

DRAFT

Center for American Progress



**American Enterprise Institute
for Public Policy Research**

The Federal Role in Improving Educational Productivity

Martin West, Harvard Graduate School of Education

Corresponding author's email:

westma@gse.harvard.edu

This conference draft has not been through a final editorial process at either of the sponsoring organizations, nor does it necessarily represent the views of either organization. Please do not cite without permission from author.

Prepared for "Tightening Up Title I", a conference sponsored jointly by the Center for American Progress and the American Enterprise Institute.

March 11, 2011

The collected papers for this conference can be found at this URL:

<http://www.americanprogress.org/events/2011/03/TitleI.html>

DRAFT

Introduction

Although it is difficult to recall in these partisan times, the federal No Child Left Behind Act (NCLB) was enacted in 2001 with overwhelming support from both Democrats and Republicans. The law's bipartisan backing reflected a broad consensus among federal policymakers that schools should be held accountable for their success in improving student achievement – and that Title I of the Elementary and Secondary Education Act (ESEA) provided an appropriate vehicle for requiring states to do so.¹

Over the past decade, of course, NCLB has been subjected to a withering array of criticism, much of it focused on the specific ways the law measures student achievement and the success (or lack thereof) of schools in improving it. While opponents of standardized testing and of federal involvement in K-12 education exploit these critiques in an attempt to undermine support for the law, observers sympathetic with the goal of enhanced accountability for American schools share many of their concerns. Credible evidence now confirms that NCLB accountability requirements have improved the math achievement of American students.² Even so, a new consensus has rightly emerged on the urgency of revising the law's performance metrics.

Much less discussed is the law's inattention to what is likely to be the defining issue for the American education system for the foreseeable future: the need to boost the productivity of school spending. While NCLB ensures that detailed information on student achievement is now available to the public from school report cards and online information sources, accurate and timely data on education spending remains difficult, if not impossible, to obtain. The law implicitly defines success in terms of outcomes produced without taking into account the level of resources expended to produce them. With few exceptions, states and school districts have likewise paid scant attention to the issue of spending productivity. Nor has the education research community, which often evaluates policies based solely on their success in improving outcomes, ignoring cost considerations altogether.³

This long-standing neglect of productivity concerns is especially problematic at the present moment, as all indications are that our schools will need to become more productive even if we are to maintain current levels of student performance. The fiscal pressures facing school districts in the aftermath of the 2008-09 financial crisis, already strong despite the flow of temporary federal stimulus funds, are poised to intensify as that funding recedes. More than 30 states have cut education outlays since the start of the recent recession, and the Center for Budget and Policy Priorities reports that "2012 is shaping up as states' most difficult budget year on record."⁴ The local tax revenues on which many school districts depend are projected to decline for several years as property valuations incorporate the full extent of the housing market's collapse. Over the long run, the rising cost of entitlement programs threatens to place competing demands on budgets at all levels of American government. In short, the current imperative in American education is to do more with less. As U.S. Secretary of Education Arne Duncan explained in a recent speech, "The alternative is to simply end up doing less with less. This is fundamentally unacceptable."⁵

This paper argues that the federal government can and should play a limited but important role in helping the nation address the challenge of improving the productivity of education spending. In particular, it should promote transparency about the level of spending throughout the American education system, support research on cost-effective ways to improve student outcomes, and encourage the development of new education delivery models that have the potential to reduce costs. It should also set an example by considering cost-effectiveness in funding decisions and jettisoning its own programs with outdated rationales or weak evidence of effectiveness. The long-awaited reauthorization of ESEA provides a welcome opportunity for Congress to accomplish each of these goals.

DRAFT

Two Approaches to Education Regulation

The history of federal education policy can be broadly characterized as consisting of two distinct regulatory approaches. The original Elementary and Secondary Education Act of 1965 (ESEA) aimed to provide federal funds to school districts to improve the services available to low-income students. Over time, Congress and the Department of Education adopted increasingly detailed compliance and reporting requirements to ensure that districts did not divert these funds from their intended beneficiaries or use them to reduce local spending on public education.

The test-based accountability movement that emerged in the 1990s reflected growing doubts that this input-oriented approach was sufficient to ensure that federal spending led to better outcomes for low-income students. With the passage of NCLB, the federal government embraced the notion that schools be held accountable not just for how they used federal dollars, but also for the outcomes they produced. Yet while often presented as an attempt to ensure that school districts use available resources more wisely, outcome-based regulation on its own is unlikely to be effective in improving educational productivity.

