MUNICIPAL TAX ABATEMENT IN A CENTRALIZED TRANSITION STATE

Mark S. Chandler, EuroFaculty, Vilnius University*

Since Lithuania instituted its currency board, monetary policy has been eliminated as a tool for demand side management. The national government can attempt to steer its taxation and spending decisions within a macroeconomic framework, but also has to account for the independent fiscal decisionmaking of local governments. This problem has been minimized by the high degree of centralization, eliminating any role for local governments in deciding on forms of taxation or tax rates. The one area that Lithuanian municipalities can adjust is the amount of tax abatement in the jurisdiction. This paper seeks to investigate the determinants of the level of municipal tax abatements, as the one part of fiscal policy that is outside the direct control of the national government and as such may offset or reinforce national fiscal policy.

TAX ABATEMENT IN LITHUANIA

Local authorities in Lithuania are constrained by a rigid financial structure, particularly with regard to raising revenue. Although taxes made up over 80 percent of their income before 2002, the tax rates were controlled by the national government and set in the budget law each year. Only stamp and marketplace permit duties, making up approximately 2 percent of local budget revenues, were fully under the control of local authorities. Local governments, however, have some freedom for maneuver within this otherwise tightly centralized system through their open-ended liberty to abate taxes raised for the purpose of funding local government.

Local authorities have used this authority primarily to grant abatements on property taxes. Over 90 percent of towns have offered abatements each year; in some years, it has been every town. Data for 2000 show that the three biggest abated taxes were the three property levies and that these made up just over 90 percent of total abatements. The three property levies are the land lease charge, the land tax, and the real estate tax. The first of these had the highest abatement. It is not really a tax, however, but rather a charge for rent of land used by a tenant to whom the land has not yet been privatized. The real estate tax is paid only by legal persons.

REVIEW OF PREVIOUS STUDIES

Reese (1991) was the first to address the question of the determinants of tax abatement policy. She divided the causal variables into those relating to economic health, government/structural, and control variables. She found a significantly positive effect on tax liability abated from three of the variables in the first category, in accordance with the model. These variables were median income, the amount of new development, and the percentage of new development abated. Another variable, population, was similarly significant for commercial abatement. Contradicting the model, however, was the effect of property values, which was significantly negative. Two structural variables were significant, and both effects were in the predicted direction. The competitiveness of mayoral races had a positive impact while a dummy for the existence of an economic development department had a negative effect. From the control variables, Reese found that education level had a negative effect and age of housing stock a positive effect on abatement. She also found a marked difference between the sets of variables determining industrial and commercial property abatements, with industrial abatements being more explained by fiscal and structural factors.

Wassmer (1992) viewed abatements as an attempt to overcome local disadvantages that had not been completely capitalized into land prices. In Wassmer's simultaneous equation model, property tax abatements for manufacturing property depended on distance to the central city and miles of divided highway as measures of access to the median voter's house. Crimes per capita proxied willingness to trade fiscal variables for environmental quality. The long-run value of manufacturing

*The author is grateful for comments on earlier drafts from Daphne Kenyon, Yilin Hou, and Mihails Hazans. This research was supported by a grant from the CERGE-EI Foundation under a program of the Global Development Network. All opinions are those of the authors and have not been endorsed by CERGE-EI or the GDN. The author remains responsible for all remaining errors.

proxied for the long-run number of manufacturing firms. Variables that affect the tax price of the property tax on manufacturing firms included local taxes, expenditures on firm services, and manufacturing agglomeration. Using two-stage least squares estimation on panel data Wassmer found significant positive effects on abatement from two variables that increase firm cost, property tax rate, and crime rate, and negative effects from two variables that decrease firm cost, locally provided firm services, and miles of divided highway, suggesting that abatements are an attempt to compensate for firm disadvantages in locating in a jurisdiction. This is in line with the Oates-Schwab idea of property tax as a benefits tax. There was also a highly significantly positive one-year lag. In the regression equation for commercial property abatement, local median income and surrounding jurisdictions' median income also both had a negative effect on abatement.

