PRELIMINARY

What Happens when the Local High School Closes?
"Economies of Size" in Illinois

December 2008

Sherrilyn M. Billger
Department of Economics
Illinois State University
Campus Box 4200
Normal, IL 61790-4200
smbillg@ilstu.edu
309.438.8720

and

Research Fellow
IZA Bonn

Abstract: I examine the fiscal condition of high schools, districts, and communities in Illinois with a new panel data set from 1991 through 2006. Debate continues about the benefits and costs of closing schools and increasing enrolments, in pursuit of great efficiency. I find that per-pupil spending and enrolment are indeed the most important predictors of high school closures. Unfortunately, after a high school has closed, it appears that the community is harmed, with higher expenditures, lower house values, and lower median incomes. I nonetheless find some economies of size benefits to enrolment increases, but only for schools already struggling with conditionally high expenditures.

This project is supported by the Cooperative State, Research, and Extension Service, U.S. Department of Agriculture, under award No. ILLR-2006-03018. I am grateful to Frank Beck, Norm Durflinger, and Joe Pacha for their contributions to the overall project, and I thank Jenna Bertschi, Eric Cheriyuot, Bishal Kasu, and especially Brandon Curtis for excellent research assistance.

1. School Closures and Economies of Size

Facing substantial financial pressure, many districts close schools in order to preserve solvency and improve student outcomes. Policymakers and administrators often cite economies of size benefits, whereby larger schools experience lower per-pupil expenditures. However, a more extensive investigation of economies of size is warranted. First, we need a better understanding of the long-term relationships between size changes and per-pupil expenditures. In addition, schools and communities benefit from a wider conception of "economies of size" that considers how additional economic indicators are impacted by school closures.

Existing studies on economies of size—as related to school consolidations and closures—focus on cross-sectional data or short panels. Therefore, a longer study imparts valuable information about the long-term consequences of closure decisions, as teachers, parents, and communities adjust. For instance, perhaps schools act as economic engines for their communities, but this may be a "fixed effect," and largely independent of school size. In order to address these long-term effects, I use a new longitudinal data set on all non-Cook County Illinois schools from 1991 through 2006.[1] The data set is quite extensive, combining information from the Illinois State Board of Education, the Census Bureau, the Illinois Department of Employment Security, and the Bureau of Labor Statistics.

The literature reveals an apparent consensus on economies of size; in most situations, bigger is better. Ratcliffe et al. (1990) report that the best fiscal conditions in Nebraska exist in the largest and smallest districts, and advocate larger schools throughout the state. Chakraborty et al. (2000) find scale economies from enrolment increases in Utah. Duncombe and Yinger (2007)

[1] We continue data collection for this project, and the final data set will include data from 1972 through 2006.

and Lewis and Chakraborty (1996) find the same general result, further recommending consolidation as an important route to lowering average costs. Dodson and Garrett (2004) also report scale economies in Arkansas, suggesting $40 million in costs savings arising from consolidation. Few studies controvert this theme, but some potential drawbacks do emerge. Sell et al. (1996) surveyed host and vacated communities following consolidations and school closures in North Dakota. Though most of their focus is on sociological variables, they also report lower sales, lower incomes, and higher unemployment in vacated communities. Brasington (1999) focuses on economic impacts, particularly house values. Using data from Ohio, he finds that increasing a school's size significantly lowers house prices, thereby contributing to a declining tax base. Into this not-quite unanimous literature, I offer yet another exploration of economies of size in public education, here focusing on Illinois school districts and the effects of high school closure decisions.

2. Illinois High Schools

This study focuses on a large sample of secondary schools from across Illinois, including all areas outside of Cook County. Cook County schools are assumed to operate quite differently from the rest of the state, and are therefore omitted from this analysis. I use annual data from a variety of sources. The Illinois State Board of Education (ISBE) provides a yearly Report Card with fiscal and demographic information about schools and districts. The overall list of schools is maintained by ISBE, but the list of closed schools required a combination of three electronic sources, annual school list books, surveys, and in some cases, direct contacts with regional

offices and schools. This volume of work has yielded what truly seems to be a comprehensive list of schools that have closed in Illinois from 1972 through today.

For this project, I consider only regular public high schools. School and district data are combined with town and county information from the Census Bureau, the Bureau of Labor Statistics, and the Illinois Department of Employment Security. When only decennial estimates are available (as for town variables from the Census), I estimate a linear trend in the intervening years. The final sample includes Illinois high schools, districts, towns, and counties (other than Cook County) from 1991 through 2006. All dollar values are adjusted to 2005 real dollars using the Midwest CPI. There are 558 high schools, and approximately 13 percent of them closed in this time period.

Summary statistics appear in Table 1, separated by whether the school closed. Means tests reveal significant differences across the closure decision. Schools that close are significantly smaller and have more low income students. The mean HS enrolment in schools that close is 218 students, for those still open it is 690. The pupil-teacher ratio at schools that closed averaged 12 to 1, while remaining schools average 16 to 1. Expenditures per pupil are roughly equal, comparing across all time periods that schools are open. On the other hand, equalized assessed value is much lower on average, and tax rates are higher in schools that close. Teachers at these schools have, on average, one year less experience and earn $7000 less per year.

