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Productivity Research, The U.S. Department of Education, and High-Quality Evidence

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Productivity Research, the U.S. Department of Education, and High-Quality Evidence

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Executive Summary

America's leaders have frequently invoked the principle that important policy decisions should be evidence-based. This rhetorical embrace, however, has not always prevailed against the appeal of policy ideas with political resonance or other perceived advantages. The following analysis describes a particularly egregious example of this phenomenon: the approach taken by the U.S. Department of Education in its "Increasing Educational Productivity" project. This example illustrates the harm done when leaders fail to ground policy in high-quality research.

The Department of Education has set forth a series of documents explaining how public school districts can stretch their dwindling dollars by becoming more productive and efficient. This brief explains that neither the materials listed nor the recommendations found in those materials are backed by substantive analyses of cost effectiveness or efficiency of public schools, of practices within public schools, of broader policies pertaining to public schools, or of resource allocation strategies. Instead, the sources listed on the website's resources page are speculative, non-peer-reviewed think tank reports and related documents that generally fail to include or even cite the types of analysis that would need to be conducted before arriving at their conclusions and policy recommendations. These omissions are particularly troubling because high-quality research in this area is available that would provide the sort of policy guidance the Department is ostensibly seeking.

This policy brief reviews the Department's stated policy objectives, provides a brief explanation of the types of analysis that should typically be conducted when attempting to draw conclusions regarding cost-effective strategies, examines the resources listed on the Department's website, critiques that content, and then offers recommendations for a research agenda that would aid in providing more thoughtful information on improving educational efficiency.

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Introduction

Advocating the idea of improving the productivity and efficiency of America's public schools, Secretary of Education Arne Duncan and the U.S. Department of Education have repeatedly promoted a so-called *New Normal* for public schools. "It's time to stop treating the problem of educational productivity as a grinding, eat-your-broccoli exercise. It's time to start treating it as an opportunity for innovation and accelerating progress"[1] The premise of the New Normal idea is that tight budgets are going to remain in place for the next several years at least and will therefore require that schools "do more with less." This idea has been embraced by pundits such as David Brooks[2] and by conservative organizations such as the American Enterprise Institute (AEI), which is where Secretary Duncan gave his main speech on the topic (on Nov. 17, 2010). As part of the Department of Education's campaign, it unveiled on its website a series of supporting documents explaining how public school districts can live within that New Normal, stretching their dwindling dollars by becoming more productive and efficient.[3]

This brief examines the materials provided by the Department as guiding resources. Our examination shows that neither the materials listed nor the recommendations found in those materials are backed by substantive analyses of cost effectiveness or efficiency of public schools, of practices within public schools, of broader policies pertaining to public schools, or of resource allocation strategies.[4] Instead, the sources listed on the website's resources page are speculative, non-peer-reviewed think tank reports and related documents, including a PowerPoint slide show and two edited books, that generally fail to include or even cite the types of analysis that would need to be conducted before arriving at their conclusions and policy recommendations.[5] These omissions are particularly troubling because high-quality research in this area is available that would provide the sort of policy guidance the Department is ostensibly seeking.

In the sections that follow, we begin by reviewing the Department's stated policy objectives. Next, we provide a brief explanation of the types of analysis that should typically be conducted when attempting to draw conclusions regarding cost-effective strategies. Specifically, we review well-documented and widely published analysis frameworks for conducting cost-effectiveness, cost-benefit, and efficiency analyses. We then look at the resources listed on the Department's website, and we offer a critique of that content, noting the lack of serious empirical analyses behind boldly stated conclusions. Finally, we offer recommendations for a research agenda that would aid in providing more thoughtful information on improving educational efficiency.

Policy Interests as Framed by the Department

In its promotion of educational productivity on its website, the Department of Education expresses a set of policy goals.[6] While the website identifies no technically precise definition of educational productivity, the following explanation is given for the Department's decision to provide the materials:

> Increasing educational productivity by doing more with less will not be easy. It will mean graduating a significantly greater number of students—with higher levels of mastery and expertise—at a lower cost per outcome. This will require leaders at every level—from the classroom to the statehouse—to work together to rethink the policies, processes, tools, business models, and funding structures that have been ingrained in our education system for decades.
>
> In March [2011], to help states meet the challenge of doing more with less and to protect public schools from counterproductive cutbacks, Education Secretary Arne Duncan released promising practices on the effective, efficient, and responsible use of resources in tight budget times. Building off of this work, the Office of Innovation and Improvement has compiled additional information to help schools, districts, and states increase educational productivity.[7]
>
> This information has been pulled from a variety of resources, in particular the work of leading thinkers in the field. The information assembled is not intended to represent a comprehensive list of efforts. Instead, it is a collection of ideas and actions from different places and serves as a starting point for additional investigation into the methods being pursued and implemented across the country.

Accordingly, it is the Department's intent to help guide local public school districts and states in how to do two things: (a) produce better educational outcomes with dwindling resources, and (b) increase production efficiency or improve cost efficiency (specific definitions in the next section). In fact, the Department offers a clarification in a later paragraph:

> The information compiled here is organized into 10 reform categories, each aligned with various strategies, practices, or approaches that seek to increase productivity by:
>
> - Improving outcomes while maintaining current costs;
> - Maintaining current outcomes while lowering costs; or
> - Both improving outcomes and lowering costs.

Notably, most of the content of the website is focused on increasing outcomes while reducing expenditures, the approach captured in the last bullet point above.

The implicit foundation of much of the website's content is in fact that public school districts across the nation have been experiencing decades of increasing revenue and that they must now learn to do more with less.[8] Yet this argument is highly suspect. Common claims of a doubling or tripling of education spending in past decades are built on the

deeply flawed assumption that the value of the education dollar need only be adjusted for changes to the prices of consumer goods. This fails to account for changes to the competitive wages necessary to recruit and retain a teacher workforce of constant quality, the additional costs of striving for higher outcome goals and a broader array of outcomes, and the additional costs of serving increasingly needy student populations.[9]

In reality, total state and local public education spending as a share of personal income has remained relatively constant for decades, and total state and local education spending has remained relatively constant as a share of total state and local revenue[10] (see figures in Appendix A). Perhaps more importantly, the United States consists of 51 unique education systems embedded in 51 varied political and economic contexts. While some states like Michigan and Vermont have increased their funding for education over the past several decades, others like Colorado, Utah, and California have not (see Appendix B). Similarly, some states have more consistently worked to reduce pupil-to-teacher ratios (see Appendix B). Given the variations in state spending and educational goals, suggesting a one-size-fits-all characterization of historical binge spending coupled with a universal New Normal rhetoric justifying short- and long-term solutions is unsound and misleading.

