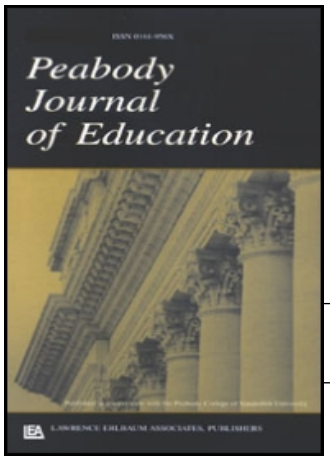

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Can Judges Improve Academic Achievement?

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Over the last 3 decades student achievement has remained essentially unchanged in the United States, but not for a lack of spending. Over the same period a myriad of education reforms have been suggested and per-pupil spending has more than doubled. Since the 1990s the education reform attempts have frequently included judicial decisions to revise state school finance systems. Invoking general clauses about the need for an adequate education found in every state constitution, judges in more than half of the states waded into the development of finely tuned reform strategies. This article empirically estimates the effect of judicial intervention on student achievement using standardized test scores and graduation rates in 48 states from 1992 to 2005. We find no evidence that court-ordered school spending improves student achievement.

The shores of school reform are littered with the wrecks of reform efforts. National, state, and local education leaders have launched an armada of reform initiatives enacted by legislatures or school boards, but none seem to arrive at their destination of school improvement. Perhaps the problem isn't with what reforms are being tried but with who is at the helm. Perhaps judges, who are insulated from electoral pressures, are better positioned than political leaders to identify the circumstances and strategies for effective school reform.

This, at least implicitly, is the rationale for a wave of judicial activity since the 1990s in revising state school finance systems. Invoking general clauses about the need for an adequate education found in every state constitution, judges in more than half of the states waded into the development of finely tuned reform strategies.

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Judges heard and incorporated into their thinking claims about the optimal number of students in classes, the appropriate level of compensation for teachers, the ideal school and district size, and a host of other issues that were factored into determining the expenditures that judges would order state legislatures to make. To be sure, legislators had deliberated over these issues on a regular basis, but, the argument went, they had arrived at the wrong conclusions. They were too influenced by re-election pressures and parochial concerns to properly weigh the merits and ensure an adequate education. We needed judges to do the job properly.

Faith in the superior wisdom of judges is not entirely without basis. The most salient example of when judges saved us from the failure of legislatures is the civil rights movement. In that case democracy failed us, perpetuating an obviously unjust and unwise policy of racial segregation. Judges rescued us from that abyss, for which they accumulated a reservoir of popular goodwill. Drawing on that political capital, judges have been empowered to venture into other policy arenas, including education reform. It is not obvious that the intervention of judges in education reform will be as beneficial as the intervention in civil rights. Civil rights is primarily an issue of justice, a question of political values—something at which judges normally excel. Education reform, on the other hand, involves resolving complicated technical questions—something for which judges and judicial procedures are not particularly well suited.

Whether judicial involvement in revising school finance has been beneficial is an empirical question that can be addressed with evidence. The purpose of this article is to assemble, analyze, and present evidence to resolve this question. Have judges succeeded at improving student achievement where others have failed?

To answer this question we examine the effect of judicial intervention in school finance systems on student achievement as measured by test scores on the U.S. Department of Education's National Assessment of Educational Progress as well as by high school graduation rates. We find no effects of judicial action on these measures of student achievement. That is, we find no evidence to suggest that student learning improves as a result of court-ordered changes in school finance systems.

PREVIOUS RESEARCH

Our results are consistent with the bulk of prior research on related issues. Previous research has generally found little or no benefit for student achievement from adding financial resources to the existing public school system. We can observe the limited usefulness of increasing educational expenditures as a mechanism for improving student achievement simply by examining the temporal relationship between school spending and student outcomes (Greene, 2005). Over the last

3 decades, per-pupil spending in U.S. public education has more than doubled and yet student achievement has remained essentially unchanged.