Communities that lose a high school are also significantly different from areas that still have theirs. The former have more agriculture, fewer immigrants, and more poverty. Towns where a

high school closed are 75% rural, on average, compared to 43% otherwise. Owner-occupied housing vacancy rates are higher, and median house values are much lower: $64k compared to $97k. Median income is also $7000 lower, on average, in towns that lose a high school. County characteristics largely coincide with town data, revealing lower educational attainment and slightly fewer school-age children as a percentage of the total population.

3. High School Closure Decision

In this paper I examine some fiscal consequences of secondary school closures. In order to begin the analysis, I seek a reliable specification of the determinants of the decision to close a school. Considering previous studies in this area, I adopt a rather common form:

(1) $Prob\ (SC_i = 1 | D_{it}, E_{it}, SD_{it}) = \Phi\ (D_{it}\gamma_1 + E_{it}\gamma_2 + SD_{it}\gamma_4)$

where *i* denotes the school district and *t* the year. In this specification I examine a pooled cross-section where the dependent variable is an indicator that the school closes at some point in time. *D* includes the demographic variables: percentage population school age, percentage immigrants, percentage population rural, and degree attainment. *E* are the economic variables: median house value, poverty rate, median HH income, unemployment rate, percent population employed in agriculture, housing vacancy rate, and Census metro status. School/District characteristics are represented by *SD* and include enrolment, EAV, per-pupil expenditures, school tax rate, education fund tax rate, pupil-teacher ratio, percent black, percent Latino, percent low income, average teacher salary, and average teacher experience.[2] I expect fiscal variables to exhibit the greatest effect, mirroring Brasington's (1999) finding that property values are particularly important in school consolidation decisions.

[2] In continuing work I will include characteristics of contiguous districts, as well as levels and trends for relevant independent variables.

I estimate equation (1) by probit. Predicted marginal effects for a limited specification of only school/district variables appear in Table 2. The most important predictor of school closures is per-pupil expenditures, which has a significant positive impact. In column (3) we see that higher teacher salaries, experience, and pupil-teacher ratios are correlated with a lower likelihood of high school closure, and racial composition appears to be irrelevant.

The results for the full model in equation (1) appear in Table 3, with town data added in column (1), county data added in column (2), and school/district data added in column (3). Community characteristics have a significant impact on these choices, and closures are more likely with lower housing values, higher poverty rates, and higher owner-occupied vacancies. However, a higher percentage of school-age children is correlated with a higher likelihood of school closure, and more agricultural communities are less likely to close a high school. Findings from Table 2 are also confirmed here. Lower enrolment, higher expenditures, and higher tax rates yield a higher probability that the high school will be closed.

4. School District Cost Function

School closures are often intended to alleviate problems with high per-pupil expenditures, by consolidating schools or sending children to another district. The obvious underlying belief is that bigger is cheaper. With this unique data set I investigate cost differences due to school size and study the relationship between per-pupil expenditures and the closure decision. As seen in Table 1, average per-pupil expenditures are virtually equal across all high schools—those that close and those that remain open. Kernel density estimates further confirm this fact.

However, when I combine all open districts with districts that closed a school only *after* they closed a school, a different finding emerges. Omitting districts before a closure retains only the districts that remained after closing a high school, and presumably, cost savings should accrue to these districts. However, kernel density estimates in Figure 1 show that the distribution of expenditures has a substantial higher mean and lower variance than that for districts with no closed schools. At first blush, school closures appear to exacerbate cost issues, rather than generate cost savings.

To address whether there are economies of size benefits I use an adapted cost function (see Andrews et al., 2002; Downes and Pogue, 1994; Duncombe et al., 1995; Duncombe and Yinger, 2007).

$$\ln(EXP_{it}) = SD_{it}\beta_1 + D_{it}\beta_2 + E_{it}\beta_3 + SC_{it}\beta_4 + \alpha_i + \varepsilon_{it} \quad (2)$$

where *EXP* is per-pupil expenditure and *SD* includes district characteristics: average HS enrolment, EAV, education fund tax rate, school tax rate, teacher salary, and teacher experience. *D* and *E* are as defined in (1), and *SC* indicates whether the district has closed a school. The error term has a time-invariant component, α_i, which is a district-specific effect assumed to be correlated with the other regressors.

Cost function results for Illinois districts appear in Table 4. I am particularly interested in the coefficients on high school closure and enrolment. Additional regressors are added cumulatively, with the full model in column (8). Panel A uses all districts, including districts prior to a high school closure. Panel B omits these observations, focusing only on the post-

closure cost function for districts that closed a high school but remained in operation. There are 31 such districts in this sample.

Even numbered columns include district fixed effects, and exhibit higher explanatory power, as expected. Across Panel A, closures are correlated with significantly higher per-pupil expenditures, contrasting with simple means differences. That is, controlling for additional fiscal and community information, schools that close are in districts with much higher costs. Beginning in column (2) we see that, following a closure, districts experience much higher per-pupil expenditures. However, the result could arise from other factors, including the overall fiscal health of the district. Indeed, this appears to be the case, as seen in column (4) of Panel B; the positive effect of a closure remains, but is much smaller in magnitude and less significant. The inclusion of community characteristics and district fixed effects further erodes the positive correlation between closures and district expenditures, yielding no significant effect in column (8). While there appears no lasting increase in spending, there is also no clear cost saving from closing a high school.