Summary of Available Methods

Discussions of educational productivity can and should be grounded in the research knowledge base. Therefore, prior to discussing the Department of Education's improving productivity project website and recommended resources, we think it important to explain the different approaches that researchers use to examine productivity and efficiency questions. Two general bodies of research methods have been widely used for addressing questions of improving educational efficiency. One broad area includes "cost effectiveness analysis" and "cost-benefit analysis." The other includes two efficiency approaches: "production efficiency" and "cost efficiency." Each of these is explained below.

Cost-Effectiveness Analysis and Cost-Benefit Analysis

In the early 1980s. Hank Levin produced the seminal resource on applying cost effectiveness analysis in education (with a second edition in 2001, co-authored with Patrick McEwan),[11] helpfully titled "Cost-Effectiveness Analysis: Methods and Applications." The main value of this resource is as a methodological guide for determining which, among a set of options, are more or less cost effective, which produce greater cost-benefit, or which have greater cost-utility.

The two main types of analysis laid out in Levin and McEwan's book are cost-effectiveness analysis and cost-benefit analysis, the latter of which can focus on either short-term cost savings or longer-term economic benefits. All these approaches require an initial determination of the policy alternatives to be compared. Typically, the baseline alternative is the status quo. The status quo is not a necessarily a bad choice. One embarks on cost-effectiveness or cost-benefit analysis to determine whether one might be able to do better than the status quo, but it is not simply a given that anything one might do is better than

what is currently being done. It is indeed almost always possible to spend more and get less with new strategies than with maintaining the current course.

Cost-effectiveness analysis compares policy options on the basis of total costs. More specifically, this approach compares the spending required under specific circumstances to fully implement and maintain each option, while also considering the effects of each option on a common set of measures. In short:

Cost of implementation and maintenance of option A

Estimated outcome effect of implementing and maintaining option A

Compared with

Cost of implementation and maintenance of option B

Estimated outcome effect of implementing and maintaining option B

Multiple options may (and arguably should) be compared, but there must be at least two. Ultimately, the goal is to arrive at a cost-effectiveness index or ratio for each alternative in order to determine which provides the greatest effect for a constant level of spending.

The accuracy of cost-effectiveness analyses is contingent, in part, upon carefully considering all direct and indirect expenditures required for the implementation and maintenance of each option. Imagine, for example, program A, where the school incurs the expenses on all materials and supplies. Parents in program B, in contrast, are expected to incur those expenses. It would be inappropriate to compare the two programs without counting those materials and supplies as expenses for Program B. Yes, it is "cheaper" for the district to implement program A, but the effects of program B are contingent upon the parent expenditure.

Similarly, consider an attempt to examine the cost effectiveness of vouchers set at half the amount allotted to public schools per pupil. Assume, as is generally the case, that the measured outcomes are not significantly different for those students who are given the voucher. Finally, assume that the private school expenditures are the same as those for the comparison public schools, with the difference between the voucher amount and those expenditures being picked up through donations and through supplemental tuition charged to the voucher parents. One cannot claim greater "cost effectiveness" for voucher subsidies in this case, since another party is picking up the difference. One can still argue that this voucher policy is wise, but the argument cannot be one of cost effectiveness.

Note also that the expenditure required to implement program alternatives may vary widely depending on setting or location. Labor costs may vary widely, and availability of appropriately trained staff may also vary, as would the cost of building space and

materials. If space requirements are much greater for one alternative, while personnel requirements are greater for the second, it is conceivable that the relative cost effectiveness of the two alternatives could flip when evaluated in urban versus rural settings. There are few one-size-fits-all answers.

Cost-effectiveness analysis also requires having common outcome measures across alternative programs. This is relatively straightforward when comparing educational programs geared toward specific reading or math skills. But policy alternatives rarely focus on precisely the same outcomes. As such, cost-effectiveness analysis may require additional consideration of which outcomes have greater value, which are more preferred than others. Levin and McEwan (2001) discuss these issues in terms of "cost-utility" analyses. For example, assume a cost-effectiveness analysis of two math programs, each of which focuses on two goals: conceptual understanding and improved basic skills. Assume also that both require comparable levels of expenditure to implement and maintain and that both yield the same average combined scores of conceptual and basic-skills assessments. Program A, however, produces higher conceptual-understanding scores, while program B produces higher basic-skills scores. If school officials or state policy makers believe conceptual understanding to be more important, a weight might be assigned that favors the program that led to greater conceptual understanding.

In contrast to cost-effectiveness analysis, cost-benefit analysis involves dollar-to-dollar comparisons, both short-term and long-term. That is, instead of examining the estimated educational outcome of implementing and maintaining a given option, cost-benefit analysis examines the economic effects. But like cost-efficiency analysis, cost-benefit analysis requires comparing alternatives:

Cost of implementation and maintenance of option A

Estimated economic benefit (or dollar savings) of option A

Compared with

Cost of implementation and maintenance of option B

Estimated economic benefit (or dollar savings) of option B

Again, the baseline option is generally the status quo, which is not assumed automatically to be the worst possible alternative. Cost-benefit analysis can be used to search for immediate, or short-term, cost savings. A school in need of computers might, for example, use this approach in deciding whether to buy or lease them or it may use the approach to decide whether to purchase buses or contract out busing services. For a legitimate comparison, one must assume that the quality of service remains constant. Using these examples, the assumption would be that the quality of busing or computers is equal if purchased, leased or contracted, including service, maintenance and all related issues. All

else being equal, if the expenses incurred under one option are lower than under another, that option produces cost savings. As we will demonstrate later, this sort of example applies to a handful of recommendations presented on the Department of Education's website.

Cost-benefit analysis can also be applied to big-picture education policy questions, such as comparing the costs of implementing major reform strategies such as class-size reduction or early childhood programs versus raising existing teachers' salaries or measuring the long-term economic benefits of those different programmatic options. This is also referred to as return-on-investment analysis.

While cost-effectiveness and cost-benefit analyses are arguably underused in education policy research, there are a handful of particularly useful examples:

a) Determining whether certain comprehensive school reform models are more cost-effective than others?[12]

b) Determining whether computer-assisted instruction is more cost-effective than alternatives such as peer tutoring?[13]

c) Comparing National Board Certification for teachers to alternatives in terms of estimated effects and costs.[14]

d) Cost-benefit analysis has been used to evaluate the long-term benefits, and associated costs, of participation in certain early-childhood programs.[15]

Another useful example is provided by a recent policy brief prepared by economists Brian Jacob and Jonah Rockoff, which provides insights regarding the potential costs and benefits of seemingly mundane organizational changes to the delivery of public education, including (a) changes to school start times for older students, based on research on learning outcomes by time of day; (b) changes in school-grade configurations, based on an increased body of evidence relating grade configurations, location transitions and student outcomes; and (c) more effective management of teacher assignments.[16] While the authors do not conduct full-blown cost effectiveness or cost-benefit analyses, they do provide guidance on how pilot studies might be conducted.