In 1970–71 public schools nationwide spent per pupil a total of $4,860, adjusted for inflation to the equivalent of 2005–06 dollars. By 2003–04 that amount had increased to $10,286 (U.S. Department of Education [USDE], 2006d). Yet during this period outcomes for students showed no significant improvement. According to the USDE's National Assessment of Educational Achievement, the average reading score for 17-year-olds, on a scale from 100 to 500, was 285 in 1971 and was still 285 in 2004 (USDE, 2006b). Math scores show the same basic pattern: In 1973, the average scale score for 17-year-olds was 304, and in 2004 it was 307, a difference that is not statistically significant (USDE, 2006c). According to the USDE's estimate of the long-term trend in public high school graduation rates, 78% of students graduated in the class of 1971 compared to 74.3% in 2004 (USDE, 2006a). Despite more than doubling financial resources for public education, multiple measures of student outcomes show that investment, in aggregate, yielded no gains for student achievement.

Of course, it is possible that other developments negated any benefit that additional spending could have produced. Perhaps the challenges that schools face have increased so that holding student achievement steady is actually a significant accomplishment. Were it not for the additional resources provided to public schools it is possible that student achievement would have experienced a substantial decline.

Although plausible, this claim is at odds with the general trends in factors that affect the challenges students bring to schools. According to the Teachability Index, which tracks 16 indicators, students are coming to the educational process with fewer disadvantages than they were 3 decades ago (Greene & Forster, 2004). In some respects, students have become more challenging to educate. For example, more students come from homes with single parents and where English is not the primary language spoken. But in other respects, students pose fewer challenges; more come to school having attended preschool, the educational attainment of parents has increased, the real income of families (even poor families) has improved, and students have better health. Overall, it appears that students may be easier to educate than they were 3 decades ago. At the very least, it would be hard to demonstrate that conditions have deteriorated so much that they have completely offset the doubling in per-pupil spending.

To isolate the independent effect that additional resources have on student outcomes, researchers have conducted statistical analyses of variation in spending controlling for other observed factors affecting student achievement. Although these analyses can improve upon the internal validity of broad national comparisons of spending and achievement over time, they come at some expense to external validity. If spending had beneficial effects in the particular situation examined, why haven't national measures of student outcomes budged as spending

has doubled? The answer appears to be that although there are isolated studies that are often invoked to prove the desirability of spending increases, the vast majority of econometric analyses of the relationship between school spending and student achievement find no significant relationship between the two. Writing in the *Handbook of the Economics of Education*, Hanushek (2006, p. 25) reviewed the research in this area and founds that 72% of analyses find no statistically significant relationship between student:teacher ratios and achievement, 73% find no relationship between teacher salary and student achievement, 66% find no relationship between per-pupil spending and achievement, and 86% find no relationship between school facilities and student achievement. From this Hanushek concluded, "A wide range of analyses indicate that overall resource policies have not led to discernible improvements in student performance" (p. 38).

Whether increased school spending contributes to higher student achievement is precisely the issue in dispute in school finance lawsuits. But the existence of this dispute in the legal arena does not necessarily mean the issue is in serious dispute in the social science arena. The techniques that are used to justify higher spending levels, including cost-functions, professional judgment models, the "evidence-based" approach, and the successful school models, are more commonly found in the courtroom than in scholarly publications. Refutation of the validity of these techniques has been ably done in previous work as well as elsewhere in this issue and are not be repeated here.[1] It is sufficient to say that the weight of the social science evidence suggests that adding financial resources to the existing public school system should have little or no effect on student performance.

If increased spending has little or no effect on achievement, then it would seem impossible for court-ordered spending to have much effect. But perhaps judges can better identify the circumstances under which additional spending might be more productive and have focused their rulings on those circumstances. In the face of null findings on the general relationship between resources and achievement, the common (and tautological) refrain is that money spent wisely will have a different effect. Perhaps judges know better than legislatures how and when to increase spending so that court-ordered spending will have a different effect from increased spending generally.

For judicial intervention in school finances to affect student achievement, we would probably have to see that intervention resulting in significant changes in school spending. Unfortunately, the current research on this matter suggests that court action actually results in little change in school finances. Just because courts issue orders does not mean that policies will be substantially changed. Legislatures sometimes defy or subvert judicial orders, and sometimes judges order policies that legislatures were going to adopt anyway.

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[1] See, for example, West and Peterson (2007) and the article in this issue by Costrell, Loeb, and Hanushek.