Throughout nearly all specifications, larger schools experience significantly lower per-pupil expenditures, suggesting true economies of size gains in Illinois districts. Bigger may seem to be better. However, within districts (in fixed effect models), increases in enrolment have no significant relationship with expenditures. On its face, a large size is not clearly 'good.'

Most studies of school consolidation focus on variations of ordinary least squares, estimating the effect of school size at the mean of the conditional distribution of expenditures. I expand beyond

this by examining the remainder of the distribution using quantile regressions (see Koenker, 2005; Koenker and Hallock, 2001). To simplify notation, I first rewrite the model in (2) as $EXP_i = f(Z_i\beta)$ where Z includes all covariates, and β the parameters. To clarify the benefits of this technique, we consider that OLS involves minimizing the sum of squared residuals, while quantile regression minimizes a weighted sum of absolute deviations

$$(3) \qquad \sum_{i:EXP_i \geq Z_i\beta}^{N} \theta \left| EXP_i - Z_i\beta \right| + \sum_{i:EXP_i < Z_i\beta}^{N} (1-\theta) \left| EXP_i - Z_i\beta \right|$$

where θ is the predicted quantile, $\theta \in (0,1)$, so that $\theta = 0.5$ is the median of the *conditional* distribution. This is similar to viewing the 0.05 quantile as the regression line where 5% (of the absolute value) of the difference between EXP_i and $\hat{EXP}_i$ is below the line and 95% is above. Quantile regression parameter estimates enable us to learn whether school closures improve expenditures not only for the "average" district, but also for those in the tails of the conditional distribution of per-pupil expenditures.

I run quantile regressions on the specification of equation (2) without fixed effects, and report select coefficients in Figure 2. The sample used matches that in Table 4 Panel B, where districts that closed high schools are included only after the fact. Each graph in Figure 2 plots the OLS parameter estimate with a dotted line, quantile regression estimates for each θ, and 95% confidence intervals. The effect of closing a high school is quite consistent across quantiles, and does not significantly differ from the mean effect, which is positive and significantly different from zero. Coefficients on additional fiscal variables are also similar to OLS estimates, mirroring results presented in Table 4.

On the other hand, the effect of enrolment declines monotonically throughout the conditional distribution of expenditures. Thus, in districts with already low costs (given their fiscal and community environment), increases in size yield cost penalties, not cost savings. However, districts with conditionally high costs do experience cost savings by becoming larger. This result coincides with previous studies suggesting non-uniform economies of size. According to the results here, increasing enrolment may be an effective way to reduce costs for schools already struggling with high per-pupil expenditures.

5. Community Effects: Housing Values and Median Income

To investigate economies of size in a broader sense, I also consider the effect of closure decisions on community outcomes. The following specification is used for outcome Y_j, as *j* indexes the specific type of outcome

$$Y_{ji} = SD_i\delta_1 + E_i\delta_2 + D_i\delta_3 + SC_i\delta_4 + \varepsilon_{it} \quad (4)$$

where *i* denotes a town and the explanatory variables are defined as in equation (2). The outcome measures I use are median house value in the town and median income in the town. These variables are provided decennially in the U.S. Census, where I focus on t = 2000. The sample here includes all towns that had a high school at some point in the data. I am particularly interested in the effect of school closures, as estimated by $\hat{\delta}_4$. I include trends with additional closure indicators, SC_{it-s}, *s = 1,2,...* to determine whether effects are lagged and/or cumulative.

Recalling mean differences across all years, as reported in Table 1, median house values are significantly lower in towns that close a high school. In this section, I analyze towns only after a closure would have occurred. Kernel density estimates for the 2000 distribution of median house

value appear in Figure 3. We see here that the mean is lower in towns that lost a school, and towns that still have a high school often have quite high house values (ln(12.5) corresponds to approximately $268k).

Regression results for ln(median house value) appear in Tables 5 and 6. Table 5 includes only an indicator for whether a high school closed. Across the board, house values are significantly lower, regardless of specification and from OLS and quantile regressions. Table 6 reports estimates for various closure lag indicators. In OLS results, house values seem to fall only after 6 or more years have passed. On the other hand, quantile regression coefficients are negative and significant for any lag length. Interestingly, the drop in values only retains significance among otherwise healthy reality markets; closing a high school does not appear to further damage a weak housing market.

I also run equation (4) on ln(median income), as a more general measure of economic health in a community. Results for these regressions appear in Tables 7 and 8. Again reflecting mean differences from Table 1, towns that closed a high school have significantly lower incomes, though the effect is understandably correlated with poverty. In the full OLS specification, 11% lower incomes persist after a school closure. Quantile regression results in Panel B are less consistent, with only significant negative effects near the median of the conditional distribution. It appears that towns with conditionally high or low income levels are largely unaffected by school closures. Comparing different lag lengths in Table 8 reveals that any negative effect on income diminishes over time, with no significant effect after 5 years. Continuing work on this

project will address the selection bias likely present in the effect of school closures on communities.