Efficiency Framework

As explained above, cost-benefit and cost-effectiveness analyses require analysts to isolate specific reform strategies in order to correspondingly isolate and cost out the strategies' components and estimate their effects. In contrast, relative-efficiency analyses focus on the production efficiency or cost efficiency of organizational units (such as schools or districts) as a whole. In the U.S. public education system, there are approximately 100,000 traditional public schools in roughly 15,000 traditional public school districts, plus 5,600 or so charter schools. Accordingly, there is significant and important variation in the ways these schools get things done. The educational status quo thus entails considerable

variation in approaches and in quality, as well as in the level and distribution of funding and the population served.

Each organizational unit, be it a public school district, a neighborhood school, a charter school, a private school, or a virtual school, organizes its human resources, material resources, capital resources, programs, and services at least marginally differently from all others. The basic premise of using relative efficiency analyses to evaluate education reform

In reality, total state and local public education spending as a share of personal income has remained relatively constant for decades, and total state and local education spending has remained relatively constant as a share of total state and local revenue.

alternatives is that we can learn from these variations. This premise may seem obvious, but it has been largely ignored in recent policymaking. Too often, it seems that policymakers gravitate toward a policy idea without any empirical basis, assuming that it offers a better approach despite having never been tested. It is far more reasonable, however, to assume that we can learn how to do better by (a) identifying those schools or districts that do excel, and (b) evaluating how they do it. Put another way, not all schools in their current forms are woefully inefficient, and any new reform strategy will not necessarily be more efficient. It is sensible for researchers and policymakers to make use of the variation in those 100,000 schools by studying them to see what works and what does not. These are empirical questions, and they can and should be investigated.

Efficiency analysis can be viewed from either of two perspectives: production efficiency or cost efficiency. Production efficiency (also known as "technical efficiency of production") measures the outcomes of organizational units such as schools or districts given their inputs and given the circumstances under which production occurs. That is, *which schools or districts get the most bang for the buck?* Cost efficiency is essentially the flip side of production efficiency. In cost efficiency analyses, the goal is to determine the minimum "cost" at which a given level of outcomes can be produced under given circumstances. That is, *what's the minimum amount of bucks we need to spend to get the bang we desire?*

In either case, three moving parts are involved. First, there are measured outcomes, such as student assessment outcomes. Second, there are existing expenditures by those organizational units. Third, there are the conditions, such as the varied student populations, and the size and location of the school or district, including differences in competitive wages for teachers, health care costs, heating and cooling costs, and transportation costs.

It is important to understand that all efficiency analyses, whether cost efficiency or production efficiency, are relative. Efficiency analysis is about evaluating how some organizational units achieve better or worse outcomes than others (given comparable spending), or how or why the "cost" of achieving specific outcomes using certain approaches and under some circumstances is more or less in some cases than others.

Comparisons can be made to the efficiency of average districts or schools, or to those that appear to maximize output at given expense or minimize the cost of a given output. Efficiency analysis in education is useful because there are significant variations in key aspects of schools: what they spend, whom they serve and under what conditions, and what they accomplish.

Efficiency analyses involve estimating statistical models with large numbers of schools or districts, typically over multiple years. While debate persists on the best statistical approaches for estimating cost efficiency or technical efficiency of production, the common goal across the available approaches is to determine which organizational units are more and less efficient producers of educational outcomes. Or, more precisely, the goal is to determine which units achieve specific educational outcomes at a lower cost.

Once schools or districts are identified as more (or less) efficient, the next step is to figure out why. Accordingly, researchers explore what variables across these institutions might make some more efficient than others, or what changes have been implemented that might have led to improvements in efficiency. Questions typically take one of two forms:

1. Do districts or schools that do X tend to be more cost efficient than those doing Y?
2. Did the schools or districts that changed their practices from X to Y improve in their relative efficiency compared to districts that did not make similar changes?

That is, the researchers identify and evaluate variations across institutions, looking for insights in those estimated to be more efficient, or alternatively, evaluating changes to efficiency in districts that have altered practices or resource allocation in some way. The latter approach is generally considered more relevant, since it speaks directly to changing practices and resulting changes in efficiency.[17]

While statistically complex, efficiency analyses have been used to address a variety of practical issues, with implications for state policy, regarding the management and organization of local public school districts:

a) Investigating whether school district consolidation can cut costs and identifying the most cost-efficient school district size.[18]

b) Investigating whether allocating state aid to subsidize property tax exemptions to affluent suburban school districts compromises relative efficiency.[19]

c) Investigating whether the allocation of larger shares of school district spending to instructional categories is a more efficient way to produce better educational outcomes.[20]

d) Investigating whether decentralized governance of high schools improves efficiency.[21]

These analyses have not always produced the results that policymakers would like to see. Further, like many studies using rigorous scholarly methods, these analyses have limitations. They are necessarily constrained by the availability of data, they are sensitive to the quality of data, and they can produce different results when applied in different settings.[22] But the results ultimately produced are based on rigorous and relevant analyses,

and the U.S. Department of Education should be more concerned with rigor and relevance than convenience or popularity.

Critique of the Department's Materials

Accompanying their website on productive resource use in schools, the U.S. Department of Education lists seven "resources," including an opinion column and a PowerPoint presentation from private consulting firm. All seven resources are published by or linked to a single source: the Center for Reinventing Public Education at the University of Washington Bothell (see Table 1 and the accompanying text). These seven resources demonstrate pervasive problems of content and evidentiary support. Consequently, the

Table 1. Summary of the Department's Recommended Sources Concerning Resource Usage

Title	Source	Type of Document
Curing Baumol's Disease: In Search of Productivity Gains in K-12 Schooling, by Paul Hill and Marguerite Roza	Center for Reinventing Public Education (CRPE)	Policy brief
Doing More with Less: Four Strategies for Improving Urban District Quality and Productivity, by Karen Hawley Miles	Education Resource Strategies (ERS), a private consulting firm	PowerPoint presentation,
The Productivity Imperative: Getting More Benefits from School Costs in an Era of Tight Budgets, by Marguerite Roza, Dan Goldhaber, and Paul T. Hill	*Education Week* (authors from CRPE and the University of Washington)	Commentary
Stretching the School Dollar: How Schools and Districts Can Save Money While Serving Students Best, edited by Frederick M. Hess and Eric Osberg	Editors from American Enterprise Institute and Thomas B. Fordham Institute	Edited book, published by Harvard Education Press
Stretching the School Dollar: A Brief for State Policymakers, Policy Brief, by Michael Petrilli and Marguerite Roza	Authors from Thomas B. Fordham Institute and Gates Foundation	Policy brief, published by the Thomas B. Fordham Institute (summary of the previous item)
The Strategic School: Making the Most of People, Time, and Money, by Karen Hawley Miles and Stephen Frank	Education Resource Strategies (ERS), a private consulting firm	Book, published by Corwin Press
Smart Money: Using Educational Resources to Accomplish Ambitious Learning Goals, edited by Jacob E. Adams, Jr.	Editor from Claremont Graduate School	Edited book, published by Harvard Education Press

evidence put forward by the Department is insufficient to support the Department's arguments that American public schools are woefully inefficient and have become more so over the past several decades. The evidentiary resources are also insufficient to support the assertion that policymakers should seriously consider embracing the specific policies offered on the website as ways to improve the productivity and efficiency of schools.

