more likely to favor lowering the earned income tax, and less likely to favor raising it, compared with the general population. For the occupation tax, the elderly were both less likely to want to raise and lower it than the general population. Aged-in-place and in-migrant elderly were more likely than the general population to want to leave the occupation and earned income taxes unchanged.

The relationship between the personal characteristics of respondents and their attitudes toward raising and lowering taxes were further analyzed by logistic regression. The model examined was of the following form:

$$(1) \qquad Y = f(P_1, \ldots, P_n)$$

where Y is a dichotomous dependent variable, and P's are personal characteristics of respondents. Several studies have suggested that the influence of age on attitudes towards taxes is insignificant when education level and income are considered (Button and Rosenbaum, 1989; Rubinfeld, 1977). Educational attainment was measured by a dummy variable. If a respondent had received at least some college education, the education variable was 1, while if they had no college experience the variable was set equal to 0. In the survey, total income was divided into five different categories; less than $10,000 a year; between $10,000 and $20,000; between $20,000 and $30,000; between $30,000 and $40,000; and greater than $40,000. A series of orthogonal contrasts (Kerlinger and Pedhazur, 1973) was used (with those earning less than $10,000 per year excluded) to include income in the logit analyses.

Whether a respondent was aged-in-place was important because it was hypothesized that "long term" residents may have different attitudes towards local taxes than in-migrant elderly. Because age and aged-in-place status were highly correlated, alternative equations were estimated omitting each in turn. Age was measured by the respondents' actual age. Aged-in-place provided a better fit in both models.

The sex of the respondent was measured by a dummy variable set to 1 if the respondent was male, 0 if female. Whether the respondent owned their own home was also included in the analysis, under the assumption that home ownership might predispose respondents against the real property tax. It was measured using a dummy variable set to 1 if they owned their home, and set to 0 if not. Home ownership was not correlated strongly with the income variables (correlation was less than .107).

The first model in Table 3 presents the results of the analysis of the probability of respondents wanting to lower real property taxes. The dependent variable was 1 if the respondent wanted to lower the real property tax, and 0 otherwise. The equation chi-square was 53.89. Aged-in-place, income, and education were the only statistically significant variables. The aged-in-place were more likely to favor reducing real property taxes. Households with incomes of $30,000 or more a year were less likely to want to lower property taxes, particularly for incomes over $40,000. An interpretation of this result is that alternative income- or occupation-based taxes would cost higher income respondents more than they would benefit from the real property tax reductions. Respondents with at least some college education were also less likely to want to lower property taxes.

The second model in Table 3 presents results of the analysis of the attitude toward keep real property taxes the same. The dependent variable was 1 if the respondent wanted to keep the real property tax the same, and 0 otherwise. The equation chi-square was 40.27. Income and education again were statistically significant, in addition to the respondent being male. Having a household income of $30,000 or more a year and having some college education increased the likelihood of respondents desiring to keep real property taxes the same. Being male was associated with a decreased probability of wanting to keep real property taxes the same. Similar analysis was conducted on the earned income tax and the occupation tax, but the models produced statistically insignificant results. Analysis conducted on the probability of respondents believing each tax should be raised also produced statistically insignificant results.

These two models demonstrate that even when controlling for income and education, elderly status, in this case aged-in-place, also may influence attitude towards taxes. Aged-in-place elderly were more likely to want to lower the real property tax than were other respondents. There was no statistically significant difference between the elderly and non-elderly with regard to keeping the real property tax the same, however.

Table 2. Attitudes Regarding Local Tax Burden by Population Group

Attitude Variables	Aged-in-Place Elderly	In-Migrant Elderly	General Population	Total
Real Property Tax***				
lower	63.2%	51.2%	49.3%	55.2%
no change	34.3	44.1	41.8	39.6
raise	2.5	4.6	8.8	5.2
Earned Income Tax*				
lower	36.6%	39.6%	34.6%	36.7%
no change	48.8	51.3	46.0	48.5
raise	14.6	9.1	19.3	14.9
Occupation Tax*				
lower	37.8%	39.8%	42.1%	39.9%
no change	54.4	54.2	45.4	50.9
raise	7.8	6.0	12.5	9.2

Chi-Square Analysis
*$p < .05$
**$p < .01$
***$p < .001$

Taxes Actually Levied

Whether the elderly's attitudes towards lowering the real property tax have a meaningful impact on local tax policy is important to consider. This can be done by considering the relationship between the elderly and specific referenda or tax increases (see, for example, Deller and Walzer, 1993; Tripple et al., 1988; Button, 1989; Hamilton and Cohen, 1974). In states which do not allow local tax referenda, it is necessary instead to look directly for evidence that these attitudes are reflected in local tax policy.