Input Regulation

In theory, there are several conditions under which an input-based approach to federal regulation may be the optimal strategy in a given policy area. A focus on inputs is the only option when it is not possible to measure outcomes reliably – or when there is a lack of consensus about which outcomes are most important. Input regulations are also more likely to be successful when the underlying process by which outcomes are produced is well understood, making it possible to determine both what is an adequate overall level of resources and how best to use those resources to maximize performance.

At the time of ESEA's passage, outcome measurement in public education was in its infancy. Even if it were possible to reach consensus about how best to define and measure student outcomes, the federal government had neither the political license nor the administrative capacity to pursue required testing.⁶ As important, those responsible for the law's design had strong faith in the capacity of professional educators to use the new resources provided by the law well. As one staffer in the Department of Health, Education, and Welfare later explained, "In 1965, everyone had a naïve view of education. We felt...educators were all good people and that all you needed to do was give them some tools and some dollars and good things would happen."⁷

To be sure, this view had dissenters even at the time. After reviewing the Johnson administration's initial legislative proposal, Senator Robert F. Kennedy told U.S. Commissioner of Education Frank Keppel, "Look, I want to change this bill because it doesn't have any way of measuring those damned educators like you, Frank, and we really out to have some evaluation in there, and some measure as to whether any good is happening."⁸ At Kennedy's urging, Congress added language requiring districts to submit annual evaluations of their Title I programs and disseminate information about "promising educational practices." In practice, however, few districts submitted evaluations – and the under-staffed Office of Education lacked the capacity to analyze the limited data that did arrive.⁹

Over time, it became clear that ESEA's input-based regulatory approach was insufficient to lead to substantially improved outcomes for the students the law aimed to help. Most troubling was evidence that the increasingly heavy-handed regulations intended to ensure that federal resources reached their intended beneficiaries raised school districts' administrative costs and may in some cases have undermined the quality of educational services. The canonical example is the Title I pull-out program, through which eligible students were removed from classrooms on an individual basis or in small groups

DRAFT

to receive specialized training from teachers funded with federal dollars. Although never required under federal guidelines, pull-outs appealed to local administrators forced to document that Title I dollars were being used only on eligible students and to supplement, not supplant, existing programming. A 1983 Twentieth Century Fund Report dismissed pull-outs as “constitutionally dubious, educationally questionable, and unsupported by the evidence from most evaluations.”¹⁰ Yet at the time they accounted for more than half of all Title I compensatory education programs.

Accountability for Outcomes

The test-based accountability policies that first emerged at the state-level in the 1990s represented an alternative approach to performance regulation. The articulation of state standards in core academic subjects made it possible to identify a set of outcome measures that, although they did not encompass the full range of goals citizens have for their public schools, could be applied as basic expectations throughout a state. And research confirms that states that adopted accountability systems rewarding or sanctioning schools based on their student’s performance against state standards improved their students’ relative standing on the National Assessment of Educational Progress (NAEP) during the decade leading up to NCLB.¹¹

With NCLB, Congress required that all states adopt such systems as a condition for receiving federal aid through Title I. It also broadened the scope of federal regulation to extend beyond the low-income students eligible for compensatory programs. In particular, the law required states to establish uniform standards in math and reading, test all students annually in grades three to eight and once in high school to ensure that those standards were being met, and intervene in schools and districts failing to make adequate progress toward the goal of universal student proficiency by 2014.

As the law was implemented, the shortcomings of certain aspects of NCLB accountability quickly became apparent. By evaluating schools based on the level at which students are performing in a given year, the law provides misleading information about schools’ effectiveness in raising student achievement from one year to the next.¹² By focusing on the percentage of students performing at proficient levels rather than on school-wide averages, it may lead schools to ignore students performing at very low or high levels.¹³ By adopting the aspirational goal of universal student proficiency, it risks labeling virtually all schools as under-performing and inadvertently pressures states to lower their performance standards.¹⁴ Although widely perceived as a high-stakes accountability regime, a loophole in the law’s intervention options for persistently under-performing schools has allowed most of them to remain open with only modest changes.¹⁵