Earlier research on this issue found that court intervention reduced within-state inequality in per-pupil spending. Murray, Evans, and Schwab (1988) found that equity in funding lawsuits reduced inequality in spending by 19 to 34% between 1972 and 1992. Card and Payne (2002) similarly found that when school finance systems are struck down by courts, the variation in per-pupil spending within states is reduced. They also found that court involvement produces a modest reduction in the variation in student SAT scores, but they did not report an effect on average achievement. Baicker and Gordon (2004) found that school finance judgments increase state aid to local education systems, but that is partially offset by reductions in local education spending and reductions in state aid to localities for noneducational purposes. Springer, Liu, and Guthrie (2005) attempted to disentangle the effects of court intervention based on equity concerns versus those based on adequacy concerns, only to discover that there does not appear to be much of a difference between the two in how school finance is affected.

Berry (2007) updated the data set examined by Springer, Liu, and Guthrie, who in turn updated the data set used by Card and Payne and by Baicker and Gordon. Berry also made an important methodological improvement on the earlier work by using state-clustered standard errors. Berry argued that the standard errors used by earlier work failed to account for serial correlation, inflating the statistical significance of the reported findings. Berry essentially replicated the earlier work but found that with state-clustered standard errors, court action seems to have little or no effect on school finances.

Total education revenue is not significantly higher in states after judges overturn the school finance system. It also does not seem to make a difference whether the courts acted on equity or adequacy concerns. In one model that counts the number of years since a court ruling, Berry (2007) produced an estimate that spending increases by $30 per pupil per year following judicial intervention, but that estimate just falls short of conventional standards for statistical significance. Berry concluded, "Across a wide range of fiscal outcomes measuring both the level and distribution of education spending, the analysis presented here generally reveals substantively small and statistically insignificant effects of school finance judgments" (p. 233).

The previous research suggests that increased school spending has little or no effect on student achievement, and judicial action has little or no effect on the level of school spending. Given these findings it would be extraordinary to find that court involvement in school finance had any effect on student achievement. But this is precisely the issue we are examining. Perhaps judicial action has subtle but important influence over the composition of school spending that nevertheless results in improved student outcomes despite the gloomy expectations derived from previous research.

DATA AND RESEARCH DESIGN

Our analysis closely follows the data and research design employed by Berry. We examine whether school finance litigation affects student outcomes using a state fixed-effects model. Berry provided us with a copy of his data set from which we obtained information on judicial actions and state demographic information. We supplemented those data to include updated information through 2005. Data regarding school finance litigation between 2003 and 2005 were obtained from the National Access Network Web site maintained by Teachers College at Columbia University (http://www.schoolfunding.info/states/state_by_state.php3).

The only significant change we make to Berry's data or analytical approach is to replace his school spending dependent variables with student achievement dependent variables. In particular, our dependent variables were state average test scores, standard errors[2] of state test scores, and high school graduation rates. The tests were fourth- and eighth-grade reading and math scale scores on the USDE's National Assessment of Educational Progress (NAEP). The measures of high school graduation rates were estimates produced by the Manhattan Institute (Greene & Winters, 2005, 2006). Obviously, the average test score is a measure of overall student performance. However, most funding lawsuits are initiated to benefit students who are performing poorly, so it is possible that school finance rulings will improve the performance of students at the bottom tail of the distribution without having a measurable effect on the mean. We include the standard error of the distribution to test for this possibility. (Although, if the standard error decreases without changing the mean, it implies potential harm to students in the upper tail of the distribution and could represent an adverse consequence of the finance judgment.) It is also possible that the distribution is unchanged but the improvement has been in preventing dropouts. If the graduation rate increases while the score distribution is unchanged, this could also represent an academic improvement resulting from the school finance judgment.

Because we do not have these student outcome measures before 1990 our analysis also differs from Berry's in that it includes only this more recent period. We have high school graduation rates for each state for each year between 1991 and

[2]Ideally we would use the standard deviation of the population, but we had access only to standard errors with NAEP data. Note that the standard error is the standard deviation divided by the square root of the sample size, and we know the population and percentage of the population consisting of school-age kids. For robustness we created a quasi-standard deviation by assuming kids are evenly distributed among the grades within a state and that NAEP samples the same percentage of kids in a state from year to year. This quasi-measure will be the actual standard deviation divided by the square root of the sampling percentage. Because all the models we estimate include state fixed effects, the square root of the sampling percentage will disappear as long as it is "fixed" for each state. When we ran the analyses using this quasi-measure we found qualitatively similar results. For transparency, we report the coefficient estimates when using the standard errors as the dependent variable.