Byrnes, Marvel and Spidhar (1999) found significantly positive effects on tax abatement from the frequency of abatement, the log of median income, and the property tax rate for businesses. They found a significantly negative impact from median housing value but no significant effect from the unemployment rate. Anderson and Wassmer (1995) found that the length of time until a municipality starts offering abatements is affected positively by median income and the property tax price of local public services. They also detect a positive emulation effect, suggesting that strategic behavior occurs. Summarizing this literature, one variable that is consistently important is median income, but Wassmer's results contradict the positive effect found in the other studies. Two of the studies found the property tax rate to be a significantly positive determinant. Property value was also significant in two of the studies, only this time negatively. Otherwise, we note a variety of interesting variables used as plausible determinants of abatement. Among the most intriguing are the structural variables used by Reese and the environmental variables used by Wassmer.

DATA AND EMPIRICAL MODELS

I use data on abatements and actual tax receipts published by the Association of Local Authorities of Lithuania for 2001 and obtained from the Ministry of Finance for earlier years. Other data come from Counties of Lithuania: Economic and Social Development published by Statistics Lithuania in 2002. This publication contains demographic and business entity numbers for 2001. Definitions of the variables are in Table 1 below and summary statistics are given in Table 2. All monetary amounts are measured in Lithuanian litas.[1]

The empirical estimation strategy consists of five alternatives. The first two make use of abatement data from 2001 to estimate a simple cross-section model. Due to missing data for some of the variables, my sample consists of 45 observations from the total of 60 municipalities. Model 1 is similar to those used in previous research in that it regresses total abated tax on the total levels of other variables.

$$Abatement_i = \beta_0 + \beta_1 Population_i + \beta_2 TaxDue_i + \beta_3 OAP_i + \beta_4 Entities_i + \beta_5 Dept + \beta_6 Comp + \varepsilon_i$$

Population and tax due indicate the size of the municipality, and thus are expected to have a positive effect on abatement. Tax due also measures fiscal capacity. OAP represents a burden on the

Table 1
Definitions of Variables

Variable	*Definition*
Abatement	Total value of abated tax
Population	Population at beginning of year
TaxDue	Sum of total local tax paid and abatement
Entities	Number of business entities
Abatpc	Abatement per capita
Abatsh	Abatement as a proportion of TaxDue
Taxpc	TaxDue per capita
Entitiespc	Entities per capita
Comp	Political competitiveness; proportion of seats in municipal council held by largest party
Dept	Dummy for presence of a dept of economic development (=1 if present)

Table 2
Summary Statistics

	1997		*1999*					
	Mean	*Std. dev.*	*Minimum*	*Maximum*	*Mean*	*Std. dev.*	*Minimum*	*Maximum*
Abatement (thsds)	301	727	3.70	5,244	199	273	1	1,719
Population	67,043	93	2,600	580,100	66,928	92,600	2,700	578,300
TaxDue (thsds)	35,804	63.869	2,716	380,253	52,500	66,254	10,112	453,601
Entities	2159	4725	139	29,369	2,621	5379	190	32,472
Abatpc	6.25	13.0	0.0853	87.7	5.94	14.2	0.00241	102
Abatsh	0.0106	0.0124	0.000323	0.0499	0.00496	0.00590	0.00000391	0.0213
Taxpc	489	232	243	1,757	952	601	618	4,824
Entitiespc	0.0267	0.0174	0.0156	0.120	0.0336	0.0199	0.0202	0.143
Comp	0.389	0.117	0.222	0.852	0.389	0.117	0.222	0.852
	2000		*2001*					
	Mean	*Std. dev.*	*Minimum*	*Maximum*	*Mean*	*Std. dev.*	*Minimum*	*Maximum*
Abatement (thsds)	160	228	0	1,198	163,306	25,888	0	824,300
Population	66,894	92,473	2,700	578,000	66,940	14,814	19,600	589,200
TaxDue (thsds)	51,040	70,923	3,381	448,605	42,835,080	9,212,236	13,583,200	370,692,400
Entities	4,467	8,333	377	52,232	1,268	401	271	15,948
Abatpc	5.95	15.8	0	101	3.64	0.63	0	20.87
Abatsh	0.00642	0.0137	0	0.0803				
Taxpc	789	141	516	1,252	656.9	10.8	597.3	1,064.3
Entitiespc	0.0606	0.0318	0.0308	0.232	0.01533	0.00069	0.01111	0.03526
Comp	0.329	0.153	0.160	0.762	0.329	0.153	0.160	0.762