6. Discussion

To investigate economies of size and the effects of school closures in Illinois, I began by estimating the likelihood a high school will close. As expected, the most important predictors are the district's fiscal condition and school enrolment. I also consider the effect of high school closures on per-pupil expenditures, house values, and median incomes. I find that closures correlate with higher district spending. I also find significantly lower house values and lower median incomes in towns that closed a high school. On the other hand, towns with particularly weak economies do not appear to be further harmed by a high school closure. With cost function estimates, I also investigate economies of size in Illinois districts. Like many other studies, I find that higher enrolment correlates with lower spending per pupil. However, these benefits accrue only to districts with conditionally high expenditures. Schools that are not struggling with exceptionally high costs are likely to be made worse off by increases in size.

References

Andrews, Matthew, William Duncombe, and John Yinger, 2002. "Revisiting Economies of Size in American Education: Are We Any Closer to a Consensus?" *Economics of Education Review*, 21: 245-262.

Brasington, David M., 1998. "Joint Provision of Public Goods: The Consolidation of School Districts," *Journal of Public Economics*, 73: 373-393.

Brasington, David M., 1997. "School District Consolidation, Student Performance, and Housing Values," *Journal of Regional Analysis and Policy*, 27(2).

Chakraborty, Kalyan, Basudeb Biswas, and W. Cris Lewis, 2000. "Economies of Scale in Public Education: An Econometric Analysis," *Contemporary Economic Policy*, 18(2): 238-247.

Dodson, Marvin E., III, and Thomas A. Garrett, 2004. "Inefficient Education Spending in Public School Districts: A Case for Consolidation?" *Contemporary Economic Policy*, 22(2): 270-280.

Downes, Thomas A., and Thomas F. Pogue, 1994. "Adjusting School Aid Formulas for the Higher Cost of Educating Disadvantaged Students," *National Tax Journal*, 47(1): 89-110.

Duncombe, William, and John Yinger, 2007. "Does School District Consolidation Cut Costs?" *Education Finance and Policy*, 2(4): 341-375.

Duncombe, William, Jerry Miner, and John Ruggiero, 1995. "Potential Cost Savings from School District Consolidation: A Case Study of New York," *Economics of Education Review*, 14(3): 265-84.

Koenker, Roger, 2005. *Quantile Regression*. Econometric Society Monographs No. 38. New York: Cambridge University Press.

Koenker, Roger, and Kevin Hallock, 2001. "Quantile Regression," *Journal of Economic Perspectives*, 15(4): 143-156.

Lewis, W. Cris, and Kalyan Chakraborty, 1996. "Scale Economies in Public Education," *Journal of Regional Analysis and Policy*, 26(1): 23-35.

Ratcliffe, Kerri, Bruce Riddle, and John Yinger, 1990. "The Fiscal Condition of School Districts in Nebraska: Is Small Beautiful?" *Economics of Education Review*, 9(1): 81-99.

Sell, Randall S., F. Larry Leistritz, and JoAnn M. Thompson, 1996. "Socio-economic Impacts of School Consolidation on Host and Vacated Communities," *Agricultural Economics Reports*, No. 347: Department of Agricultural Economics, North Dakota State University.

Figure 1. Kernel Density Estimates of Ln(Per-Pupil Expenditures)

