

Table 1
Means and Standard Deviations

	Mean	Standard Deviation
Change in Log (Aggregate House Value per Pupil)	0.174	0.535
Change in Log (State Aid per Pupil)	0.510	0.435
Change in Log (Predicted Basic Aid per Pupil) ^a	0.363	0.849
Change in Log (Predicted Total Aid per Pupil) ^a	0.317	0.842
Change in Log (Synthetically Predicted Basic Aid per Pupil) ^b	0.082	0.580
Change in Log (Synthetically Predicted Total Aid per Pupil) ^b	-0.065	0.642
Change in Log (Average Household Income)	0.040	0.166
Change in % Population With at Least 16 Years of Education	3.195	3.960
Change in % Unemployed	-2.961	3.351
Change in % Housing Units Owner Occupied	-0.501	5.168
Change in % Housing Units Vacant	4.373	8.719
Change in % Occupied Housing Units Built More Than 10 Years Ago	8.876	9.249
Change in % Households Moved into House Less Than 10 Years Ago	-19.921	13.719
% Missing Change in % Households Moved into House Less Than 10 Years Ago	0.004	0.066
Change in % Population Over 55 Years of Age	1.278	4.301
Change in % Children Enrolled in Private School	2.344	4.515
% Missing Change in % Children Enrolled in Private School	0.002	0.041
Change in Log (Total Housing Units)	0.148	0.260
Change in Log (Enrollment)	-0.115	0.282
Change in Log (Crime Index)	0.017	0.529
% Missing Change in Log (Crime Index)	0.022	0.147
Change in % Voting Republican	-15.566	6.922
Change in % Voting Democratic	0.923	6.692
% Missing % Voting Republican and % Voting Democratic	0.001	0.034
Change in % County Employees Organized	1.426	21.162
% Missing Change in County Employees Organized	0.025	0.156
Change in % Employed in Manufacturing	-0.081	1.710
% Missing Change in % Employed in Manufacturing	0.000	0.009

Notes: There are 11928 observations. All dollar values are in 1994 dollars. All means are weighted by the log of

student enrollment in 1980.

^a Change in “Predicted” state aid is calculated using only the 1980 characteristics of school districts.

^b Change in “Synthetically Predicted” state aid is the mean state aid calculated using the characteristics of all school districts except for those in the state in question.

Table 2
OLS Estimates of the Effect of the Change in State Aid on Change in Average House Values per Pupil

	(1)	(2)	(3)
Change in Log (State Aid per Pupil)	0.002 (0.011)	0.041 (0.005)	0.036 (0.005)
Change in Log (Average Household Income)		-8.069 (0.403)	-6.822 (0.405)
Change in Log(Average Household Income) Squared		0.429 (0.019)	0.368 (0.019)
Change in % Population With at Least 16 Years of Education		0.006 (0.001)	0.004 (0.001)
Change in % Unemployed		0.002 (0.001)	0.003 (0.001)
Change in % Housing Units Owner Occupied		0.017 (0.001)	0.016 (0.001)
Change in % Housing Units Vacant		-0.012 (0.0003)	-0.011 (0.0003)
Change in % Occupied Housing Units Built More Than 10 Years Ago		-0.005 (0.0003)	-0.005 (0.0003)
Change in % Households Moved into House Less Than 10 Years Ago		0.005 (0.0002)	0.004 (0.0002)
Change in % Population Over 55 Years of Age		-0.001 (0.001)	-0.002 (0.001)
Change in % Children Enrolled in Private School		0.003 (0.001)	0.003 (0.001)
Change in Log (Total Housing Units)		1.095 (0.012)	1.100 (0.012)
Change in Log (Enrollment)		-1.079 (0.010)	-1.045 (0.010)
Change in Log (Crime Index)			-0.015 (0.005)
Change in % Voting Republican			0.007 (0.0004)
Change in % Voting Democratic			0.007 (0.0005)
Change in % County Employees Organized			-0.0004 (0.0001)
Change in % Employed in Manufacturing			0.004 (0.002)
p-value: State Aid = 0.287 ($\delta = 0.0733$) ^a	0.000	0.000	0.000

R²

0.000

0.765

0.773

Notes: The dependent variable is the change (from 1980-1990) in the logarithm of aggregate house values per pupil. Standard errors are in parentheses. There are 11928 observations. All equations include a constant. Columns (2) and (3) also include dummy variables indicating whether the percent of the population that moved in 10 years ago and the percent of children enrolled in private school are missing. In addition, column (3) includes dummy variables indicating if the crime index, the percent voting Republican and Democratic, the percent of county employees that are unionized, and the percent employed in manufacturing are missing. The equations are weighted by the log of student enrollment in 1980. All dollar values are in 1994 dollars.