The existing literature that focuses on the level and composition of local taxes provides only partial direction in this effort. More attention has been paid to analysis of the demand for public services than tax composition (Ladd, 1992). Much of the literature that does exist has been largely theoretical (see, for example, Hettich and Winer, 1988; and Inman, 1989). Little of the earlier work has examined the influence of the elderly on local taxes. Potential influences could include whether the elderly affect which specific taxes are actually levied by local governments, or how much the local governments rely upon these various taxes. Each supposition will be examined in turn.

Whether Specific Taxes are Levied

Table 4 shows the relationship between the percentage of municipalities which levied each tax in 1991, and changes between 1980 and 1990 in the proportion of elderly in the municipalities' total

Table 3. Logit Analysis of Factors Associated with Wanting to Lower or Keep Unchanged Real Property Taxes

	Lower Real Property Tax		Keep Real Property Tax Unchanged	
Variable	Parameter Estimate	Standard Error	Parameter Estimate	Standard Error
Intercept	0.21	(0.20)	−0.48	(0.21)
Male	0.13	(0.13)	−0.29*	(0.13)
Aged-in-place elderly	0.36**	(0.13)	−0.22	(0.13)
Income between $10,000 & $20,000	−0.14	(0.18)	0.10	(0.19)
Income between $20,000 & $30,000	−0.17	(0.19)	0.11	(0.19)
Income between $30,000 & $40,000	−0.59**	(0.22)	0.51*	(0.22)
Income over $40,000	−0.65**	(0.20)	0.53**	(0.20)
Own home	0.30	(0.17)	−0.16	(0.17)
Education	−0.50***	(0.13)	0.50***	(0.13)
Equation Chi-Square	53.89		40.27	
N	1116		1116	

*$p < .05$
**$p < .01$
***$p < .001$

population. For example, if the proportion of elderly in a municipality increased from 15 percent of the total population in 1980, to 19.5 percent of the total population in 1990, the share increase would be 4.5 percent. Such changes can occur because the elderly are migrating into the municipalities; the non-elderly are leaving, thus increasing the percentage of the aging-in-place; or because of a combination of both.

Municipalities which experienced the largest share increases in the percentage of elderly were more likely than municipalities with smaller increases to levy the earned income tax, the real property transfer tax, the mercantile tax, the occupational privilege tax, and "all other" taxes. Only 82 percent of municipalities in which the elderly became a smaller share of the population, for example, levied the earned income tax, as opposed to 94 percent of the municipalities with the largest increases in the proportion of elderly. Apparently, the elderly influence government officials' decisions to utilize taxes that are less burdensome on their primary income sources.

These results provide the basis for a more detailed analysis of the particular Pennsylvania situation. Because attitudes toward the earned income tax differed, and because the earned income tax generally plays an important role in the municipalities which levy it, the influence of the elderly population on whether or not that tax is levied in a municipality will be investigated further.

This analysis can be placed in the context of more general models that examine the determinants of government spending. The theoretical issue is how governments actually choose quantities of public goods. The issue typically is examined by looking at voting behavior as the mechanism by which individuals make their preferences known to government officials. The institutional context is "direct democracy" (citizens vote directly on decisions) vs. "representative democracy" (where elected representatives vote on the decisions) (Boadway and Wildasin, 1984). The main analytical approach uses median voter models (Inman, 1978; Romer and Rosenthal, 1979; Chicoine et al., 1989). Although Pennsylvania has neither direct democracy nor referendum, the models do present situations wherein possible influences of the elderly and retired population can be examined.