2003. The NAEP data are less comprehensive, with only some states taking the test each year before 2002, when the administration of the test became universal. To accommodate this irregular schedule with our fixed-effects design we divided the NAEP scores into six "eras" or periods during which tests were taken rather than into annual intervals. Doing so measures time slightly less precisely but prevents missing data and should have little substantive effect on our findings.

Like Berry, our unit of analysis is the state and our model has a dummy for each state and for each year (or era). This design allows us to isolate changes in the dependent variable, if any, that occur after court action. Following Berry's example, we also include in our model controls for some state demographic factors, including the state population older than 65, state school-age population, total population, and income. Finally, we report state-clustered robust standard errors, as Berry suggested.

Our independent variables of interest are measures of judicial action in school finance lawsuits. We have dummy variables that represent whether the courts have overturned the state's school finance system on adequacy grounds, whether they have overturned that system on equity grounds, and whether they have upheld the funding system. These variables allow us to measure whether student outcomes are different after these court actions than they were before. But it is also possible that the impact of judicial involvement in school finance takes time to yield benefits for student achievement. To capture that possibility we have an alternative specification of the model in which we add a variable that counts the number of years since courts struck down the state school funding system.

In total we present 27 analyses—nine measures of student outcomes with three model specifications for each outcome. The nine dependent variables are state average scale scores and standard error of scores on the fourth-grade reading and math tests, the eighth-grade reading and math tests, and high school graduation rates. The three model specifications are as follows: The first model includes dummy variables for school finance formulas being overturned or upheld (with the excluded category being no challenge thus far), the second model replaces the overturned indicator with dummies specifying whether the school finance ruling was based on adequacy or equity grounds, and the third model adds to these dummies a counter for years since the court overturned the school finance system.

RESULTS

The clear conclusion across all analyses is that we find no evidence that judicial involvement in state school finance systems improves student achievement. As can be seen in Tables 1 through 6, none of the independent variables of interest

TABLE 1
Descriptive Statistics

	1992		*2005*	
Summary Statistics	*M*	*SD*	*M*	*SD*
Court Intervention				
SFJ	0.2500	0.4376	0.5098	0.5049
Equity	0.2174	0.4170	0.2600	0.4431
Adequacy	0.0435	0.2062	0.4800	0.5047
Upheld	0.2800	0.4536	0.4200	0.4986
Years Since SFJ	3.2000	6.5403	8.3137	11.2508
Outcomes				
Grade 4 reading	215.2893	8.3068	218.1141	7.4846
SE	1.2701	0.2663	1.0855	0.2280
Grade 4 math	218.4101	8.2994	237.0534	6.6979
SE	1.1610	0.245	0.8558	0.1768
Grade 8 reading	260.4437	7.1423	261.6131	7.0763
SE	1.2952	0.2568	1.0171	0.2264
Grade 8 math	266.3603	10.208	277.7520	8.5717
SE	1.1838	0.2897	0.9972	0.2477
Graduation rate	0.755	0.0762	0.7229	0.0846

Note. The earliest Grade 8 reading scores are from 1998, and the most recent graduation rates are from 2003 data. SFJ = school finance judgments.

is consistently positively related to our measures of student outcomes. When we measure academic achievement using test scores, the upheld indicator consistently has a negative sign, but it is only significant in 2 of 12 analyses and only at the nonconventional $p < .1$ level. The estimated coefficient for the adequacy indicator is positive and significant only once in 12 equations, and again it is only significant at the $p < .1$ level, which is likely because of chance when this many equations are estimated.

When the standard errors of exam scores are used, we have similar null findings. In these 12 analyses we estimate 36 coefficients on variables of interest and find only 2 statistically significant at the $p < .1$ level.

When graduation rates are used to measure academic achievement we find more statistically significant results; however, the coefficients on both the equity and adequacy indicators are *negative*, implying school finance judgments harm graduation rates rather than improve them. Although it is possible that schools somehow altered their priorities, leading to lower graduation rates following school finance judgments, we find it more plausible that these are spurious results. We find no evidence that judicial intervention in school finance leads to improved student achievement.