^a δ is the discount rate; see text.

Table 3**First-stage Estimates of the Effect of Predicted Change in State Aid
on Change in House Values**

	Instrumental Variable	
	Change in Log Basic State Aid	
	Predicted State Aid ^a	Synthetically Predicted State Aid ^b
	(1)	(2)
Change in Log State Aid	0.045 (0.005)	0.110 (0.068)
R ²	0.069	0.079
	Change in Log Total State Aid	
	Predicted State Aid ^a	Synthetically Predicted State Aid ^b
	(3)	(4)
	Change in Log State Aid	0.049 (0.005)
R ²	0.070	0.085

Notes: The dependent variable is the change in the logarithm of aggregate house values per pupil. State aid is also calculated per pupil. Standard errors are in parentheses; the standard errors in columns (2) and (4) are adjusted for the fact that the instrument varies only at the state level. See text or column (3) of Table 2 for other covariates. There are 11928 observations. The equations are weighted by the log of student enrollment in 1980.

^a Change in “Predicted” state aid is calculated using only the 1980 characteristics of school districts.

^b Change in “Synthetically Predicted” state aid is the mean state aid calculated using the characteristics of all school districts except for those in the state in question.

Table 4

**IV Estimates of the Effect of Predicted Change in State Aid
on Change in House Values**

	Instrumental Variable	
	Basic State Aid	
	Predicted State Aid ^a	Synthetically Predicted State Aid ^b
	(1)	(2)
Change in Log State Aid	0.416 (0.074)	0.340 (0.383)
p-value: State Aid = 0.287 ($\delta = 0.0733$) ^c	0.082	0.891
	Total State Aid	
	Predicted State Aid ^a	Synthetically Predicted State Aid ^b
	(3)	(4)
	Change in Log State Aid	0.456 (0.072)
p-value: State Aid = 0.287 ($\delta = 0.0733$) ^c	0.019	0.659

Notes: The dependent variable is the change in the logarithm of aggregate house values per pupil. The endogenous variable is the change in actual state aid per pupil. Standard errors are in parentheses; the standard errors in columns (2) and (4) are adjusted for the fact that the instrument varies only at the state level. See text or column (3) of Table 2 for other covariates. There are 11928 observations. The equations are weighted by the log of student enrollment in 1980.

^a Change in “Predicted” state aid is calculated using only the 1980 characteristics of school districts.

^b Change in “Synthetically Predicted” state aid is the mean state aid calculated using the characteristics of all school districts except for those in the state in question.

^c δ is the discount rate; see text.

Table 6a

IV First-Differenced Estimates of the Effect of Educational Expenditures on House Values by Selected Characteristics of the School District Residents

	Type of State Aid Used as Instrument	
	Predicted Basic State Aid	Predicted Total State Aid
Average Household Income		
Low (Bottom 20 th percentile)	0.474 (0.324)	0.538 (0.319)
Average (20 to 80 th percentile)	0.757 (0.157)	0.864 (0.165)
High (Top 20 th percentile)	0.918 (0.114)	0.950 (0.118)
p-value: Low = High	0.188	0.223
Education		
Low (Top 20 th percentile in share of householders without a high school diploma)	-0.022 (0.103)	-0.028 (0.109)
Average(20 to 80 th percentile in share of householders without a high school diploma)	0.569 (0.115)	0.638 (0.117)
High (Bottom 20 th percentile in share of householders without a high school diploma)	0.458 (0.148)	0.487 (0.145)
p-value: Low = High	0.008	0.005

Notes: The dependent variable is the change in the logarithm of aggregate house values per pupil. The endogenous variable is the logarithm of the change in actual state aid per pupil. Standard errors are in parentheses. See text or column (3) of Table 2 for other covariates. For the average household income regressions the measures of changes in log average household income are dropped from the estimation. For the education regressions, measures of the change in percent with at least a BA are omitted from the estimation. There are 11928 observations. The equations are weighted by the log of student enrollment in 1980. Change in “Predicted” state aid is calculated using only the 1980 characteristics of school districts. The demographic groups are based on their values in 1980.