town and thus should have a negative effect on abatements. Entities measures the degree of competition in the municipality and thus should have a negative effect on abatement through reducing the lobbying power of any one firm. Reese found the existence of a department of economic development in the municipality's bureaucracy to have a negative effect on abatement and the degree of political competitiveness to have a positive impact.

Model 2 uses per-capita measures:

$$Abatpc_i = \beta_0 + \beta_1 Population_i + \beta_2 Taxpc_i + \beta_3 OAPpc_i + \beta_4 Entitiespc_i + \beta_5 Dept + \beta_6 Comp + \varepsilon_i$$

One possible advantage of this specification is that it allows a scale effect in case larger towns tend to have lower or higher abatement per capita. A priori, one might expect that larger towns would have less well-informed voters and thus higher scope for preferential tax abatements.

The remaining three specifications make use of a panel of data consisting of the years 1997, 1999, and 2000. 2001 data could not be used for this panel since full year revenue data are not yet available. Before 2000, there were only 56 municipalities, one of which ceased to exist in 2000. I also missed data for one additional municipality, bringing the number of observations for each year to 54. Models 3 and 4 are the same as models 1 and 2, respectively, except that they include fixed effects dummy variables for municipalities and dummies for 1999 and 2000. We might expect these models to be better specifications since the fixed effects will capture all time invariant differences between municipalities and thus they have a lower likelihood of specification bias. Model 5 used a different dependent variable. It posits abatement as a proportion of total revenue as the variable to be explained and uses the same explanatory variables as in the per capita regression of model 4.

RESULTS

The first two equations gave rise to the following regression results.

The results for the per capita specification are considerably more satisfactory than for the totals regression. None of the variables in the totals regression are significant at the 10 percent level; hence, neither is the regression equation overall. In the per capita regression, however, TaxDue has the expected positive effect and is on the verge of being significant at the 10 percent level, and population is significantly negative, indicating larger towns having lower abatement per capita. This latter result thus contradicts the rational voter ignorance hypothesis. Entities per capita is also close to being significantly positive at the 10 percent level. One robust result from these estimations is that when the tax due to a municipality increases by 1 litas, the town gives away an additional 2 cents in abatements.

Turning to the panel data estimation, table 4 shows the results for model 3.

The panel data results show several key differences to the 2001 results. The totals regression is much improved and is significant overall with the fixed effects model. TaxDue becomes very significant but negative, a strikingly counterintuitive result. Entities becomes significantly negative as predicted initially.

Table 5 shows results for the per-capita regression with the panel data, model 4.

Table 3
Regression Results for a Cross-Section in 2000; Abatement and Abatement per Capita. n = 45

	Model 1 (totals)			*Model 2 (per capita)*		
	Coefficient	*Standard error*	*t-statistic*	*Coefficient*	*Standard error*	*t-statistic*
Intercept	67.49	107.5	0.63	–13.61*	5.490	–2.48
Population	–5.57	9.00	–0.62	–0.01505*	0.008306	–1.81
TaxDue	0.01792	0.01644	1.09	0.01864	0.01120	1.66
Entities	–0.2010	0.1315	–1.53	358.7	220.1	1.63
Dept	7.613	72.41	0.11	0.007223	1.410	0.01
Comp	–147.5	206.6	–0.71	1.647	4.497	0.37
R^2	0.08			0.38		
Adj R^2	–0.03			0.31		
F	0.72			4.88*		

*Significant at least at 10 percent level.