Table 1 presents a full list of the seven resources from the Department's website, all of which have at least three things in common. None are peer-reviewed studies. None include any type of detailed cost-effectiveness, cost-benefit or efficiency analysis of American public schools or programs, or of reform strategies within American public schools. All have at least some connection to the Center on Reinventing Public Education (CRPE).[23]

In one sense, CRPE is a natural source for resources of this type, since its work includes analyses of education funding and since it advocates for the sorts of reform that the Department has been promoting. However, it is deeply problematic for any single organization to shape such an important policy agenda without the critical checks and balances of external review.[24] Most troubling, however, is the poor quality of the information provided in these documents as regards the Department's stated objectives. Below, we take a closer look at two examples.

The "Curing Baumol's Disease" Report

The objective of this policy report by Paul Hill and Marguerite Roza[25] of CRPE is to explain how American public education suffers from Baumol's disease, described in the report as "the tendency of labor-intensive organizations to become more expensive over time but not any more productive" (p. 1).[26] The report attempts to validate empirically the claim that American public education suffers from this "disease." It relies on two oversimplified figures: a graph showing an increase in the number of staff who are not core teachers (the report's Figure 1), and a graph showing that student test scores on the National Assessment of Educational Progress (NAEP) have remained flat over time (the report's Figure 2). The claim that there has been no improvement in NAEP scores over time, however, is certainly contested.[27] In fact, each of the nation's commonly identified racial and ethnic subgroups has shown notable improvement over the past 30 years.[28] Further, when aggregated across all states, as in the report's Figure 1, tales of dramatic increases in non-teaching staff are uninformative due to two factors, both of which are not addressed: significant variations occurring across states, schools and districts, and significant changes between 1960 and 1999 in the regulatory environment of public schools and the populations they serve.

Even setting aside the validity of the CRPE report's two main assertions, the report is troubling because it provides no empirically rigorous link between the two. Rather, the casual reader is simply to assume that public schools could have achieved greater productivity gains by allocating resources, presently allocated to non-teaching staff, toward other uses.

The reader is also asked to accept the report's central assumption that American public education takes one single form, as represented by national averages in the two graphs provided. Under this assumption, there is little or no significant variation within the public education system in terms of resource use or outcomes achieved (i.e., it all suffers from Baumol's disease).

In sum, the report begins with two highly contestable claims. It then draws an unsupported causal connection between the two claims. Further, it assumes that the problem is universal—that the system as a whole is diseased. In making this assumption, the authors ignore any possibility that lessons may be derived from within the public education system.

Therefore, the report's readers are invited to conclude that the only possible cures to the problem the report claims to have identified are those that come from outside the public education system. For example, the authors suggest a closer look at "home schooling, distance learning systems, foreign language learning, franchise tutoring programs, summer content camps, parent-paid instructional programs (music, swimming lessons, etc.), armed services training, industry training/development, apprentice programs, education systems abroad" (p. 10). However, without a disease with a catchy name, there would be little reason for this proposed long list of cures, and those cures are no more thoroughly tested than the disease.

We do think it important that, even though the report's quality and usefulness are weak, insights might indeed be gained from other labor-intensive industries, or from education beyond the current public system. Whatever the extent of those insights, however, it would be foolish to ignore the extent of variation that already exists in the current American public education system, or in magnet, charter and private schooling. Lessons can be learned from all these sources even if one does not buy into the report's Baumol's disease premise.

The "Stretching the School Dollar" Policy Brief

In their policy brief titled *Stretching the School Dollar*, Michael Petrilli of Thomas B. Fordham Institute and Marguerite Roza provide a laundry list of strategies by which school districts and states can supposedly increase their productivity while cutting expenses. The policy brief is a loosely coupled extension of the book by the same title edited by Frederick Hess (American Enterprise Institute) and Eric Osberg (Fordham Institute).[29] We chose to highlight this resource because Secretary Duncan specifically referred to it in his "New Normal" speeches.[30] The book is a compilation of different authors' work, all framed by the argument that American public education has been on a spending spree since the Great Depression. It offers a variety of generalized strategies to reverse this as well as anecdotal tales of small- and large-scale cost-cutting schemes. The policy brief offers a more specific list of popular district- and state-level school reforms. Neither the book nor the brief includes any type of rigorous cost-effectiveness, cost-benefit or relative-efficiency analysis of the proffered proposals. This lack of productivity research

does not make the book or the brief worthless, but it does make them an odd choice for the Department's short list of productivity resources.

The options suggested in the *Stretching the Dollar* policy brief can be grouped into four categories: (a) changes to personnel policies and compensation strategies, (b) reduction of regulatory controls, (c) funding-formula changes at the state and district levels, and (d) miscellaneous financial savings strategies. In short, the brief presents a list of politically

It is deeply problematic for any single organization to shape such an important policy agenda without the critical checks and balances of external review. Most troubling, however, is the poor quality of the information provided in these documents.

popular ideas. But none of those ideas is backed by rigorous cost-effectiveness or cost-benefit analysis. Moreover, as discussed below, several of them are merely redistribution mechanisms or approaches used simply to cut costs without regard for benefit or effect. That is, the proposals do not *stretch* the dollar in any way—they simply cut it or move it from one place to another.

For example, the brief suggests cutting off state aid for services to limited-English-proficient children after two years. Yet it provides no evidence that this approach, which has been adopted in states such as Colorado and Arizona, has been effective. The conclusion appears to be that the money is largely or completely wasted on limited English proficient children after two years, but readers are asked to accept this questionable conclusion without evidence.