In the optimal constitution decision summarized by Boadway and Wildasin (1984), the potential incentive for the elderly to influence taxing decisions is apparent. For a decision rule requiring only majority rule, the likelihood that costly taxing and public spending decisions can be imposed on the elderly may be relatively high. The "representative individual" will prefer such a voting rule because the costs (personal and public) of reaching a decision will be lower than higher levels of required voting percentage (Boadway and Wildasin, 1984). The elderly, however, could be presumed to view the personal costs of majority decisions as more of a concern, and would thus work directly (lobby the representatives) to influence decisions. They can afford to do this as they have the time to devote to such activities. The cost involved to in-

Table 4. Percent of Pennsylvania Municipalities Levying Each Tax by Absolute Share Increase in the Population Age 65 and Over (1980–1990)

		Share Change in Elderly				
Municipal Taxes	State Average	≤0%	>0 to <2.5%	2.5% to <5%	5% to <10%	≥10%
Real Property Tax	98%	100%	99%	98%	98%	99%
Occupation Tax**	10%	15%	14%	9%	10%	11%
Per Capita Tax***	69%	52%	71%	71%	71%	65%
Earned Income Tax***	92%	82%	89%	91%	93%	94%
Real Property Transfer Tax***	86%	74%	83%	86%	88%	89%
Mercantile Tax***	11%	4%	8%	7%	12%	19%
Amusement Tax***	5%	7%	4%	5%	5%	5%
Occupational Privilege Tax***	44%	28%	29%	36%	47%	64%
All Other Taxes***	17%	7%	8%	11%	20%	31%

Data source: Pennsylvania Department of Community Affairs. 1990. "Local Government Financial Statistics, 1990." Harrisburg: Commonwealth of Pennsylvania; U.S. Department of Commerce, Bureau of the Census. 1992. 1990 Census of Population: Summary Social, Economic, and Housing Characteristics: Pennsylvania. Washington, D.C.
Chi-Square analysis
*$p < .05$
**$p < .01$
***$p < .001$.

fluence the decision may be less than the cost that could be imposed on them by the majority. More importantly for the usefulness of these models, such actions by the elderly and retired could be considered cases of direct democracy.

Inman (1978) discussed and tested the median income voter model to examine local government fiscal choice. In this model the hypothesis is that governments select their budgetary and service-provision levels "as if" to maximize the well-being of the median income family, or voter. Such a voter is not likely to be retired or elderly. Nevertheless, while generally confirming the hypothesis, Inman's results include points that are particularly relevant to this study.

Inman found that the median public service quantity demanded equaled the quantity demanded by a median income voter times a political shift term, which depends on the percent of the town's residents in various community subgroups. This issue is relevant in the context of the present study, where the absolute number and percentage of elderly is growing. Inman maintains that if analysis neglects the subtleties of local politics, biased parameter estimates can result. Introducing political variables permits identification of special cases, and of the variables which are most effective in moving a community away from the median income family's preferred service level. In Inman's study, the elderly had the biggest "social interest" impact (negative) on school spending. Knowledge of the relative importance of these special interest groups can be important.

The particular models of the demand for local public services implied by the median voter hypothesis are presented in slightly different forms by Inman (1978) and by Chicoine et al. (1989). Inman portrays the generalized public service demand as a function of family income, a family's tax share, and demand factors which are common to all residents within the town. The assumption is that the last set of factors has a negligible effect on the demand for public services (Inman, 1978, p. 49). The present study provides a direct test of this assumption; that factors will differ for the elderly. Chicoine et al. state that the normal model specification for public service demand is a function of median family income, the tax share of the median family home, and other relevant tastes, preferences, and service condition variables. In their particular analysis, they include three measures of taxes and township population.

The particular models to be examined in this study contain similar sets of variables, plus two measures of the elderly population as "political shift" variables. The first model is estimated as a logistic regression of the following form:

$$Y = f(P_1, \ldots, P_n; L_1, \ldots, L_n; T_1, \ldots, T_n) \quad (2)$$

where Y is a dichotomous dependent variable set to 1 if the municipality levied the earned income tax and 0 if it did not. The P's are population characteristics of the municipality, L's are location characteristics, and T's are tax characteristics of the municipality.

Button (1992) found attitudes towards school issues split along age lines, implying that the proportion of elderly in the population may affect which perspectives are reflected in local tax policy. The percent of the population aged 65 and over in 1990 was included in the regression as a reflection of this potential political or social influence exerted by the elderly. Similarly, the change in the proportion of the elderly in the municipality between 1980 and 1990 was used to reflect how these influences may be changing.

Because Ladd (1992) and Inman (1989) focused their analyses on relatively homogeneous municipalities (suburban municipalities and large U.S. cities, respectively), they did not consider whether the size of a municipality can influence taxes. This is an important concern because larger municipalities in more likely than smaller jurisdictions to have professionally trained managers who can evaluate tax alternatives. The total municipal population in 1990 was included to reflect the potential influence of municipality size. Ladd (1992) and Button (1992) also included per capita income in their analyses. Income is important because it reflects the revenue generating potential of the earned income tax, as well as reflecting the social characteristics of the municipality. All these population variables were measured using the 1980 and 1990 Census of Population.