All Districts with No Closed High Schools

Districts After a High School Closed

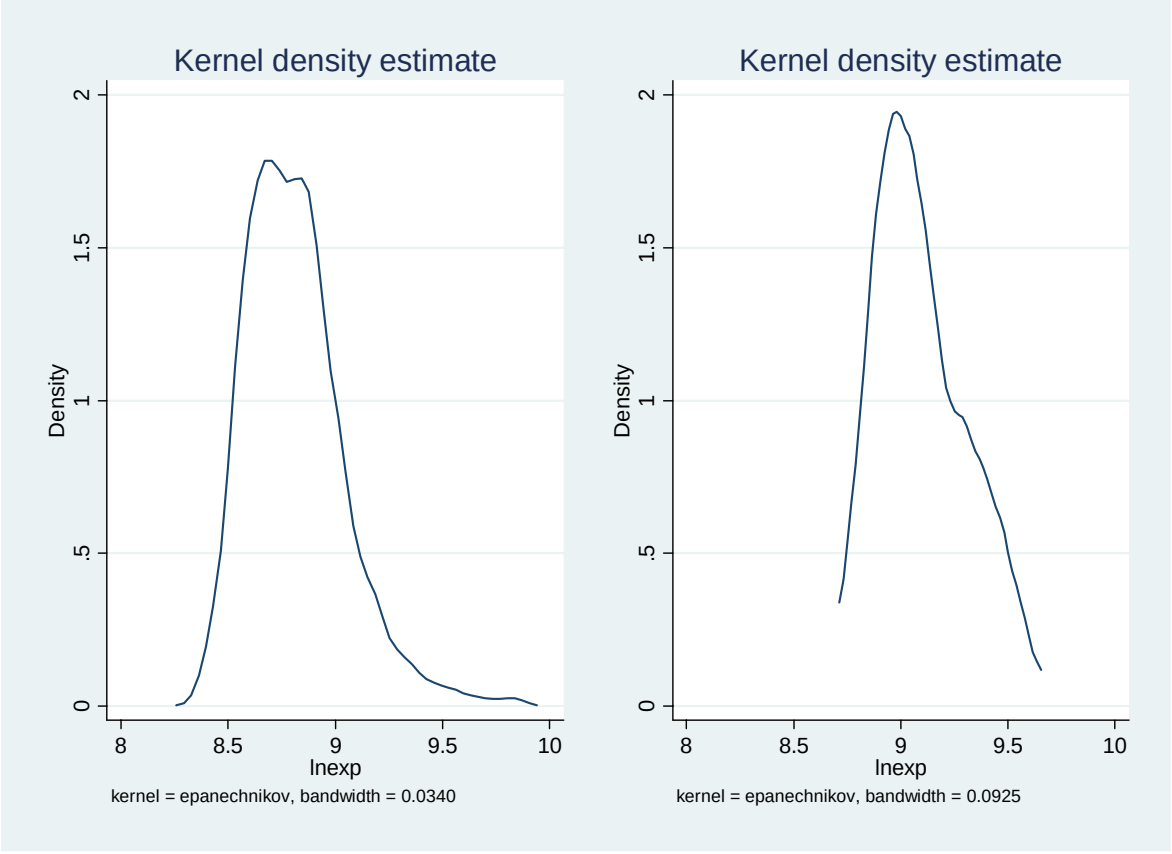


Figure 2. Quantile Regression Coefficients
Dependent Variable = Ln(Per-Pupil Expenditures)

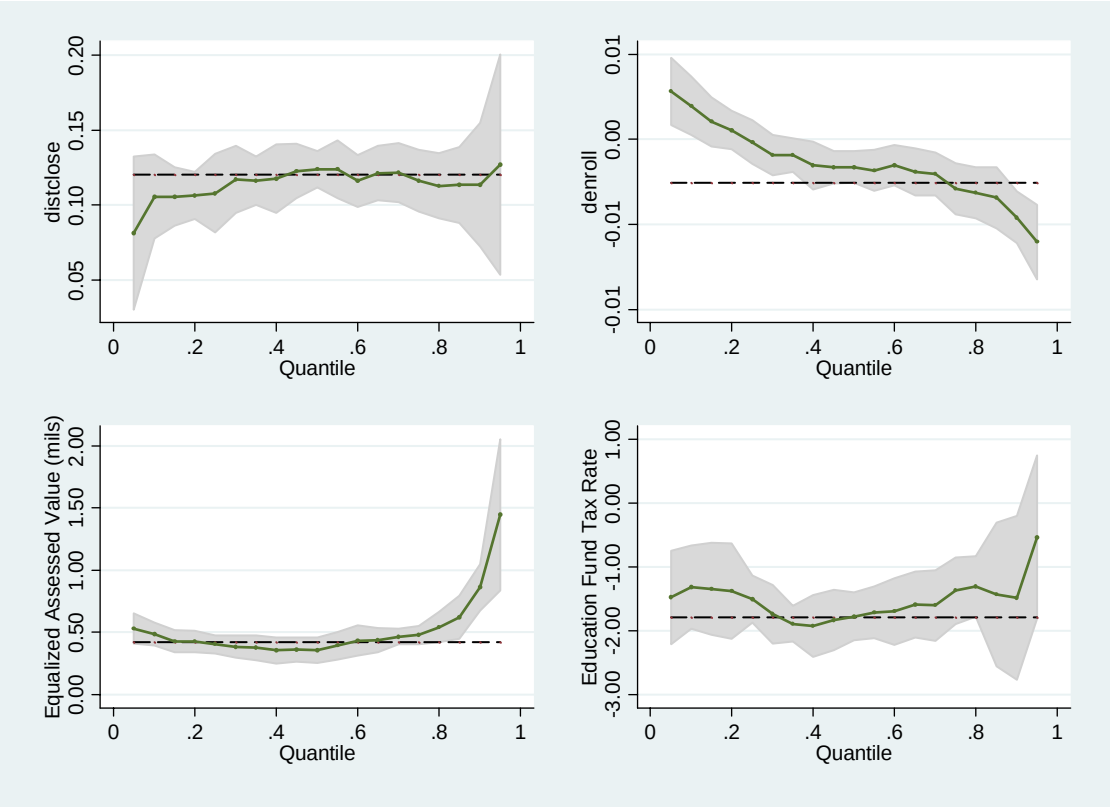
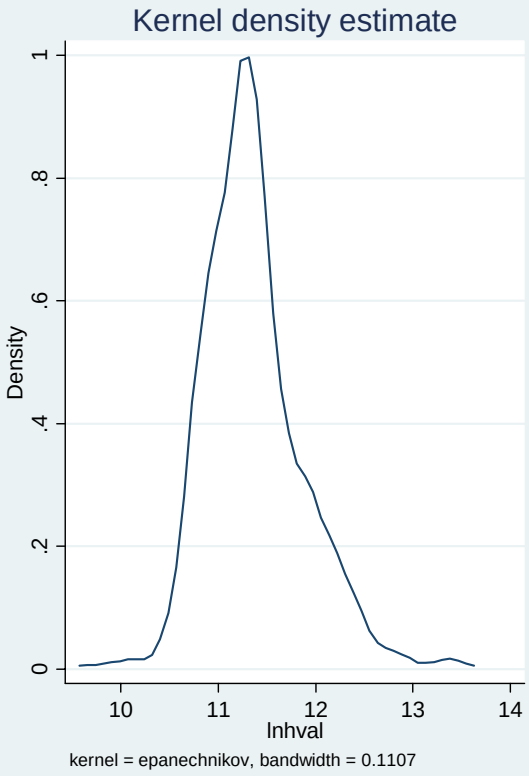