The brief also suggests simply defunding small schools or districts—those that are too small to achieve economies of scale—seemingly without regard for the fact that some of those schools or districts exist as a function of geographic circumstance (population sparsity or remoteness) and without regard for a sizable body of rigorous research on economies of scale and consolidation, which indicates that schools with fewer than 2,000 pupils in remote, sparsely populated locations face substantially higher per-pupil costs.[31] The brief similarly fails to provide any evidence about the impact that taking funding from small schools would have on the rest of the system.[32]

Petrilli and Roza further imply that costs can be cut with no harm to student outcomes by re-allocating special education funding in uniform proportions with respect to total enrollment rather than according to the needs of students. But the brief provides no research supporting the assumption that this would produce any increase in relative efficiency or cost effectiveness.[33] Rather, this approach merely reshuffles special education funding from districts with high classification rates to districts with low classification rates, and it caps any further growth of that aid. The same is true for their proposal to move toward "weighted student funding" formulas, which, in addition to not being clearly connected with any improvement to relative efficiency or cost effectiveness of school

districts, have not even proven to consistently perform their primary purpose of improving equity across schools or districts.[34]

Proposed pension reforms are another example of spending (and benefit) reduction. The brief proposes having employees pay a larger share of the cost and removing the guaranteed benefit by shifting from defined-benefit to defined-contribution—akin to 401(k)—plans. Simply spending less is not an efficiency reform—it's merely a cut. One must examine the repercussions of such a cut on desired outcomes before making any efficiency claims.

Table 2. Proposals for Stretching the School Dollar

Category	Recommendation	Type of Analysis that Should/Could be Done
Personnel policies and compensation strategies	End "last hired, first fired" practices	Cost-Effectiveness or Efficiency
Personnel policies and compensation strategies	Create a rigorous teacher-evaluation system	Cost-Effectiveness or Efficiency
Personnel policies and compensation strategies	Tackle the fiscal viability of teacher pensions	Cost-Benefit
Personnel policies and compensation strategies	Eliminate mandatory salary schedules	Cost-Effectiveness or Relative Efficiency
Reduction of regulatory controls	Eliminate state mandates regarding work rules and terms of employment	Cost-Effectiveness or Efficiency
Reduction of regulatory controls	Remove "seat time" requirements	Cost-Effectiveness or Efficiency
Reduction of regulatory controls	Remove class-size mandates	Cost-Effectiveness or Efficiency
Reduction of regulatory controls	Offer waivers of non-productive state requirements	No clear option
Funding formula changes	Merge categorical programs and ease onerous reporting requirements	Cost-Effectiveness or Efficiency
Funding formula changes	Move toward weighted student funding.	Cost-Effectiveness or Efficiency
Funding formula changes	Eliminate excess spending on small schools and small districts	Cost-Effectiveness or Efficiency
Funding formula changes	Allocate spending for learning-disabled students as a percent of population	Cost-Effectiveness or Efficiency
Funding formula changes	Limit the length of time that students can be identified as English Language Learners	Cost-Effectiveness or Efficiency
Other financial savings strategies	Pool health-care benefits	Cost-Benefit
Other financial savings strategies	Create bankruptcy-like loan provisions	Cost-Benefit

Other ideas suggested by the brief would lend themselves to relatively straightforward cost-benefit analysis (see Table 2), but no such analyses are actually provided. For example, cost-benefit analyses (i.e., savings from choosing one option over another) might be conducted to compare alternative retirement benefit options, or to evaluate whether pooled health care plans make sense. However, even if these proposals had been examined, these comparisons may not have one-size-fits-all answers. That is, it may make sense in some markets to pool resources but not in others. Therefore, it is often less useful to dictate solutions than to provide local district administrators with discretion plus sound analytical frameworks.

Other untested beliefs of the authors include proposals based on assumptions that smaller class sizes, existing employee work rules or terms of employment, "seat time" requirements, or other regulations necessarily reduce efficiency systemwide.

The biggest unsupported assumptions in *Stretching the School Dollar* are found in its recommendations regarding productivity increases that would supposedly follow from altering personnel policies. Petrilli and Roza's personnel policy recommendations are built on the assumption that we all know as an absolute fact that "teacher quality" oriented policies are more cost effective than "teacher quantity" oriented policies. That is, that it is better to have a relatively small number of good teachers in classrooms with a relatively large number of students, as opposed to smaller classes taught by teachers of lower average quality. This assumption may or may not be true, but as the foundation for a set of policy recommendations it has several serious flaws, as set forth below.

The policy recommendations include: (a) removing any pay increments for teachers' experience or degree level; (b) adding performance pay based on student test-score gains or teacher performance evaluations, without changing the average level of salaries; (c) layoffs to be based not on seniority but solely on student test-score results or performance evaluations; and (d) moving toward employee-funded defined-contribution from current employer-funded defined benefit retirement plans at no change in total expense to the employer (e.g., shifting costs to employees). The argument is that by increasing class sizes and holding total salary costs roughly constant, money can be cut from the education budget as a whole. Further, if salaries are restructured and dismissal procedures altered, teacher quality will improve to a degree where the effectiveness achieved from those improvements in teacher quality will far outweigh any slight loss in student outcomes from increased class sizes. This reminds us of someone we used to know who, while driving others in his car, would smile mischievously and say, "Hang on. I want to try something!" The *Stretching the School Dollar* proposal amounts to nothing more than an unwarranted and largely untested assumption; policymakers, like the backseat passengers, are encouraged to ignore any possible risks.

That is not to say that such ideas cannot or should not be piloted and tested. They are, to some extent, researchable questions, most appropriately studied through relative efficiency analyses across districts and schools that are applying varied approaches, including the proposed new approaches. But the book and policy brief propose no such research and include no reference to it. Ignoring a broad set of potentially interesting and

complex research questions, the book and brief present an oversimplified view that the only two options for improving the system are trade-offs between class size and restructuring teacher compensation.

Research Agenda for the Department of Education

Policy briefs such as the two just discussed may be considered as, at best, useful conversation starters. The U.S. Department of Education does students, educators, and the public a disservice when it identifies non-rigorous resources of this type as "Key Readings on Educational Productivity." If the Department truly desires to offer high-quality productivity information to and for the nation's schools, we recommend seeking guidance from leading scholars in the areas of understanding and measuring education costs, productivity, and efficiency. These researchers, working with practitioners and policy leaders, should be selected based on a track record of relevant peer-reviewed publications and national and international leadership roles, including membership on the editorial boards of relevant, major peer-reviewed academic journals. While we acknowledge that knowledgeable experts and credible research exist that are not constrained by these requirements, all indications are that the Department has thus far relied overwhelmingly on work that is not peer-reviewed, most of which is neither convincing nor rigorous.

The scholars forming a national consortium on the topic of educational productivity should be asked to summarize what is known from academic research and to translate that research into practical terms for policy consumption, focusing on the implications of the research for the operation of schools and districts. They should also be asked to develop short- and long-term agendas for cost-effectiveness analysis, cost-benefit analysis, and relative-efficiency analysis.