Location characteristics were measured by whether the municipality is located in a metropolitan or nonmetropolitan county, Municipalities in metropolitan counties in Pennsylvania are more likely to provide a different mix of local services than those offered by nonmetropolitan municipalities, affecting the probability of the municipality's levying the earned income tax. The metropolitan variable was given a 1 if the municipality was located in a metropolitan county, and a 0 otherwise.

Tax characteristics of the municipality included the real property tax base per capita, reflecting the potential tax revenue available via the real property tax. Municipalities with a smaller tax base per capita will have a more difficult time raising real prop-

erty tax revenue, potentially increasing their probability of levying the earned income tax. The tax characteristics also included the local tax revenues per capita from each of the local taxes (including the per capita, occupation, real property transfer, mercantile, occupational privilege, and other taxes). These were included to represent the relative importance of the various taxes in each municipality. The tax characteristics were measured using a state compilation of 1991 financial reports from all 2516 Pennsylvania municipalities (Pennsylvania Department of Community Affairs 1991), and the 1990 Census of Population.

Table 5 presents results of the logit analysis for the likelihood of levying the earned income tax. The fit of the equation was good, with an equation chi-square of 289.6. The results were consistent with the contingency table analysis in Table 4. Factors associated with the increased likelihood of a municipality levying the earned income tax include having a larger tax base per capita, being located in a metropolitan county, and having greater per capita tax revenue from the occupational privilege and other local taxes. Having a larger population, greater per capita income, and receiving greater per capita tax revenue from the per capita, occupation, real property transfer, or mercantile tax were associated with a decreased likelihood of a municipality levying the earned income tax.

With respect to the influence of the elderly, increases in the proportion of elderly in a municipality were associated with a greater chance of levying the earned income tax. Simply having a larger proportion of the population as elderly, in contrast, was associated with a smaller probability of levying the earned income tax. This implies that the elderly by themselves may not be affecting whether the earned income tax is levied. A higher percentage of elderly may mean the earned income tax does not yield sufficient revenue, and other taxes are necessary. An increasing percentage of elderly, however, may increase the pressure to keep property taxes lower, which leads to a greater need to rely upon the earned income tax.

Table 5. Logit Analysis of Factors Associated with the Probability of Pennsylvania Municipalities Levying the Earned Income Tax

Variable	Parameter Estimate	(Standard Error)
Intercept	3.70***	(0.434)
Tax base per capita	0.10***	(0.017)
Population in 1990	−0.00006***	(0.00001)
Percent of 1995 population age 65 and over	−4.41*	(1.99)
Share increase in percent of population age 65 and over	0.10***	(0.03)
Township	−0.36	(0.20)
Metropolitan county	0.89***	(0.20)
Income per capita	−0.00004*	(0.00002)
Real property tax revenue per capita	−0.007***	(0.001)
Per capita tax revenue per capita	−0.05	(0.03)
Occupation tax revenue per capita	−0.16***	(0.06)
Real property transfer tax revenue per capita	−0.07***	(0.01)
Mercantile tax revenue per capita	−0.02***	(0.01)
Amusement tax revenue per capita	−0.01	(0.02)
Occupational privilege tax revenue per capita	0.11***	(0.04)
All other tax revenue per capita	0.37*	(0.18)
Equation Chi-Square	289.6	
N	2507	

*$p < .05$
**$p < .01$
***$p < .001$

Relative Importance of the Real Property Tax

Given the generally strong feelings of the elderly against the property tax (supported by results in Tables 1 and 2 in this study), the next section examines this relationship in more detail. The real property tax generally is used to balance local budgets in Pennsylvania because the other local taxes typically are levied at the state limits, leaving only real property tax rates flexible enough to change. Whether differences in which taxes are levied locally actually impact the relative important of the real property tax is also important to consider. These differences can shift the tax burden from the real property tax onto other taxes which treat the elderly's income more favorably.

The relationship between the percent of total tax revenues coming from the real property tax to the population, location, and tax characteristics of Pennsylvania municipalities was examined using a model of the following form:

$$Y = f(P_1, \ldots, P_n; L_1, \ldots, L_n; T_1, \ldots, T_n) \quad (3)$$

where *Y* is the percent of total tax revenues which come from the real property tax. This data came

from the Pennsylvania Department of Community Affairs.