Table 6b

IV First-Differenced Estimates of the Effect of Educational Expenditures on House Values by Selected Characteristics of the School District

	Type of State Aid Used as Instrument	
	Basic State Aid	Total State Aid
County Herfindahl Index (HHI)		
Low (HHI < 0.14/Competitive)	0.507 (0.087)	0.488 (0.088)
Average (0.14 ≤ HHI ≤ 0.60)	0.292 (0.132)	0.419 (0.126)
High (HHI > 0.60/Not Competitive)	-0.309 (0.150)	-0.213 (0.133)
p-value: Low = High	0.000	0.000
Urbanicity of District*		
Rural	0.029 (0.009)	0.030 (0.009)
Not-Urban/Not-Rural	0.598 (0.142)	0.663 (0.136)
Urban	0.357 (0.161)	0.446 (0.158)
p-value: Rural = Urban	0.041	0.009
Unionization Status in 1980**		
Non-Unionized	0.108 (0.105)	0.142 (0.107)
Unionized	0.549 (0.085)	0.597 (0.081)
p-value: Unionized = Non-Unionized	0.002	0.001

Notes: See notes to Table 6a.

* A district is considered rural if all of the households are in rural (farm and non-farm) areas; it is considered urban if all the households live inside urbanized areas; and it is considered not-urban/not-rural if it does not fall into either of the other two categories.

** A district is considered unionized if at least 50 percent of the teachers are organized and the district has at least one collective bargaining agreement in effect. These regressions only have 11701 observations because of missing values in the district-level data on unionization.

Table 7

IV First-Differenced Estimates of the Effect of Educational Expenditures on School Inputs and Outcomes by Differential Efficiency

	Dependent Variable	
	Pupil-Teacher Ratio	Percent High School Dropouts
Education		
Low (Top 20 th percentile in share of householders without a high school diploma)	0.007 (0.109)	0.058 (0.262)
Average(20 to 80 th percentile in share of householders without a high school diploma)	-0.720 (0.119)	-0.565 (0.292)
High (Bottom 20 th percentile in share of householders without a high school diploma)	-0.499 (0.165)	0.824 (0.389)
County Herfindahl Index (HHI)		
Low (HHI < 0.14/Competitive)	-0.614 (0.100)	0.292 (0.272)
Average (0.14 ≤ HHI ≤ 0.60)	-0.579 (0.152)	-0.191 (0.400)
High (HHI > 0.60/Not Competitive)	-0.012 (0.164)	-0.391 (0.318)
Unionization Status in 1980*		
Non-Unionized	-0.374 (0.113)	-0.317 (0.265)
Unionized	-0.616 (0.090)	0.199 (0.247)

Notes: The dependent variable in column (1) is the change in the logarithm of the pupil-teacher ration. The dependent variable in column (2) is the change in the logarithm of the percent of civilian persons 16 to 19 years old who are not enrolled in school and do not have a high school diploma. Standard errors are in parentheses. See text or column (3) of Table 2 for other covariates. For the education regressions, measures of the change in percent with at least a BA are omitted from the estimation. There are 11652 observations in the pupil-teacher regressions and 10058 observations in the dropout regressions. The equations are weighted by the log of student enrollment in 1980. Change in “Predicted” state aid is calculated using only the 1980 characteristics of school districts. The demographic groups are based on their values in 1980.

* A district is considered unionized if at least 50 percent of the teachers are organized and the district has at least one collective bargaining agreement in effect. The dropout regression has only 9897 observations because of missing values in the district-level data on unionization.

Appendix Table I

**IV Estimates of the Effect of Predicted Change in State Aid
on Change in House Values Using All Available Districts and in Levels per Pupil**

	Instrumental Variable	
	Predicted Basic State Aid (Logs)	Predicted Total State Aid (Logs)
	(1)	(2)
Change in Log in State Aid	0.416 (0.074)	0.456 (0.072)
p-value: State Aid = 0.278 ($\delta = 0.0733$) ^a	0.082	0.019
Number of Observations	11928	11928
	Predicted Basic State Aid (Levels)	Predicted Total State Aid (Levels)
	(3)	(4)
	Change in State Aid (Levels)	12.110 (4.658)
p-value: State Aid = 13.64 ($\delta = 0.0733$) ^a	0.743	0.482
Number of Observations	11928	11928
	Predicted Basic State Aid (Levels)	Predicted Total State Aid (Levels)
	(5)	(6)
	Change in State Aid (Levels)	9.924 (4.491)
p-value: State Aid = 13.64 ($\delta=0.0733$) ^a	0.408	0.250
Number of Observations	12785	12785

Notes: The dependent variable in cells (1) and (2) is the change in the logarithm of aggregate house values per pupil; the dependent variable in cells (3) - (6) is the (levels) change in average house values per pupil. The endogenous variable and instrument are in analogously in logs in cells (1) and (2) and in levels in cells (3)-(6). Standard errors are in parentheses. See text or column (3) of Table 2 for other covariates. There are 11928 observations. The equations are weighted by the log of student enrollment in 1980. "Predicted" state aid is per pupil and is calculated using only the 1980 characteristics of school districts.