These productivity inquiries should be approached systematically and rigorously, with no unrealistic expectations that facile solutions will miraculously emerge. By collaborating with experts and relying on existing high-quality research, the Department can develop an agenda focused on a balance of five key charges: (a) improving empirical methods and related data; (b) evaluating major education reform models, programs, and strategies; (c) disseminating the results of those evaluations; (d) expanding and improving stakeholder understanding of cost-effectiveness, cost-benefit, and relative-efficiency analyses; and (e) supporting the training of current and future scholars in these methods.

Appendix A

Comparisons of state and local public education against personal income (Figure 1) and against total state and local revenue (Figure 2) show that, contrary to the often-asserted claim that education spending has risen markedly over the last several decades, it has remained relatively constant.

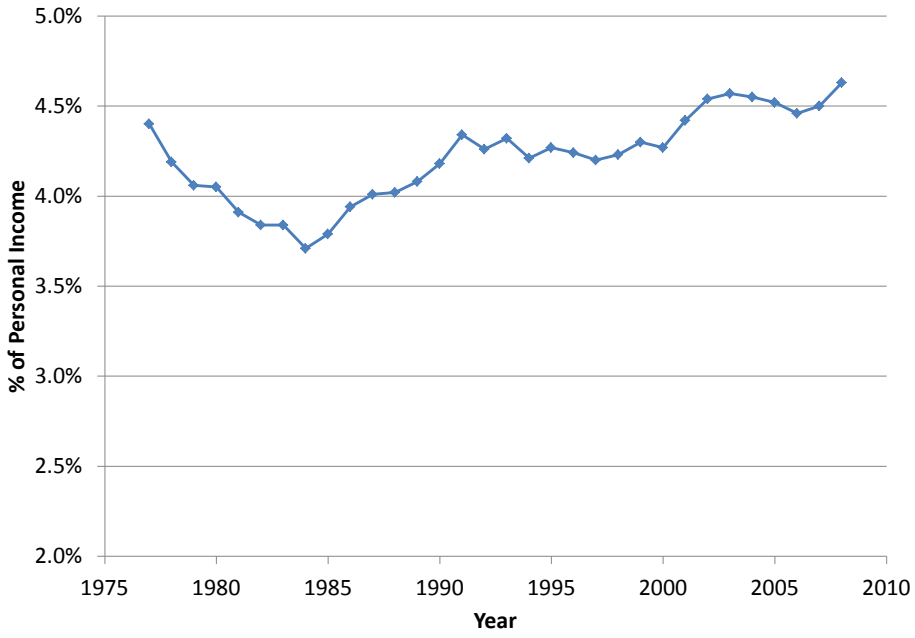

Figure 1. K-12 Direct Education Expenditure as a Percent of Personal Income.

Data Source: The Urban Institute-Brookings Institution Tax Policy Center. Data from U.S. Census Bureau, Annual Survey of State and Local Government Finances, Government Finances, Volume 4, and Census of Governments (Years). Retrieved November 8, 2011, from http://www.taxpolicycenter.org/slf-dqs/pages.cfm.

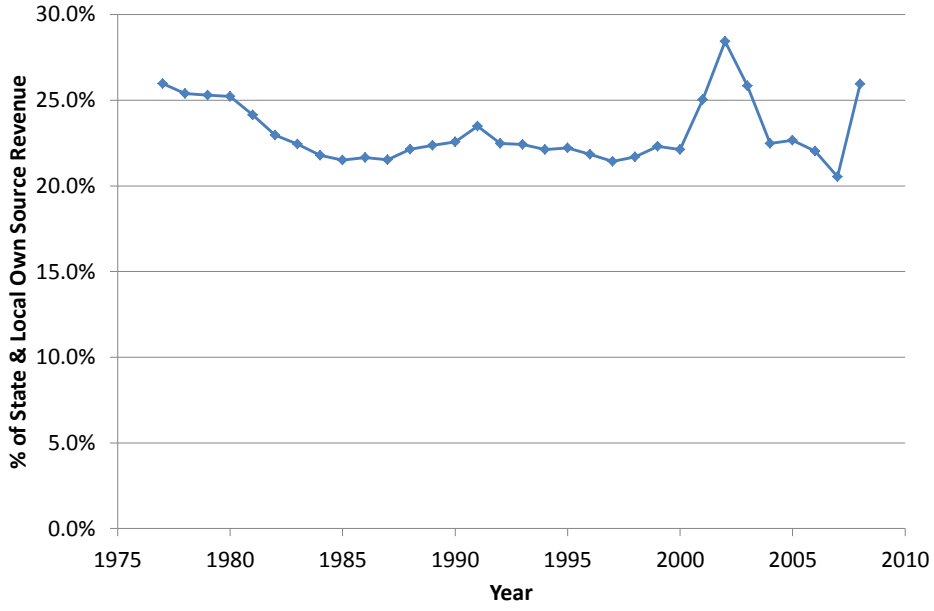

Figure 2. State and Local Education Expenditure as a percent of State and Local Own-Source* Revenue.

*excludes funds from intergovernmental transfers (such as federal aid)

Data Source: The Urban Institute-Brookings Institution Tax Policy Center. Data from U.S. Census Bureau, Annual Survey of State and Local Government Finances, Government Finances, Volume 4, and Census of Governments (Years). Retrieved November 8. 2011, from http://www.taxpolicycenter.org/slf-dqs/pages.cfm.

Appendix B

States are not consistent, one to another, in how they have increased funding for education relative to personal income (Figure 3), and similarly have not acted uniformly in reducing pupil-to-teacher ratios (Figure 4).

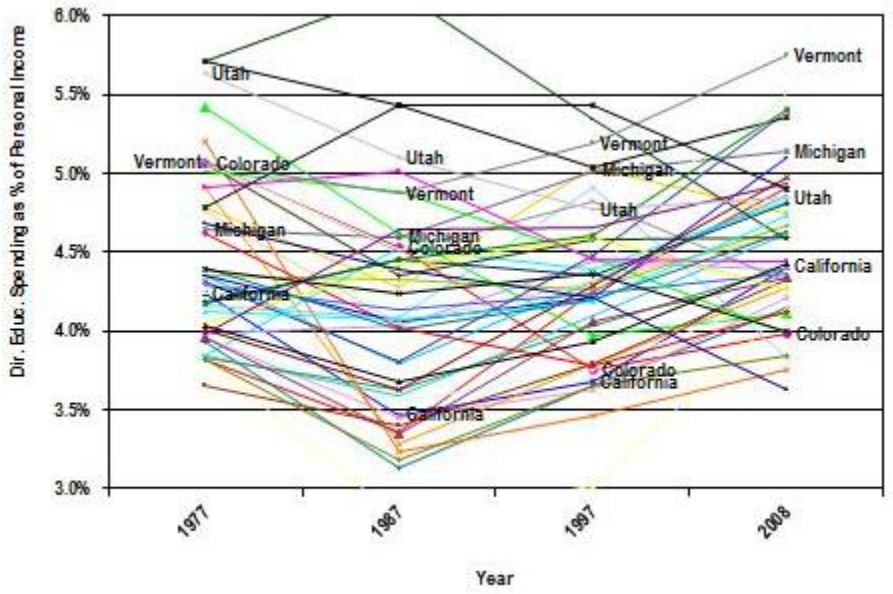

Figure 3. Total Direct Education Spending (Elementary and Secondary) as a Percent of Personal Income Across States.