The *P*'s are population characteristics of the municipality, *L*'s are location characteristics, and *T*'s are tax characteristics of the municipality. The population and location characteristics in the regression were identical to those used earlier in the logit analyses, and included the municipal population in 1990, the percentage of the population aged 65 and over in 1990, the change in the proportion of the elderly in the municipality between 1980 and 1990, per capita income, and whether the municipality is located in a metropolitan county. Similar to the logit analyses, tax characteristics included the real property tax base per capita, and the other local taxes are levied in the municipality, which were included through a series of dummy variables. If a tax was levied in the municipality its corresponding variable was set equal to 1, otherwise it was 0. Dummy variables were included for the occupation, per capita, earned income, real property transfer, mercantile, amusement, occupational privilege, and "all other" local tax category.

The model was estimated using two-limit tobit analysis because the dependent variable was bounded by 0 and 1. Table 6 presents results of the tobit analysis. Location in a metropolitan area and levying the occupation, occupational privilege, or other local taxes were positively associated with greater reliance on the real property tax, while levying the per capita tax and earned income tax were negatively associated. The influence of the real property assessment per capita and size of the municipal population were statistically insignificant.

The results also show that a larger percentage of the elderly makes it more likely that a municipality will rely more heavily upon the real property tax. An increase in the proportion of the elderly between 1980 and 1990, however, was associated with relying less upon that tax. The former result may occur because with a higher percentage of elderly in a taxing district, taxes on wage earners may not yield sufficient revenue. At the same time, as the numerical influence, and presumably political influence, of the elderly increases, they may be taxes less (This would be an example of Inman's (1978) "political shift" effect.).

Table 6. Tobit Analysis of Factors Associated with the Percent of Total Taxes Generated by the Real Property Tax

Variable	Parameter Estimate	(Standard Error)
Intercept	56.84	(2.08)
Tax base per capita	0.03	(0.03)
Population in 1990	−0.0001*	(0.0001)
Percent of 1990 population Age 65 and over	1.41***	(0.08)
Share increase in percent of population age 65 and over	−0.51***	(0.12)
Metropolitan county	2.03***	(0.71)
Income per capita	−0.0001	(0.0001)
Occupation tax	2.58*	(1.03)
Per capita tax	−1.54*	(0.68)
Earned income tax	−44.84***	(1.15)
Real property transfer tax	0.81	(0.93)
Mercantile tax	0.46	(1.15)
Amusement tax	−5.12***	(1.41)
Occupational privilege tax	6.50***	(0.70)
All other taxes	6.52***	(0.90)
Log Likelihood	−10239.45	
N	2504	

*$p < .05$
**$p < .01$
***$p < .001$

Summary and Conclusions

The elderly and retired are becoming a larger proportion of the population, and this trend is expected to continue. Increasingly, this group is being looked at for its economic development potential; for its positive impacts on local economies. Another aspect of these impacts is the potential effect on local taxes. Previous research, as well as common perception, often suggests that the elderly are not supportive of increasing taxes. This study examined the local tax implications of the elderly through two approaches. The first involved surveys of the elderly and non-elderly in four rural counties with both increasing and stable elderly populations. The second approach examined the tax influence of the elderly population and its changes with secondary data for all municipalities in the state.

The types of taxes used locally make a difference for tax fairness and who actually bears the local tax burden. Certain local taxes in Pennsylvania, such as the earned income tax or the occupation tax, affect the elderly and non-elderly dissimilarly. In the telephone survey, for example, 83 percent of the income of working age people was subject to the earned income tax, while only 15 percent of in-migrant elderly and 23 percent of aged-in-place elderly income was subject to the tax. These differences were reflected in the attitudes of respondents, with the elderly generally being more predisposed towards taxes which treat their income and property favorably. The attitudes of the non-elderly also reflected self interest;

higher income was associated with a smaller likelihood of wanting to lower the real property tax.

Earlier studies of the relationship of the elderly and local taxes generally have relied upon analysis of referenda (Hamilton and Cohen, 1974; Piele and Hall, 1973; Button and Rosenbaum, 1989; Button, 1992; Deller and Walzer, 1993). Such voter records provide a method of measuring attitudinal differences between the elderly and non-elderly, and the influence of those attitudes on local tax decisions. When citizens do not vote directly on local tax issues, however, referenda-based analysis cannot accurately reflect the influence of the elderly. While the attitudinal results from the four-county survey in this study were consistent with most of the prior referenda-based research, the analysis of the relationship between the proportion of elderly and taxes across all state municipalities did not indicate a uniform impact.