Yet, for all its limitations, the best available evidence suggests that NCLB has generated at least limited improvements in the achievement of American students. The strongest evidence to support this claim comes from economists Thomas Dee and Brian Jacob, who compared the changes in NAEP performance as the law was implemented among states the law required to adopt consequential accountability policies for the first time to the changes in performance of states with such systems already in place. Their results indicate that the accountability provisions of NCLB increased 4th grade math achievement by more than 0.2 standard deviations, or well over one half of a year’s worth of learning, with larger benefits estimated for low-achieving, economically disadvantaged, and minority students. They also find evidence of smaller positive effects on 8th-grade math achievement, but no evidence that NCLB has increased performance in reading.¹⁶ To be sure, these gains are limited to one subject and represent just a fraction of the improvement that would be needed in order to meet the law’s goal of universal student proficiency. Even so, the existing evidence provides a strong basis for the continued use of test-based accountability as a means to generate improvements in the performance of American schools.

DRAFT

If a more refined accountability system represents a promising strategy for generating improved performance, however, it is by no means sufficient to address the nation's productivity challenge. Indeed, Dee and Jacob's research also shows that NCLB led states adopting accountability policies to increase spending from state and local sources by roughly \$700 per pupil as the law was implemented. While the improvements in math performance that resulted suggest that this was a relatively cost-effective investment relative to other widely pursued educational interventions, there is no evidence that the law led districts to do more with less.¹⁷

The Productivity Imperative

This should come as no surprise. The accountability programs developed under NCLB and its state-level predecessors focus exclusively on improving student test scores and closing achievement gaps without considering whether school districts accomplish those vital goals in a cost-effective way. District leaders who succeed in shaving costs while holding performance constant can therefore expect little public recognition or reward, even as spendthrift leaders who eke out test score gains are lavished with praise. When budgets decline, existing accountability systems may press districts to seek out those cost-cutting measures which are least likely to impact student achievement adversely. Yet by ignoring inputs they create asymmetric incentives under which productivity gains are only acknowledged if they are accomplished through noticeable increments in student achievement.

Moreover, the electoral incentives facing the more than 13,500 school boards charged with the day-to-day management of American school districts do not incline them to challenge established routines in pursuit of greater productivity, even when budgets are tight. By definition, enhancing productivity requires either that resources be reallocated from less efficient to more efficient uses or that inefficient practices be altered. Either approach imposes concentrated costs on discrete constituencies who will readily mobilize against change, and the structure of local education politics works to their advantage. School board elections are low-turnout affairs in which information about candidates and their positions is notoriously difficult for voters to obtain, enabling organized interests to exert outsized influence. The general public, which stands to benefit from improved productivity through reduced tax burdens, increased property values and access to better schools, is far more difficult to mobilize for political action.¹⁸

Accountability programs' inattention to inputs, combined with the complexity of state school finance systems, makes accurate information on school spending difficult for the public to obtain. The 2009 *Education Next*-PEPG Survey of Public Opinion showed that citizens are able to provide reasonably accurate assessments of the national graduation rate and the relative standing of American students on international assessments of math and science. When asked to assign letter grades to specific schools in their community, their evaluations tend to correspond closely to publicly available information on the performance of the school's students on state tests.¹⁹ These findings suggest that the accountability movement has succeeded in providing Americans with ample information about the performance of the nation's schools.

They also diverge sharply from the findings of surveys probing their knowledge of school spending. When the 2007 *Education Next*-PEPG Survey asked citizens to estimate how much was spent to educate each student in their local school district, the average response was \$4,231 dollars – and the median response was just \$2,000. (Actual average spending per pupil in their districts at the time exceeded \$10,000.) They also underestimated average teacher salaries in their state by more than \$14,000, or nearly one-third of the actual average salaries of \$47,000.²⁰ Such contrasting levels of public awareness

DRAFT

about student outcomes and spending inputs both reflect and reinforce a one-dimensional rewards system in which student outcomes are valued but productivity is ignored.