^a δ is the discount rate; see text.

Appendix Table IIa
Profiles of District Divisions Used in Table 6a

	Education					
	Low (bottom 20 th percentile)		Average (20 to 40 th percentile)		High (top 20 th percentile)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
1980 Enrollment	2828	6975	4097	22839	4872	9397
Proportion Minority	0.185	0.195	0.054	0.099	0.040	0.056
Proportion Private school	0.033	0.043	0.049	0.055	0.068	0.056
Proportion householders over 55 years of age	0.245	0.062	0.229	0.060	0.183	0.063
Urban*	0.040	0.197	0.086	0.280	0.239	0.427
Rural	0.554	0.497	0.493	0.500	0.230	0.421
Unionized**	0.095	0.294	0.518	0.500	0.634	0.482
Average Income						
Low	0.574	0.495	0.135	0.342	0.022	0.148
Average	0.421	0.494	0.745	0.435	0.343	0.475
High	0.006	0.076	0.120	0.325	0.635	0.481
Herfindahl						
Low (“Competitive”)	0.072	0.259	0.253	0.435	0.455	0.498
Average	0.453	0.498	0.548	0.498	0.420	0.494
High (“Not Competitive”)	0.474	0.499	0.198	0.399	0.125	0.331
Number of Observations	2400		7227		2301	

Notes: These means are weighted using the log of enrollment in 1980. In addition, these are column proportions; therefore the proportions by education level (low, average, and high) sum to 1.00 within each column. The categorizations correspond to those in Table 6a. These are district characteristics in 1980.

* A district is considered rural if all of the households are in rural (farm and non-farm) areas; it is considered urban if all the households live inside urbanized areas; and it is considered not-urban/not-rural if it does not fall into either of the other two categories.

** There are 2384 observations for whether the district is unionized in columns 1 and 2; 7071 in columns 3 and 4; and 2246 in columns 5 and 6.

Appendix Table IIb
Profiles of District Divisions Used in Table 6b

	Herfindahl-Hirschman Index					
	Low (“Competitive”) (bottom 26 th percentile)		Average (26 to 75 th percentile)		High (“Not Competitive”) (top 25 th percentile)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
1980 Enrollment	3289	4685	2970	12486	6930	32601
Proportion Minority	0.050	0.097	0.066	0.120	0.131	0.165
Proportion Private school	0.071	0.057	0.044	0.054	0.039	0.045
Proportion householders over 55 years of age	0.211	0.060	0.228	0.067	0.226	0.062
Urban*	0.255	0.436	0.073	0.260	0.021	0.115
Rural	0.321	0.467	0.527	0.499	0.437	0.496
Unionized**	0.698	0.459	0.442	0.497	0.224	0.417
Income						
Low	0.081	0.273	0.204	0.403	0.319	0.466
Average	0.526	0.499	0.634	0.482	0.608	0.488
High	0.392	0.488	0.162	0.368	0.073	0.261
Education						
Low	0.056	0.230	0.180	0.384	0.397	0.489
Average	0.590	0.492	0.653	0.476	0.498	0.500
High	0.354	0.478	0.167	0.373	0.105	0.306
Number of Observations	2983		6226		2719	

Notes: These means are weighted using the log of enrollment in 1980. In addition, these are column proportions; therefore the proportions by Herfindahl-Hirschman Index (low, average, and high) sum to 1.00 within each column. The categorizations correspond to those in Table 6b. These are district characteristics in 1980.

* A district is considered rural if all of the households are in rural (farm and non-farm) areas; it is considered urban if all the households live inside urbanized areas; and it is considered not-urban/not-rural if it does not fall into either of the other two categories.

** There are 2932 observations for whether the district is unionized in columns 1 and 2; 6074 in columns 3 and 4; and 2695 in columns 5 and 6.