Our results showed a negative relationship between the percentage of the population age 65 and over and the probability of levying the earned income tax. This would indicate that simply having a relatively larger elderly population will not mean that the tax system will place more of a burden on other groups. On the other hand, the finding of a positive relationship between an increasing proportion of elderly in a municipality and the probability of levying the earned income tax indicates the presence of some influence. Similar relationships existed between municipalities' reliance upon the real property tax and changes in the proportion of the elderly vs. the percentage of population age 65 and over. These results suggest that a higher percentage of elderly in Pennsylvania municipalities will not by itself alter the local tax mix or rates to favor the elderly. An increasing proportion of the elderly, however, may lead to that result. Another implication is that even though direct referenda on taxes do not exist, the elderly may be exerting an indirect influence on the local tax system.

Thus, when including the elderly and retired in economic development strategies, another consideration also should be the fiscal implications of such approaches. Relying on taxes which treat the elderly favorably may help make areas more attractive as retirement destinations, but it is important to consider the burden this also may place on the non-elderly. At the same such a tax base may be attractive to the elderly, it may reduce potential fiscal benefits of retiree-based economic development.

Finally, given the increasing size, influence and interest in the elderly and retired population, further research into the impacts is warranted. One focus should be an examination of the changing patterns of tax reliance, with particular attention to whether they precede or follow the influx of in-migrant elderly. Research also should investigate more specifically how the tax burden is distributed between the elderly and non-elderly when the local tax mix can be altered.

References

Biggar, J.C., C.F. Longino, Jr., and C.B. Flynn. "Elderly Interstate Migration: Impact on Sending and Receiving States, 1965 to 1970." *Research on Aging*. 2(1980):217–32.

Blair, M.L. "Characteristics of Elderly Pennsylvania Migrants: Comparing County Types." (Population Issues Research Center Working Paper No. 1989-03) University Park: Institute for Policy Research and Evaluation, 1989.

Boadway, R.W., and D.W. Wildasin. *Public Sector Economics*. Boston: Little, Brown and Company, 1984.

Button, J.W. "A Sign of Generational Conflict: The Impact of Florida's Aging Voters on Local School and Tax Referenda." *Social Science Quarterly*. 73, No. 4(1992):786–97.

Button, J.W., and W.A. Rosenbaum. "Seeing Gray: School Bond Issues and the Aging in Florida." *Research on Aging*. 11, No. 2(1989):158–73.

Chicoine, D.L., N. Walzer, and S.C. Deller. "Representative Vs. Direct Democracy and Government Spending in a Median Voter Model." *Public Finances*. 44, No. 2(1989): 225–235.

Clark, D.E. and W.J. Hunter. "The Impact of Economic Opportunity, Amenities and Fiscal Factors on Age-Specific Migration Rates." *Journal of Regional Science*. 32, No. 3(1992):349–65.

Deller, S.C. and N. Walzer. "The Effect of an Aging Rural Population on the Financing of Rural Public Education." *Journal of Research in Rural Education*. 9, No. 2(1993): 104–121.

Drabenstott, M. and K. Welch. "Rural America's Competitive Challenge: Strategies for the Future." in *Increasing Understanding of Public Problems and Policies-1991* Oak Brook, IL: Farm Foundation, 1991.

Fournier, G.M., D.W. Rasmussen and W.J. Serow. "Elderly Migration: For Sun and Money," *Population Research and Policy Review*. 7(1988):189–199.

Frey, J.H. *Survey Research by Telephone,* 2nd ed. Beverly Hills, CA: Sage Press 1989.

Glasgow, N.L. "The Older Metropolitan Origin Migrant as a Factor in Rural Population Growth." in A.J. Sofranko and J.D. Williams (eds.), *Rebirth of Rural America: Rural Migration in the Midwest* Ames, IA: North Central Regional Center for Rural Development, 1980.

Glasgow, N.L. "Attracting Retirees as a Community Development Option." *Journal of the Community Development Society* 21, No. 1(1990):102–114.

Graves, P.E. and T.A. Knapp. (1988). "Mobility Behavior of the Elderly." *Journal of Urban Economics*. 24(1988):1–8.