Figure 3. Kernel Density Estimates of Ln(Median House Value)

Towns with No Closed High Schools



Towns Where a High School Closed

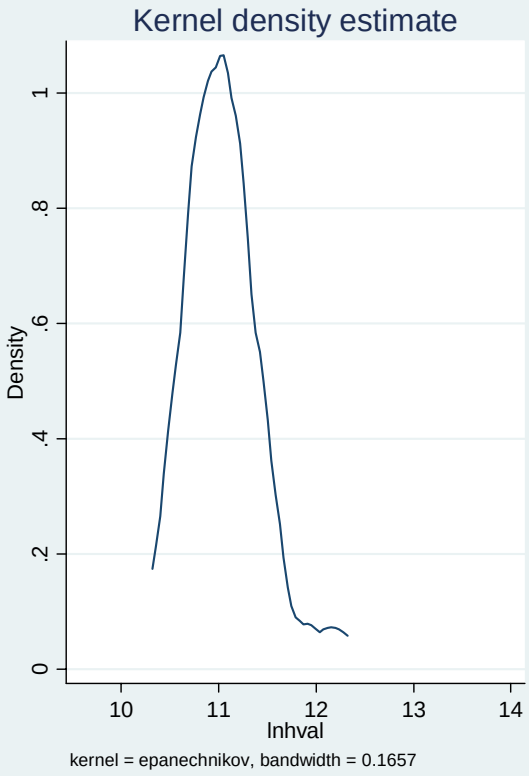


Table 1. Summary Statistics for Illinois High Schools, 1991-2006

	School Closes		Open Schools		Difference in
	Mean	St. Error	Mean	St. Error	Means Test
School Characteristics					
Enrolment	217.78	15.20	689.65	8.71	14.02***
% Black Students	6.00	1.03	4.76	0.16	1.81*
% Latino Students	1.23	0.27	2.76	0.08	4.74***
% Low Income Students	21.82	0.75	16.65	0.18	7.38***
Attendance Rate	93.69	0.11	93.62	0.03	0.57
Pupil-Teacher Ratio	12.16	0.19	15.94	0.05	19.80***
District Characteristics					
Expenditures Per Pupil	7082.43	81.72	7084.38	25.48	0.02
Equalized Assessed Value[a]	88325.14	4952.89	136503.30	2762.33	3.82***
School Tax Rate[a]	4.50	0.06	3.89	0.02	7.07***
Education Tax Rate	76.19	0.38	73.96	0.12	4.67***
Average Teacher Salary	39003.45	432.92	46226.51	135.16	13.61***
Average Teacher Experience	13.99	0.14	15.08	0.03	9.40***
Town Characteristics					
% Employed in Agriculture	2.82	0.10	1.83	0.02	10.08***
% Immigrant Population	1.28	0.16	2.87	0.06	6.68***
Povery Rate	2.13	0.08	1.24	2.67	6.76***
% Population Rural	75.19	2.05	42.52	0.61	13.54***
Median House Value	63755.60	1506.52	96737.55	891.37	9.58***
Vacancy Rate O-O Housing	8.01	0.16	6.72	0.04	8.01***
Median Household Income	38040.65	472.66	45354.59	216.79	8.70***
County Characteristics					
Census Designated Metro	0.29	0.02	0.47	0.01	7.09***
% Population 14 & Under	20.93	0.07	21.15	0.02	2.44**
Unemployment Rate	5.76	0.09	5.74	0.02	0.30
% Pop HS Diploma	38.33	0.26	34.75	0.08	11.60***
% Pop BA/BS	10.58	0.23	11.92	0.07	4.96***
% Pop Graduate Degree	5.46	0.16	6.54	0.05	5.63***
Number of Schools/Obs.	63/422		495/6208		

Data: ISBE, Census, BLS, IDES. Illinois high schools excluding Cook County.
Absolute t-statistics reported for difference in means tests. Asterisks denote standard confidence levels.
All dollar value variables are in real 2005 dollars, based upon Midwest CPI.
a Data are unavailable prior to 1996-7.

Table 2. Marginal Effects on Probability High School Will Close

	(1)	(2)	(3)
Equalized Assessed Value (mils)	-0.0265		-0.0257
	(0.0495)		(0.0389)
Per Pupil Expenditures (100000s)	2.0333***		1.0221***
	(0.1626)		(0.1584)
School Tax Rate	0.0214***		0.0146***
	(0.0042)		(0.0036)
Teacher Salary	-0.5192***		-0.1087***
	(0.0321)		(0.0419)
Education Fund Tax Rate	1.1662***		0.7100***
	(0.2679)		(0.2322)
Enrolment (100s)		-0.0049***	-0.0047***
		(0.0007)	(0.0007)
% Latino Students		0.0004	0.0003
		(0.0004)	(0.0004)
% Black Students		0.0007***	0.0002
		(0.0002)	(0.0002)
% Low Income Students		0.0002	0.0002
		(0.0002)	(0.0002)
Average Teacher Experience		-0.0039***	-0.0027***
		(0.0009)	(0.0009)
Pupil-Teacher Ratio		-0.0061***	-0.0028***
		(0.0009)	(0.0008)
Missing Data 1991-1996	0.1616***		0.1167***
	(0.0370)		(0.0317)
Observations	6630	6630	6630

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Data: Illinois State Board of Education, 1991-2006. Illinois high schools outside of Cook County are included in the analysis.