Addressing this situation makes sense in light not only of the nation’s short- and long-term fiscal challenges, but also of the considerable evidence suggesting that the productivity of education spending in the United States could be substantially improved. It is often noted that per pupil spending has increased more than three-fold since 1970 after adjusting for inflation, while graduation rates and the academic performance of high-school students have remained essentially flat.²¹ Using historical data from the NAEP, Stanford economist Caroline Hoxby has estimated that the productivity of school spending declined by as much as 70 percent between 1971 and 1999. The expansion of professional opportunities available to women with graduate degrees during this period, a factor that raised labor costs for school districts, can account for no more than one third of the overall decline.²² International evidence, too, suggests substantial room for improvement. The latest data from the Organization for Economic Cooperation and Development (OECD), for example, indicates that the U.S. spends more on the education of each student through age 15 than any other developed country save Luxembourg, yet the performance of its students on international assessments of math and science achievement is mediocre at best.²³

Recent attempts to develop comparable productivity measures for large numbers of school districts confirm that the efficiency of district spending varies widely. In the most ambitious undertaking to date, Ulrich Boser of the Center for American Progress merged NCLB state test data with information on district spending to develop a productivity rating for virtually every school district in the United States. A key finding of his analysis is that the data needed to adjust for cost differences across school districts (and therefore to measure productivity precisely) are often lacking, which reflects of the paucity of attention that has been devoted to the subject. Taken at face value, however, the results indicate that districts with below-average productivity spend nearly \$1,000 per student each year more than districts with above-average productivity. Closing this gap would yield \$175 Billion in savings, or roughly 1 percent of national gross domestic product.²⁴ A 2010 analysis of overall district productivity conducted by the Texas Comptroller’s Office, using more detailed measures of districts’ success in raising student achievement, also found wide variation in spending levels among similarly situated Texas districts in which students were learning at the same rate.²⁵

Taking Productivity Seriously

Bringing productivity considerations into performance measurement in public education is conceptually straightforward. NCLB currently categorizes schools and districts as making adequate yearly progress or in need of improvement based on the level and equity of student outcomes. A productivity-oriented approach would simply incorporate a second dimension into school evaluations that reflects the level of resources expended to achieve a given level of performance with respect to student outcomes (see Figure 1).

Figure 1. Conceptual framework for productivity-aware accountability system

	LOW PERFORMING	HIGH PERFORMING
LOW SPENDING	Priority for new investment	Potential Models
HIGH SPENDING	Priority for outside intervention	Priority for productivity gains

Schools or districts performing at high levels while spending less than their counterparts serving comparable students would be identified as models for productivity improvements elsewhere. Those that perform at high levels while spending more than their peers would be encouraged to seek strategies to boost their efficiency – or perhaps to justify their spending levels by documenting success in pursuing other goals not acknowledged by existing performance measures. For schools or districts with low performance and low spending, this approach would maintain pressure to improve outcomes while potentially highlighting inequities in the distribution of funds between and within districts as an obstacle to their doing so. Finally, schools and districts which under-perform despite relatively high spending would be identified as candidates for outside intervention by the district (in the case of schools) or the state. It is easy to see how incorporating spending levels into rating systems would provide a more nuanced picture of the performance of American schools and foster for a richer and more appropriate set of incentives than outcome-based accountability alone.

Of course, this approach carries risks that need to be taken seriously. It is often feared, for example, that identifying school districts as inefficient would undermine support for school spending, perhaps aggravating the challenge of improving outcomes in those districts most in need of improvement. Indeed, polling data suggests that citizens informed about actual spending levels in their local school districts are substantially less likely to express support for spending increases.²⁶ For this reason, success in improving student outcomes should continue to be reported separately and used as the primary basis for any explicit rewards and sanctions tied to performance metrics. In particular, districts and schools with low levels of performance and spending should not be exempted from policies intended to boost student outcomes on the grounds that they are not obviously less efficient than peers performing at higher levels.

The measurement of educational productivity also raises difficult technical issues that researchers in the field have only begun to acknowledge, much less to address in satisfactory ways.²⁷ Perhaps most critical is the need to adjust reliably for legitimate differences in the cost of education outside of the control of districts or their schools. The cost of educating students to high levels of performance is obviously higher for students from disadvantaged backgrounds, students with special needs, and English language learners, to cite only the most prominent and common examples. Additional factors that may influence the cost of providing educational services across districts include regional salary differences, population density, and district size. Although analysts evaluating the equity of school finance systems have proposed a variety of strategies intended to account for these cost differentials, the wide range of approaches currently in use illustrates the lack of consensus on an optimal approach.²⁸

Although these technical issues are likely to prove tractable as better data becomes available, our limited experience with the development and use of productivity measures in public education has implications for the nature of the federal role. The federal government is not in a position to address all

DRAFT

of these challenges or to impose a uniform approach across all 50 states. Here the national experience with NCLB is again instructive. In designing an approach to test-based accountability that could be mandated nationwide, Congress out of necessity adopted a lowest-common-denominator model that restricted the options available to states with the capacity to provide more nuanced measures of school performance and arguably slowed the development of such measures. Especially given the lack of state-level models for the measurement of educational productivity, the case for not mandating a specific approach in this area is even stronger.