Haas, W.H. III and W.J. Serow. "The Influence of Retirement In-Migration on Local Economic Development," Final

Report to the Appalachian Regional Commission, September, 1990.

Hamilton, H.D., and S.H. Cohen. *Policy Making by Plebiscite: School Referenda*. Lexington, MA: Heath, 1974.

Hettich, W. and S.L. Winer. "Economic and Political Foundations of Tax Structure." *American Economic Review*. 78, No. 4(1988):701–712.

Hodge, G. "The Economic Impact of Retirees on Smaller Communities: Concepts and Findings from Three Canadian Studies," *Research on Aging*, 13(1991):39–54.

Inman, R.P. "Testing Political Economy's 'As If' Proposition: Is the Median Income Voter Really Decisive?" *Public Choice*. 13(1978):45–65.

Inman, R.P. "The Local Decision to Tax: Evidence from Large U.S. Cities." *Regional Science and Urban Economics*. 19(1989):455–491.

Kallan, J.E. "A Multilevel Analysis of Elderly Migration." *Social Science Quarterly*. 74, No. 2(1993):403–416.

Kerlinger, F.N. and E.J. Pedhazur. *Multiple Regression in Behavioral Research*. New York: Holt, Rinehart and Winston, Inc., 1973.

Kviz, F.J. "Toward a Standard Definition of Response Rate." *Public Opinion Quarterly*. 41(1977):265–67.

Ladd, H.F. "Mimicking of Local Tax Burdens Among Neighboring Counties." *Public Finance Quarterly*. 20, No. 4(1992):450–467.

Litwak, E. and C.F. Longino. "Migration Patterns Among the Elderly: A Developmental Perspective." *Gerontologist*. 27(1987):266–272.

Longino, C.F. Jr. and W.H. Crown. "Retirement Migration and Interstate Income Transfers," *The Gerontologist*, 30(1990):784–789.

Pennsylvania Department of Community Affairs. *Local Government Financial Statistics, 1990*. Harrisburg: Commonwealth of Pennsylvania, 1991.

Piele, P.K., and J.S. Hall. *Budgets, Bonds, and Ballots: Voting Behavior in School Financial Elections*. Lexington, MA: Heath, 1973.

Rasmussen, D.W., G.M. Fournier, and D.A. Charity. "The Impact of Cost of Living Differentials on Migration of Elderly People to Florida." *The Review of Regional Studies*. 19, No. 2(1989):48–54.

Reeder, R.J. and L. Glasgow. "Nonmetro Retirement Counties' Strengths and Weaknesses." *Rural Development Perspectives* 5, No. 2(1990):12–7.

Romer, T. and H. Rosenthal. "Bureaucrats Versus Voters: On the Political Economy of Resource Allocation by Direct Democracy." *The Quarterly Journal of Economics*. 93(1979):563–588.

Rubinfeld, D.L. "Voting in a Local School Election: A Micro Analysis." *Review of Economics and Statistics*. 59(1977): 30–42.

Sastry, M.L. "Estimating the Economics Impacts of Elderly Migration: An Input-Output analysis," *Growth and Change*, 23, No. 1(1992):54–79.

Siegel, P.B. and F.O. Leuthold. *Economic and Fiscal Impacts of Tellico Village, Loudon County, Tennessee*, Research Report 92-17, Agricultural Experiment Station, Knoxville, Tennessee: The University of Tennessee, December, 1992.

Summers, G.F. and T.A. Hirschl. (1985). "Retirees as a Growth Industry." *Rural Development Perspectives* 1(2): 13–16.

Tripple, P.A., B.A. Gunn, and M.B. Keiser. "A Rural Retirement Community's Attitudes Toward Allocation of Tax Dollars," *Human Services in the Rural Environment*, 12(1988):26–31.

U.S. Department of Commerce, Bureau of the Census. *1990 Census of Population: Summary Social, Economic, and Housing Characteristics: Pennsylvania*. Washington, D.C., 1992.

Watkins, J.F. "Appalachian Elderly Migration: Patterns and Implications," *Research on Aging*, 12(1990):409–429.

Wiseman, R.F. "Direct and Indirect Economic Impacts of Elderly Migration on Selected States Within the Appalachian Region," Chapter 5 in *Elderly Migration and Population Dynamics in Appalachia*, eds. Graham D. Rowles and John F. Watkins, Occasional Publication No. 2, Sanders-Brown Center on Aging, Lexington, KY: University of Kentucky, 1991.