Table 3. Marginal Effects on Probability High School Will Close

	(1)	(2)	(3)
Median House Value (10000s)	-0.0146***	-0.0073***	-0.0044***
	(0.0013)	(0.0015)	(0.0011)
Poverty Rate	0.0005	-0.0016**	-0.0019***
	(0.0007)	(0.0008)	(0.0007)
Median HH Income (10000s)	0.0176***	-0.0029	-0.0024
	(0.0045)	(0.0048)	(0.0034)
Population 14 & Under	0.0044***	0.0068***	0.0041***
	(0.0015)	(0.0015)	(0.0012)
Unemployment Rate	-0.0043***	0.0036***	0.0016*
	(0.0013)	(0.0014)	(0.0010)
% Employed in Agriculture		-0.0008	-0.0021**
		(0.0011)	(0.0008)
% Immigrant		0.0008	0.0013*
		(0.0007)	(0.0008)
O-O Vacancy Rate		0.0027***	0.0012**
		(0.0008)	(0.0006)
% Population Rural		0.0004***	0.0000
		(0.0001)	(0.0000)
Enrolment (100s)			-0.0033***
			(0.0006)
Equalized Assessed Value (mils)			-0.0254
			(0.0306)
Per Pupil Expenditures (100000s)			0.8631***
			(0.1335)
School Tax Rate			0.0108***
			(0.0029)
Education Fund Tax Rate			0.5052***
			(0.1804)
Pupil-Teacher Ratio			-0.0023***
			(0.0007)
Observations	6630	6630	6630

Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%
Data: ISBE, Census, BLS, IDES, 1991-2006. Illinois high schools outside of Cook County are included in the analysis.
Also included in regressions: indicator for missing EAV and tax rate 1991-1996, % minorites in school, % low income in school, teacher salary and experience, Census metro status, and community educational attainment.

Table 4. Illinois School District Cost Function

Panel A. All Districts, n=5991	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
High School Closes in District	0.0882***	0.3568***	0.1280***	0.3683***	0.1210***	0.3029***	0.1206***	0.3891***
	(0.0115)	(0.1351)	(0.0084)	(0.0804)	(0.0080)	(0.0793)	(0.0079)	(0.0704)
Average HS Enrolment in District	0.0137***	0.0238***	-0.0054***	-0.0010	-0.0035***	-0.0039**	-0.0026***	-0.0234***
	(0.0005)	(0.0017)	(0.0005)	(0.0012)	(0.0005)	(0.0017)	(0.0005)	(0.0040)
Equalized Assessed Value (mils)			0.5217***	-0.0778***	0.4491***	-0.1003***	0.4250***	-0.1081***
			(0.0274)	(0.0173)	(0.0276)	(0.0175)	(0.0274)	(0.0167)
Education Fund Tax Rate			-1.4243***	-1.9051***	-1.8859***	-1.9509***	-1.8021***	-1.6036***
			(0.2238)	(0.1356)	(0.2182)	(0.1334)	(0.2151)	(0.1243)
School Tax Rate			0.0248***	0.0167***	0.0191***	0.0145***	0.0171***	0.0131***
			(0.0033)	(0.0024)	(0.0033)	(0.0023)	(0.0032)	(0.0022)
R-squared	0.13	0.71	0.55	0.90	0.59	0.90	0.61	0.92
Panel B. After Closures, n=5647	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
High School Closes in District	0.1015***	0.7314***	0.0560**	0.1362*	0.0486*	0.1368*	0.0466*	0.0509
	(0.0392)	(0.1346)	(0.0282)	(0.0801)	(0.0271)	(0.0802)	(0.0267)	(0.0727)
Average HS Enrolment in District	0.0139***	0.0238***	-0.0051***	-0.0013	-0.0030***	-0.0144***	-0.0020***	-0.0019
	(0.0005)	(0.0017)	(0.0005)	(0.0012)	(0.0005)	(0.0026)	(0.0005)	(0.0032)
Equalized Assessed Value (mils)			0.5264***	-0.0697***	0.4561***	-0.0938***	0.4331***	-0.0960***
			(0.0276)	(0.0173)	(0.0277)	(0.0175)	(0.0275)	(0.0167)
Education Fund Tax Rate			-1.3528***	-1.9624***	-1.8350***	-2.0114***	-1.7615***	-1.6393***
			(0.2275)	(0.1363)	(0.2219)	(0.1341)	(0.2188)	(0.1252)
School Tax Rate			0.0254***	0.0176***	0.0196***	0.0152***	0.0178***	0.0148***
			(0.0034)	(0.0024)	(0.0033)	(0.0024)	(0.0033)	(0.0022)
R-squared	0.14	0.71	0.56	0.90	0.60	0.90	0.62	0.92
Community Characteristics	none	none	none	none	Town	Town	Town/County	Town/County
District Fixed Effects Included	no	yes	no	yes	no	yes	no	yes

Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Data: ISBE, Census, BLS, IDES, 1991-2006. Illinois districts with high schools outside of Cook County are included in the analysis.