The Federal Role

The federal government should instead pursue a more limited agenda centered around promoting transparency about school spending, research on strategies to enhance productivity, and the elimination of barriers to the development of new models of education delivery.

Most important, Congress should condition the receipt of Title I funds on the timely disclosure of comparable measures of per pupil spending at the level of the state, district, and school alongside the test-based metrics that now dominate school report cards. Traditionally expenditure reporting at the federal level has been limited to the district level and released well over a year after the relevant school year has ended. This new federal requirement would build on the school-level expenditure reporting mandated as a one-time requirement under the American Reinvestment and Recovery Act of 2009 and facilitate the broader dissemination of that information. By requiring that school spending reports reflect actual teacher salaries rather than the district-wide salary averages (the common practice in district financial reporting), it could also serve to highlight within-district disparities in spending caused by the migration of experienced teachers to schools serving more advantaged students and create pressure for equity-oriented reform. States like Florida and California, which have now required school-level expenditure reporting for several years, show that it is possible to do so in a way that minimizes the compliance burden on districts and schools.

A new competitive grant program could then be launched to encourage State Education Agencies and private entities to develop and disseminate “Return on Investment” performance measures that use alternative methods to adjust for relevant cost differences across districts and schools. Although such adjustments would necessarily be imperfect, even relatively crude measures would enhance the transparency of information about district and school performance and foster local discussions of strategies to improve productivity. The recent studies by the Center for American Progress and the Texas Comptroller’s Office confirm the feasibility and value of this type of exercise.

The Department of Education should also require that data systems funded with federal dollars incorporate program participation and cost information needed to analyze the cost-effectiveness of specific programs. State administrative datasets tracking the performance of individual students over time and linking them to their classroom teachers have revolutionized research on teacher effectiveness and opened up new opportunities for state and local policymakers in areas such as teacher evaluation, certification, and compensation. Yet these databases often contain very limited information about the programs and curricula to which students and teachers have been exposed and their cost. Establishing stronger connections between data on student outcomes, program participation, and cost is essential to facilitate research on cost-effectiveness. Although these connections alone will not necessarily provide definitive evidence on the causal effect of programs on student outcomes, they would provide the necessary infrastructure to design studies that could be expected to improve our understanding of how to improve productivity over time.

DRAFT

Perhaps most importantly, the federal government should pressure states to eliminate barriers to the expansion of new education delivery models that have the potential to reduce costs. In particular, the rapid development of online instructional technologies could dramatically reduce the labor-intensiveness of schooling and therefore staffing costs, which have been the main driver of the growth in education spending over time.²⁹ The effectiveness of virtual schooling models remains uncertain and needs to be monitored carefully. As John Chubb and Terry Moe have documented, however, political resistance has slowed the development, adoption, and testing of these models in many states.³⁰ For this reason, a 2010 Brookings Institution Task Force proposed “that Congress authorize the establishment of accrediting bodies for online K-12 education, incentivize states to participate in these accrediting efforts, and extend the Elementary and Secondary Education Act provisions for school choice for students in low performing Title I schools to virtual schools.”³¹

Finally, Congress and the U.S. Department of Education should set an example for states and school districts by prioritizing productivity in their own funding decisions. As Secretary Duncan has recently noted, the recent Investing in Innovation (i3) program represented the first competitive grant program to incorporate unit cost formally into its selection criteria, something that should now become standard practice.³² It should prioritize programs like the Teacher Incentive Fund, which are meant to catalyze local innovation on politically contentious policy issues like teacher compensation rather than cover the cost of add-on programs. Finally, and especially in light of the state of the federal budget, Congress should eliminate their own programs with outdated rationales and limited evidence of effectiveness. A variety of organizations, including the Center for American Progress, have developed detailed recommendations that provide a roadmap for this politically difficult, but essential, exercise.³³

Endnotes

¹ Andrew Rudalevige, "Forging a Congressional Compromise," in Paul E. Peterson and Martin R. West, eds., *No Child Left Behind? The Politics and Practice of School Accountability* (Brookings Institution Press, 2003), pp. 23-54.