TABLE 2
Effect on 4th Grade Reading Scores and Distribution

	Grade 4 Reading Scores			*Grade 4 Reading SEs*		
% population > 65	1.1160	1.2580	1.202	−0.0079	−0.0165	−0.0166
	(0.9400)	(0.9600)	(0.960)	(0.0570)	(0.0570)	(0.058)
% population 5–17	0.3650	0.2460	0.224	0.0134	0.0229	0.0228
	(0.4100)	(0.4000)	(0.390)	(0.0340)	(0.0340)	(0.034)
Per-capita income	−3.233**	−3.560**	−3.654**	0.1040	0.1250	0.125
	(1.3500)	(1.4600)	(1.450)	(0.1000)	(0.1100)	(0.110)
Per-capita income sq	0.0417***	0.0460***	0.0477***	−0.0011	−0.0014	−0.00135
	(0.0160)	(0.0170)	(0.017)	(0.0011)	(0.0012)	(0.001)
Population	0.00253**	0.00246**	0.00239**	−0.0002	−0.0002	−0.00016
	(0.0012)	(0.0012)	(0.001)	(0.0001)	(0.0001)	(0.000)
Population squared	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.000)	(0.0000)	(0.0000)	(0.000)
SFJ indicator	−0.5370			−0.0155		
	(0.8300)			(0.0570)		
Upheld indicator	−0.9090	−1.0650	−1.185	−0.0569	−0.0620	−0.0622
	(0.8200)	(0.8300)	(0.850)	(0.0550)	(0.0560)	(0.056)
Adequacy indicator		−0.9360	−0.371		−0.0279	−0.027
		(0.8100)	(0.880)		(0.0510)	(0.057)
Equity indicator		1.7800	2.219		−0.0820	−0.0813
		(1.3700)	(1.350)		(0.0960)	(0.098)
Years since SFJ			−0.158			−0.00026
			(0.120)			(0.007)
Constant	238.5***	244.0***	246.9***	−0.0374	−0.4420	−0.437
	(26.7000)	(27.9000)	(27.800)	(2.1800)	(2.2700)	(2.280)
Observations	206	202	202	206	202	202
No. of states	48	48	48	48	48	48
R^2	0.49	0.50	0.5	0.38	0.39	0.39
F probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Note. Robust standard errors in parentheses. SFJ = school finance judgments.
** $p < .05$. *** $p < .01$.

DISCUSSION

In some ways these null findings are completely unsurprising. Given previous research suggesting little or no effect of increased school spending on student achievement and little or no effect of judicial involvement on total school spending, it is unremarkable that we find no relationship between court-ordered spending and educational outcomes. It would have been quite unusual if we had found any other result.

Yet, viewed in another way, these null findings are very unexpected. In more than half of the states, courts have ventured into school finance on the premise that

TABLE 3
Effect on 4th Grade Math Scores and Distribution

	Grade 4 Math Scores			*Grade 4 Math SEs*		
% population > 65	0.2300	0.1330	0.0836	−0.0374	−0.0229	−0.0205
	(1.0400)	(1.1400)	(1.150)	(0.0570)	(0.0590)	(0.059)
% population 5–17	1.001*	1.015*	0.938*	−0.0235	−0.0245	−0.0207
	(0.5400)	(0.5300)	(0.530)	(0.0370)	(0.0360)	(0.036)
Per-capita income	2.4400	2.741*	2.523	0.0095	0.0354	0.0464
	(1.5700)	(1.6200)	(1.590)	(0.0820)	(0.0850)	(0.086)
Per-capita income sq	−0.0301	−0.0341*	−0.0311	−0.0001	−0.0003	−0.00048
	(0.0190)	(0.0200)	(0.020)	(0.0010)	(0.0010)	(0.001)
Population	0.0018	0.0019	0.0018	0.0001	0.0001	0.0000
	(0.0015)	(0.0015)	(0.002)	(0.0001)	(0.0001)	(0.000)
Population squared	0.0000	0.0000	0.0000	0.0000	0.0000*	0.0000*
	(0.0000)	(0.0000)	(0.000)	(0.0000)	(0.0000)	(0.000)
SFJ indicator	0.0972			0.0028		
	(1.1200)			(0.0820)		
Upheld indicator	−1.872*	−1.1910	−1.314	0.0397	0.0060	0.0123
	(1.0400)	(1.0100)	(1.050)	(0.0790)	(0.0790)	(0.080)
Adequacy indicator		1.6910	2.342*		−0.0592	−0.0921
		(1.2800)	(1.270)		(0.0540)	(0.064)
Equity indicator		0.2310	0.78		−0.1850	−0.212*
		(1.5900)	(1.640)		(0.1200)	(0.120)
Years since SFJ			−0.147			0.00742
			(0.120)			(0.007)
Constant	147.0***	141.8***	147.9***	1.6140	1.0090	0.699
	(38.2000)	(39.5000)	(38.900)	(2.0100)	(1.9200)	(1.960)
Observations	127	125	125	127	125	125
No. of states	48	48	48	48	48	48
R^2	0.92	0.92	0.92	0.62	0.63	0.63
F probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Note. Robust standard errors in parentheses. SFJ = school finance judgments.
*$p < .1$. ***$p < .01$.