Table 5. Ln(Median House Value) in Town

Panel A. OLS	(1)	(2)	(3)	(4)	
High School Closed in Town	-0.3147***	-0.0770**	-0.1050***	-0.1050***	
	(0.0969)	(0.0357)	(0.0334)	(0.0326)	
% Population Rural		-0.0004*	-0.0004*	-0.0001	
		(0.0002)	(0.0002)	(0.0002)	
Poverty Rate		-4.2608***	-3.8964***	-3.9553***	
		(0.4854)	(0.4622)	(0.4467)	
Population 14 & Under			0.0164***	0.0130**	
			(0.0055)	(0.0054)	
Unemployment Rate			-0.0623***	-0.0672***	
			(0.0134)	(0.0131)	
Equalized Assessed Value (mils)				0.1468	
				(0.1017)	
Education Fund Tax Rate				-2.0114***	
				(0.7651)	
R-squared	0.02	0.87	0.89	0.90	
Panel B. Quantile Regression	Q .1	Q .25	Q .5	Q .75	Q .9
High School Closed in Town	-0.0840*	-0.0918*	-0.0758*	-0.1227***	-0.0914*
	(0.0470)	(0.0488)	(0.0409)	(0.0374)	(0.0473)

N = 475. Standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%

Data: ISBE, Census, BLS, IDES, 2000. Illinois towns with schools outside of Cook County are included.

Table 6. Ln(Median House Value) in Town

	(1)	(2)	Q .1	Q .25	Q .5	Q .75	Q .9
HS Closed 1 to 5 Years Ago		-0.1205	0.0801	-0.0953	-0.1482*	-0.2204**	-0.2342**
		(0.0852)	(0.0822)	(0.0870)	(0.0878)	(0.1076)	(0.1131)
HS Closed 6 to 10 Years Ago		-0.1339*	-0.0982	-0.0713	-0.0761	-0.1623**	-0.3168***
		(0.0742)	(0.1143)	(0.0902)	(0.0691)	(0.0649)	(0.0672)
High School Closed$_{t-1}$	-0.0178						
	(0.1660)						
High School Closed$_{t-2}$	-0.2040						
	(0.1671)						
High School Closed$_{t-3}$	-0.1291						
	(0.1208)						
High School Closed$_{t-4}$	0.0000						
	(0.0000)						
High School Closed$_{t-5}$	0.0000						
	(0.0000)						
R-squared	0.90	0.90					

N = 475. Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Data: ISBE, Census, BLS, IDES, 2000. Illinois towns with schools outside of Cook County are included in the analysis. Additional regressors as in Table 5.

Table 7. Ln(Median Income) in Town

Panel A. OLS	(1)	(2)	(3)	(4)	
High School Closed in Town	-0.1443**	-0.0766	-0.1095***	-0.1054***	
	(0.0606)	(0.0532)	(0.0379)	(0.0345)	
% Population Rural		0.0004	0.0002	0.0005**	
		(0.0003)	(0.0002)	(0.0002)	
Poverty Rate		-3.5817***	-1.4878***	-1.4041***	
		(0.6945)	(0.5167)	(0.4655)	
Population 14 & Under			0.0491***	0.0342***	
			(0.0058)	(0.0055)	
Unemployment Rate			-0.0448***	-0.0466***	
			(0.0151)	(0.0137)	
Equalized Assessed Value (mils)				0.4952***	
				(0.1023)	
Education Fund Tax Rate				-2.2489***	
				(0.8085)	
R-squared	0.01	0.26	0.63	0.71	
Panel B. Quantile Regression	Q .1	Q .25	Q .5	Q .75	Q .9
High School Closed in Town	-0.0762	-0.0222	-0.0648*	-0.1177**	-0.0451
	(0.1344)	(0.0483)	(0.0332)	(0.0527)	(0.0446)

N = 475. Standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%

Data: ISBE, Census, BLS, IDES, 2000. Illinois towns with schools outside of Cook County are included.

Table 8. Ln(Median Income) in Town

	(1)	(2)	Q .1	Q .25	Q .5	Q .75	Q .9
HS Closed 1 to 5 Years Ago		-0.2642***	-0.3560*	-0.0103	-0.1176	-0.2216	-0.3134**
		(0.0898)	(0.2134)	(0.2374)	(0.1800)	(0.1507)	(0.1516)
HS Closed 6 to 10 Years Ago		-0.0396	0.0921	-0.0041	-0.0611	-0.1304	-0.0350
		(0.0786)	(0.0776)	(0.0809)	(0.0961)	(0.1257)	(0.1229)
High School Closed$_{t-1}$	-0.1025						
	(0.1747)						
High School Closed$_{t-2}$	-0.0997						
	(0.1758)						
High School Closed$_{t-3}$	-0.4309***						
	(0.1262)						
High School Closed$_{t-4}$	0.0000						
	(0.0000)						
High School Closed$_{t-5}$	0.0000						
	(0.0000)						
R-squared	0.71	0.71					

N = 475. Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Data: ISBE, Census, BLS, IDES, 2000. Illinois towns with schools outside of Cook County are included in the analysis. Additional regressors as in Table 7.