² Thomas S. Dee and Brian A. Jacob, "The Impact of No Child Left Behind on Student Achievement," *Journal of Policy Analysis and Management* (forthcoming); Manyee Wong, Thomas D. Cook, and Peter Steiner, "No Child Left Behind: An Interrupted Evaluation of its Effects on Learning Using Two Interrupted Time Series each with its own Non-Equivalent Comparison Series," Institute for Policy Research Working Paper Series (Northwestern University, 2009), available at <http://www.northwestern.edu/ipr/publications/papers/2009/wp0911.pdf>.

³ For an important early paper calling on researchers to incorporate cost considerations, see Henry M. Levin, "Cost-effectiveness and educational policy," *Education Evaluation and Policy Analysis*, Vol. 10, No. 1(1988), pp. 51-69. Other exceptions include Douglas N. Harris, "Toward Policy-Relevant Benchmarks for Interpreting Effect Sizes: Comparing Benefits with Costs," *Education Evaluation and Policy Analysis*, Vol. 31, No. 1(2009), pp. 3-29; and Frederick M. Hess and Eric Osberg, eds., *Stretching the School Dollar: How Schools and Districts Can Save Money While Serving Students Best* (Harvard Education Press, 2010).

⁴ Nicholas Johnson, Phil Olif, and Erica Williams, "An Update on State Budget Cuts" (Washington DC: Center on Budget and Policy Priorities, 2010), available at <http://www.cbpp.org/files/3-13-08sfp.pdf>; Elizabeth McNichol, Phil Olif, and Nicholas Johnson, "States Continue to Feel Recession's Impact" (Washington DC: Center on Budget and Policy Priorities, 2010), available at <http://www.cbpp.org/files/9-8-08sfp.pdf>.

⁵ Arne Duncan, "The New Normal: Doing More with Less," Speech delivered at the American Enterprise Institute on November 17, 2010, available at <http://www.ed.gov/news/speeches/new-normal-doing-more-less-secretary-arne-duncans-remarks-american-enterprise-institut>.

⁶ Paul Manna, *School's In: Federalism and the National Education Agenda* (Georgetown University Press, 2006).

⁷ Christopher T. Cross, *Political Education: National Policy Comes of Age* (Teachers College Press, 2004), p. 29.

⁸ Abigail Thernstrom and Stephen Thernstrom, *No Excuses: Closing the Racial Gap in Student Learning* (Simon and Schuster, 2003), p. 215.

⁹ Gareth Davies, *See Government Grow: Education Politics from Johnson to Reagan* (University of Kansas Press, 2007).

¹⁰ Twentieth Century Fund, *Making the Grade: Report of the 20th Century Fund Task Force on Federal Elementary and Secondary Education Policy* (Priority Press Publications, 1983), p. 102.

¹¹ Eric A. Hanushek and Margaret E. Raymond, "Does school accountability lead to improved student performance?" *Journal of Policy Analysis and Management*, vol. 24, no. 2 (2005), pp. 297-327; Martin Carnoy and Susanna Loeb, "Does External Accountability Affect Student Outcomes? A Cross-State Analysis," *Education Evaluation and Policy Analysis*, vol. 24, no. 4 (2002), pp. 305-331.

¹² Paul E. Peterson and Martin R. West, "Is Your Child's School Effective? Don't Rely on No Child Left Behind to Tell You," *Education Next*, vol. 6, no. 4 (2006), pp. 76-80.

¹³ Derek Neal and Diane Whitmore Schanzenbach, "Left Behind by Design: Proficiency Counts and Test-Based Accountability," NBER Working Paper No. 13293 (Cambridge, Mass: National Bureau of Economic Research, 2007).

¹⁴ James E. Ryan, "The Perverse Incentives of The No Child Left Behind Act," *New York University Law Review*, vol. 79, pp. 932-988.

¹⁵ Sara Mead, “Easy Way Out: ‘Restructured’ usually means little has changed,” *Education Next*, vol. 7, no. 1 (2007), pp. 52-56.

¹⁶ Dee and Jacob, “The Impact of No Child Left Behind on Student Achievement.”