they could alter student outcomes. Tens of millions of dollars have been spent on the litigation. Courts have ordered tens of billions of dollars in increased spending (although if we believe Berry's results, this resulted in little or no more spending than legislatures would have done anyway). Judicial activity has raised serious concerns about separation of powers. The integrity and credibility of the judicial system was put on the line. If all of this was done for naught, that would be shocking indeed.

Unfortunately the evidence consistently shows that judicial involvement in school spending has yielded no improvements in student outcomes. Judges appear to have no special wisdom or advantage over their elected colleagues in

TABLE 4
Effect on 8th Grade Reading Scores and Distribution

	Grade 8 Reading Scores			*Grade 8 Reading SEs*		
% population > 65	1.7930	1.7900	1.9080	−0.1430	−0.1490	−0.1430
	(2.3400)	(2.3500)	(2.3500)	(0.1200)	(0.1100)	(0.1200)
% population 5–17	−0.7770	−0.8170	−0.7060	0.158**	0.153**	0.159**
	(0.7700)	(0.7900)	(0.7900)	(0.0640)	(0.0650)	(0.0650)
Per-capita income	−5.7490	−5.5360	−5.5510	0.2960	0.3590	0.3580
	(3.7800)	(3.9100)	(3.8800)	(0.2200)	(0.2300)	(0.2300)
Per-capita income squared	0.0784	0.0750	0.0764	−0.0042	−0.0052	−0.0051
	(0.0500)	(0.0520)	(0.0520)	(0.0030)	(0.0031)	(0.0031)
Population	−0.0017	−0.0018	−0.0019	0.0002	0.0002	0.0002
	(0.0037)	(0.0038)	(0.0037)	(0.0002)	(0.0002)	(0.0002)
Population squared	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
SFJ indicator	−0.1080			−0.0867*		
	(0.7800)			(0.0510)		
Upheld indicator	−1.1640	−1.2920	−1.0680	−0.0235	0.0175	0.0302
	(1.0000)	(1.1500)	(1.1700)	(0.0960)	(0.1100)	(0.1100)
Adequacy indicator		−0.2570	−0.0142		0.0558	0.0697
		(1.2200)	(1.2400)		(0.0880)	(0.0890)
Equity indicator		0.0000	0.0000		0.0000	0.0000
		0.0000	0.0000		0.0000	0.0000
Years since SFJ			−0.1780			−0.0102
			(0.2500)			(0.0160)
Constant	364.8***	362.9***	360.4***	−5.8260	−6.8930	−7.0330
	(68.5000)	(72.1000)	(70.6000)	(4.3700)	(4.5300)	(4.5600)
Observations	123	120	120	123	120	120
No. of states	48	48	48	48	48	48
R^2	0.17	0.17	0.18	0.35	0.33	0.34
F probability	0.0444	0.0496	0.0797	0.0076	0.0306	0.0170

Note. Robust standard errors in parentheses. SFJ = school finance judgments.
$^{*}p < .1$. $^{**}p < .05$. $^{***}p < .01$.

legislatures or on school boards in identifying the circumstances and manner in which additional spending would produce better education. Education policy is complicated, is highly technical, and involves strong conflicts of values and interests. Although elected legislators and school board members may suffer from parochial and short-term concerns in assessing these issues, courts suffer from other disadvantages. Courts are lacking in the deliberation and electoral accountability that might assist them in determining the credibility of competing claims about education policy. Without debating colleagues, as they do in legislatures, and without having to answer to voters, the unchallenged thinking of judges may lead them into errors.