The Urban Institute-Brookings Institution Tax Policy Center. Data from U.S. Census Bureau, Annual Survey of State and Local Government Finances, Government Finances, Volume 4, and Census of Governments (Years). Retrieved November 8, 2011, from http://www.taxpolicycenter.org/slf-dqs/pages.cfm.

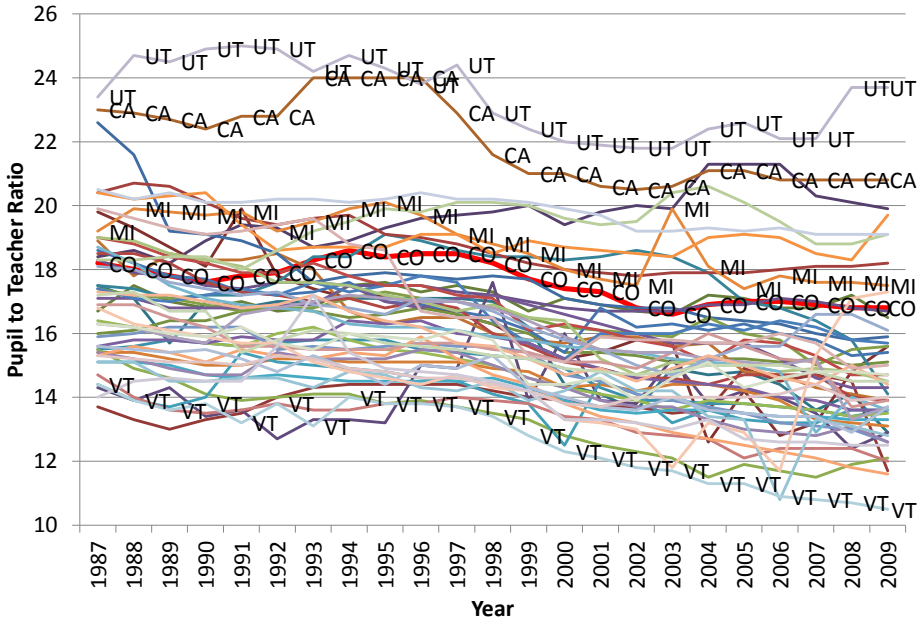

Figure 4. Pupil-to-Teacher Ratios over Time in Selected States.

Common Core of Data (CCD), "National Public Education Financial Survey (State Fiscal)" , 1986-87 (FY 1987) v.1b, 1987-88 (FY 1988) v.1b, 1988-89 (FY 1989) v.1b, 1989-90 (FY 1990) v.1b, 1990-91 (FY 1991) v.1b, 1991-92 (FY 1992) v.1b, 1992-93 (FY 1993) v.1b, 1993-94 (FY 1994) v.1b, 1994-95 (FY 1995) v.1b, 1995-96 (FY 1996) v.1b, 1996-97 (FY 1997) v.1b, 1997-98 (FY 1998) v.1b, 1998-99 (FY 1999) v.1b, 1999-2000 (FY 2000) v.1b, 2000-01 (FY 2001) v.1b, 2001-02 (FY 2002) v.1c, 2002-03 (FY 2003) v.1b, 2003-04 (FY 2004) v.1b, 2004-05 (FY 2005) v.1b, 2005-06 (FY 2006) v.1b, 2006-07 (FY 2007) v.1a, 2007-08 (FY 2008) v.1a

Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education" , 1986-87 v.1c, 1988-89 v.1c, 1989-90 v.1c, 1990-91 v.1c, 1991-92 v.1c, 1992-93 v.1c, 1993-94 v.1b, 1994-95 v.1b, 1995-96 v.1b, 1996-97 v.1c, 1997-98 v.1c, 1998-99 v.1b, 1999-2000 v.1b, 2000-01 v.1c, 2001-02 v.1c, 2002-03 v.1b, 2003-04 v.1b, 2004-05 v.1f, 2005-06 v.1b, 2006-07 v.1c, 2007-08 v.1a, 2008-09 v.1b

The file contains (51) records based on your search.

*NCES is not responsible for the manner in which this information is presented. This information is provided as an extra service to the user. To download full CCD datasets please go to the CCD home page. http://nces.ed.gov/ccd/

Notes and References

1 Retrieved November 6, 2011, from http://www.ed.gov/news/speeches/new-normal-doing-more-less-secretary-arne-duncans-remarks-american-enterprise-institut.

See also Stratman-Krusemark, K. (2011). "New Normal" Is Harsh Reality, Duncan Tells Principals. Retrieved November 6, 2011, from http://www.ed.gov/blog/2011/01/new-normal-is-harsh-reality-duncan-tells-principals/.

2 Brooks, D. (2011, February 28). "The New Normal." *New York Times*. Retrieved November 6, 2011, from http://www.nytimes.com/2011/03/01/opinion/01brooks.html.

3 Retrieved November 6, 2011, from http://www.ed.gov/oii-news/resources-framing-educational-productivity.

4 The one partial exception listed on the Department's website is Adams, J. E. (2010). *Smart Money: Using Educational Resources to Accomplish Ambitious Learning Goals*. Cambridge, MA: Harvard Education Press. This volume includes some (a minority of the total) chapters with citations to literature of the type we endorse here (primarily in Chapter 6). But the Adams book also includes speculative, unfounded claims of the type found in the other resources listed on the Department's website.

5 Specifically, we are most concerned with poorly grounded arguments and disinformation in the following:

Miles, K. H. (2010). *Doing More with Less: Four Strategies for Improving Urban District Quality and Productivity* [powerpoint presentation]. Retrieved November 6, 2011, from http://erstrategies.org/documents/pdf/Doing_More_with_Less_Posted.pdf.

Miles, K. H., & Frank, S. (2008). *The Strategic School: Making the Most of People, Time, and Money*. Corwin Press.