¹⁷ Thomas S. Dee and Brian A. Jacob, “The Impact of No Child Left Behind on Students, Teachers and Schools,” *Brookings Papers on Economic Activity* (Fall 2010). Available at http://www.brookings.edu/~media/Files/Programs/ES/BPEA/2010_fall_bpea_papers/2010fall_deejacob.pdf

¹⁸ For an elaboration of this argument, see Martin R. West, “Overcoming the Political Barriers to Change,” in Frederick M. Hess and Eric Osberg, eds., *Stretching the School Dollar: How Schools and Districts Can Save Money While Serving Students Best* (Harvard Education Press, 2010), pp. 263-289.

¹⁹ Matthew M. Chingos, Michael Henderson, and Martin R. West, “Grading Schools: Can citizens tell a good school when they see one?” *Education Next*, vol. 10, no. 4 (2010), pp. 60-67; Matthew M. Chingos, Michael Henderson, and Martin R. West, “Citizen Perceptions of Government Service Quality: Evidence from Public Schools,” Program on Education Policy and Governance Working Paper 10-03 (2010).

²⁰ William G. Howell and Martin R. West, “Is the Price Right? Probing Americans’ Knowledge of School Spending,” *Education Next*, vol. 8, no. 3 (2008), pp. 37-41.

²¹ Eric A. Hanushek, “The Failure of Input-Based Schooling Policies,” *The Economic Journal*, vol. 113 (2003), pp. F64-F98.

²² Caroline M. Hoxby, “School Choice and School Productivity,” in Caroline M. Hoxby, ed., *The Economics of School Choice* (University of Chicago Press, 2003), pp. 287-341. Another factor affecting education costs during this period was the expansion of services for students in need of special education in response to Section 504 of the Rehabilitation Act and the Individuals with Disabilities Education Act. Data limitations make it difficult to isolate the additional cost of these policies, but most analysts conclude that they can explain only a small portion of the total growth for the nation as a whole (although they may be a more important factor in some districts). See, e.g., Eric A. Hanushek and Steven Rivkin, “Understanding the Twentieth-Century Growth in School Spending,” *Journal of Human Resources*, vol. 1, no. 32 (1997), pp. 35-68.

²³ Organization of Economic Cooperation and Development, *Strong Performers and Successful Reformers in Education: Lessons from PISA for the United States* (OECD, 2010), available at <http://dx.doi.org/10.1787/9789264096660-en>.

²⁴ Ulrich Boser, “Return on Educational Investment: A district-by-district evaluation of U.S. educational productivity,” (Washington, DC: Center for American Progress, 2011).

²⁵ Texas Comptroller of Public Accounts, “Financial Allocation Study for Texas” (2010). Available at <http://www.fastexas.org>.

²⁶ William G. Howell and Martin R. West, “Educating the Public,” *Education Next*, vol. 9, no. 3 (2009), pp. 40-47.

²⁷ Leanna Stiefel, Amy Ellen Schwartz, Ross Rubenstein, and Jeffrey Zabel, eds., *Measuring School Performance and Efficiency: Implications for Practice and Research* (Eye on Education, American Education Finance Association 2005 Yearbook).

²⁸ For a recent discussion of these issues in the context of the equity of school spending, see Bruce D. Baker, David G. Sciarra, and Danielle Farrie, “Is School Funding Fair? A National Report Card” (Education Law Center, 2010), available at <http://www.schoolfundingfairness.org>.

²⁹ Paul E. Peterson, *Saving Schools: From Horace Mann to Virtual Learning* (Harvard University Press, 2010).

³⁰ Terry M. Moe and John E. Chubb, *Liberating Learning: Technology, Politics, and the Future of American Education* (Josey-Bass, 2009).

³¹ Jay P. Greene, et al. "Expanding Choice in Elementary and Secondary Education: A Report on Rethinking the Federal Role in Education" (Brown Center on Education Policy at the Brookings Institution, 2010), available at http://www.brookings.edu/~media/Files/rc/reports/2010/0202_school_choice/0202_school_choice.pdf.

³² Arne Duncan, "The New Normal: Doing More with Less," Speech delivered at the American Enterprise Institute on November 17, 2010, available at <http://www.ed.gov/news/speeches/new-normal-doing-more-less-secretary-arne-duncans-remarks-american-enterprise-institut>.

³³ Glenda L. Partee, "Education Transformation: Doing What Works in Education Reform" (Center for American Progress, 2011), available at http://www.americanprogress.org/issues/2010/04/pdf/dww_education.pdf.