Table 4
Regression Results for Panel of 1997, 1999, and 2000
Abatement. n = 162

	Model 3 (total abatement)		
	Coefficient	*Standard error*	*t-statistic*
Intercept	–2054	2402	–0.85
D99	347.5*	101.6	3.42
D00	360.0*	95.43	3.77
Population	76.25	61.14	1.25
TaxDue	–0.02473*	0.00482	–5.13
Entities	–0.06072*	0.02082	–2.92
Dept	2.651	181.2	0.01
Comp	–444.6	386.0	–1.15
R^2	0.67		
Adj R^2	0.47		
F	3.37*		

*Significant at least at 10 percent level.

Table 5
Regression Results for Panel of 1997, 1999, and 2000
Abatement per Capita and Abatement as a Proportion of Tax Due. n = 156[2]

	Model 4			*Model 5*		
	Coefficient	*Standard error*	*t-statistic*	*Coefficient*	*Standard error*	*t-statistic*
Intercept	4.100	23.81	0.17	0.01939	0.04160	0.47
D99	0.2595	1.264	0.21	–0.00254	0.00221	–1.15
D00	0.6710	2.269	0.30	–0.00345	0.00397	–0.87
Population	0.1293	0.6009	0.22	–0.00004584	0.00105	–0.04
TaxDue	–0.0005431	0.00224	–0.24	–0.00000552	0.00000391	–1.41
Entities	–41.11	64.97	–0.63	0.01716	0.1135	0.15
Dept	–2.431	1.990	–1.22	–0.00792*	0.00348	–2.28
Comp	–1.982	4.338	–0.46	–0.00571	0.00758	–0.75
R^2	0.54			0.56		
Adj R^2	0.26			0.29		
F	1.94*			2.11*		

*Significant at least at 10 percent level.

Comparing model 4 with model 2, in the fixed effects model, all variables lose their significance and only the dummy indicating the presence of a department of economic development even makes a contribution to the significance of the overall regression. These results suggest that the negative effect of population on per capita abatement for the cross-sectional data is actually explained by fixed differences between towns. Alternatively, there may not be enough variation in town populations over time to separate the effect of population from the fixed effects.[3]

In the abatement as a share of tax due regression, model 5, the results are slightly more encouraging. The presence of an economics development department now has a significantly negative effect on tax abatement, and tax due also makes a contribution to the overall regression. Model 5 appears to be the most reliable representation of this data, and it suggests that an economic development department may remove completely the tax abatement program of an average town.

SUMMARY

This paper presents the results of a number of empirical specifications of the determinants of tax abatement for Lithuanian municipalities. The fixed effects model on panel data for 1997, 1999, and 2000 contradicts the negative effect of population and the positive impact of tax revenue due found in the cross sectional results for 2001. It also suggests a negative effect from the existence of a department of economic development. The model of

abatement as a share of tax revenue due is the strongest of the models and suggests that economic development departments may remove tax abatement completely from a town's menu of policy instruments.

Notes

[1] Until 2002, the exchange rate was fixed at 4 litas to the U.S. dollar.

[2] Two towns, Neringa and Palanga, were extreme outliers and were excluded from the sample. These two towns are Lithuania's main seaside resorts, with municipal budget structures quite different from the norm.

[3] I could not reject the null hypothesis of homoskedasticity for any of the panel data regressions.

References

Anderson, John E., and Robert W. Wassmer. The Decision to "Bid for Business": Municipal Behavior in Granting Property Tax Abatements. *Regional Science and Urban Economics* 25 (1995): 739-757.

Byrnes, Patricia, Mary K. Marvel and Kala Spidhar. An Equilibrium Model of Tax Abatement. *Urban Affairs Review* 34, 6 (July1999): 805-819.

Reese, Laura A. Municipal Fiscal Health and Tax Abatement Policy. *Economic Development Quarterly* 5, 1 (February 1991): 23-32.

Wassmer, Robert W. Property Tax Abatement and the Simultaneous Determination of Local Fiscal Variables in a Metropolitan Area. *Land Economics* 68, 3 (August 1992): 263-282.