TABLE 5
Effect on 8th Grade Math Scores and Distribution

	Grade 8 Math Scores			*Grade 8 Math SEs*		
% population > 65	0.188	0.241	0.21	0.0259	0.0355	0.0391
	(0.9900)	(1.0500)	(1.0500)	(0.0550)	(0.0590)	(0.0590)
% population 5–17	1.076*	1.131**	1.081*	0.0207	0.0136	0.0194
	(0.5600)	(0.5500)	(0.5600)	(0.0500)	(0.0430)	(0.0480)
Per-capita income	1.992	2.285	2.141	0.122	0.126	0.142
	(1.5800)	(1.6300)	(1.6300)	(0.1300)	(0.1200)	(0.1300)
Per-capita income squared	−0.0209	−0.0246	−0.0226	−0.00147	−0.00142	−0.00165
	(0.0180)	(0.0200)	(0.0200)	(0.0016)	(0.0014)	(0.0016)
Population	0.00227	0.00233	0.00228	0.000139*	0.000140*	0.000146*
	(0.0015)	(0.0015)	(0.0016)	(0.0001)	(0.0001)	(0.0001)
Population squared	0.0000	0.0000	0.0000	0.0000*	0.0000*	0.0000*
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
SFJ indicator	0.187			0.0229		
	(1.2900)			(0.1200)		
Upheld indicator	−1.923*	−1.679	−1.736	0.0262	0.000213	0.0068
	(1.0500)	(1.0800)	(1.1100)	(0.0760)	(0.0790)	(0.0780)
Adequacy indicator		0.769	1.171		−0.0256	−0.0717
		(1.5100)	(1.5400)		(0.1000)	(0.1400)
Equity indicator		−0.161	0.172		0.0335	−0.00479
		(3.0000)	(3.1300)		(0.1800)	(0.1700)
Years since SFJ			−0.0891			0.0102
			(0.1400)			(0.0130)
Constant	199.2***	191.7***	195.7***	−2.219	−2.344	−2.798
	(39.5000)	(40.4000)	(40.9000)	(3.1400)	(2.8100)	(3.1000)
Observations	126	124	124	126	124	124
No. of states	48	48	48	48	48	48
R^2	0.80	0.80	0.80	0.50	0.48	0.49
F probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Note. Robust standard errors in parentheses. SFJ = school finance judgments.
* $p < .1$. ** $p < .05$. *** $p < .01$.

Democracy has its virtues as well as its defects. On balance we think the virtues are greater. This is why under normal circumstances our system of government is designed to have policy decisions, like the level of education spending, made by democratic bodies, like legislatures. Our frustrating inability to improve educational outcomes over the last several decades has opened the door to more extraordinary arrangements, including judicial involvement in determining the level of education spending. But the solution to our long-standing problems may not be found in who is driving the spending, courts or legislatures, but in what policies shape the education system in which that spending occurs. It may not be

TABLE 6
Effect on Graduation Rates

	Graduation Rates		
% population > 65	0.0028	0.0046	0.0051
	(0.0038)	(0.0039)	(0.0039)
% population 5–17	0.0047	0.0028	0.0031
	(0.0031)	(0.0031)	(0.0032)
Per-capita income	−0.0106	−0.0133**	−0.0121*
	(0.0064)	(0.0066)	(0.0066)
Per-capita income squared	0.0001	0.000135*	0.0001
	(0.0001)	(0.0001)	(0.0001)
Population	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)
Population squared	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)
SFJ indicator	−0.0061		
	(0.0075)		
Upheld indicator	−0.0062	−0.00922**	−0.00833*
	(0.0047)	(0.0045)	(0.0045)
Adequacy indicator		−0.0112*	−0.0140**
		(0.0060)	(0.0060)
Equity indicator		−0.0524***	−.0552***
		(0.0080)	(0.0084)
Years since SFJ			0.00111*
			(0.0007)
Constant	0.839***	0.909***	0.872***
	(0.1500)	(0.1500)	(0.1500)
Observations	613	589	589
No. of states	48	48	48
R^2	0.34	0.38	0.38
F probability	0.0000	0.0000	0.0000

Note. Robust standard errors in parentheses. SFJ = school finance judgments.
* $p < .1$. ** $p < .05$. *** $p < .01$.

how much we spend as much as the incentive system that shapes whether that spending is used wisely.

None of this is meant to suggest that student outcomes cannot be improved or that increased spending could not contribute to those better outcomes. The problem is that the system in which we have spent, whether by judicial fiat or by legislative act, has squandered those additional resources. Unless we think the next wave of court-ordered spending will yield a result different from the last wave, school finance litigation is not a promising avenue for education reform. The solution will have to be found in revising the structure of the school system and that will almost certainly have to be done in legislatures.

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