Hess, F. M., & Osberg, E. (2010). *Stretching the School Dollar: How Schools and Districts Can Save Money While Serving Students Best*. Cambridge, MA: Harvard Education Press.

Hill, P., & Roza, M. (2010). *Curing Baumol's Disease: In Search of Productivity Gains in K-12 Schooling*. Center on Reinventing Public Education. Retrieved November 6, 2011, from http://www.crpe.org/cs/crpe/view/csr_pubs/343.

Petrilli, M., & Roza, M. (2011). *Stretching the School Dollar: A brief for State Policymakers*. Thomas B. Fordham Institute. Retrieved November 6, 2011, from http://www.edexcellencemedia.net/publications/2011/20110106_STSD_PolicyBrief/20110106_STSD_PolicyBrief.pdf.

6 Retrieved November 6, 2011, from http://www.ed.gov/oii-news/increasing-educational-productivity.

7 The website has a footnote here: "The U.S. Department of Education does not guarantee the accuracy, timeliness, or completeness of this information. Further, the inclusion of the particular examples does not reflect their importance or success, not [sic] are they intended to endorse any particular approaches discussed, views

expressed, or products or services offered, but we are hopeful that this information will still be helpful to you. We encourage you to consider other approaches that might address the matters discussed in this document."

8 For example, in the book *Stretching the School Dollar*, a resource repeatedly promoted by Arne Duncan in his "New Normal" speech, Guthrie and Peng argue in the introductory chapter: "First, even when controlled for inflation, school spending has been increasing substantially for a century. Historically, year over year public schools' per-pupil, real-dollar revenues have almost always increased. Moreover, these added dollars have kept coming even when the economy… turned down. The number of school employees relative to the number of students has followed a similar trajectory for past five decades. Only in the Great Depression and in the midst of World War II were there significant slowdowns in per-pupil spending and in added personnel, and these slow growth periods lasted only a short time." Further, the Petrilli and Roza policy brief by the same title asserts: "After years of non-stop increases—national k-12 per-pupil spending is up by *one-third* in inflation-adjusted dollars since 1995—our schools now face the near certainty of repeated annual budget cuts for the first time since the Great Depression."

9 For a thorough discussion of these issues, see:

Baker, B. D. (2011). *Understanding Costs and Inflation*. Retrieved November 20, 2011, from http://nepc.colorado.edu/thinktank/costs-and-inflation.

10 Total elementary and secondary enrollments as a share of total population declined significantly between 1970 and 1990, then rose again through 2000, at which point they again more gradually declined. See: http://nces.ed.gov/programs/digest/d10/tables/dt10_022.asp?referrer=list.

Notably, the share of population served with 4.5% of aggregate personal income in 2009 is smaller than in 1975, but that population has changed substantively in terms of numbers and shares of children with disabilities included in the public education system since initial adoption of P.L. 94-142 in 1975.

11 Levin, H. M. (1983). *Cost-Effectiveness.* Thousand Oaks, CA: Sage.

Levin, H. M., & McEwan, P. J. (2001). *Cost effectiveness analysis: Methods and applications*. 2nd ed. Thousand Oaks, CA: Sage.

12 Borman, G., & Hewes, G. (2002). The long-term effects and cost-effectiveness of Success for All. *Educational Evaluation and Policy Analysis*, *24*, 243-266.

13 Levin, H. M., Glass, G.V, & Meister, G. (1987). A cost-effectiveness analysis of computer assisted instruction. *Evaluation Review*, *11*, 50-72.

14 Rice, J. K., & Hall, L. J. (2008). National Board Certification for teachers: What does it cost and how does it compare? *Education Finance and Policy*, *3*, 339-373.

15 Barnett, W. S., & Masse, L. N. (2007). Comparative Benefit Cost Analysis of the Abecedarian Program and its Policy Implications. *Economics of Education Review*, *26*, 113-125.

16 See Jacob, B., & Rockoff, J. (2011). *Organizing Schools to Improve Student Achievement: Start Times, Grade Configurations and Teacher Assignments*. The Hamilton Project. Retrieved November 6, 2011, from http://www.hamiltonproject.org/files/downloads_and_links/092011_organize_jacob_rockoff_paper.pdf.

See also Patrick McEwan's review of this report:

McEwan, P. (2011). *Review of Organizing Schools to Improve Student Achievement*. Boulder, CO: National Education Policy Center. Retrieved December 2, 2011, from http://nepc.colorado.edu/thinktank/review-organizing-schools.

17 Numerous authors have addressed the conceptual basis and empirical methods for evaluating technical efficiency of production and cost efficiency in education or government services more generally. See, for example:

Bessent, A. M., & Bessent, E. W. (1980). Determining the Comparative Efficiency of Schools through Data Envelopment Analysis, *Education Administration Quarterly*, *16*(2), 57-75.

Duncombe, W., Miner, J., & Ruggiero, J. (1997). Empirical Evaluation of Bureaucratic Models of Inefficiency, *Public Choice*, *93*(1), 1-18.

Duncombe, W., & Bifulco, R. (2002). *Evaluating School Performance: Are we ready for prime time?* In William J. Fowler, Jr. (Ed.), Developments in School Finance, 1999–2000, NCES 2002–316.Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Grosskopf, S., Hayes, K. J., Taylor, L. L., & Weber, W. (2001). On the Determinants of School District Efficiency: Competition and Monitoring. *Journal of Urban Economics*, *49*, 453-478.

18 Duncombe, W. & Yinger, J. (2007). Does School District Consolidation Cut Costs? *Education Finance and Policy*, *2*(4), 341-375.

19 Eom, T. H., & Rubenstein, R. (2006). Do State-Funded Property Tax Exemptions Increase Local Government Inefficiency? An Analysis of New York State's STAR Program. *Public Budgeting and Finance*, *Spring*, 66-87.

20 Taylor, L. L., Grosskopf, S., & Hayes, K. J. (2007). *Is a Low Instructional Share an Indicator of School Inefficiency? Exploring the 65-Percent Solution*. Working Paper.

21 Grosskopf, S., & Moutray, C. (2001). Evaluating Performance in Chicago Public High Schools in the Wake of Decentralization. *Economics of Education Review*, *20*, 1-14.

22 See, for example, Duncombe, W., & Bifulco, R. (2002). "Evaluating School Performance: Are we ready for prime time?" In William J. Fowler, Jr. (Ed.), *Developments in School Finance, 1999–2000, NCES 2002–316*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

23 One is directly published by CRPE. One is a commentary co-authored by CRPE scholars. Two are from a private consulting firm called Education Resource Strategies but are authored by Karen Hawley Miles, who is also author of six CRPE policy briefs (http://www.crpe.org/cs/crpe/view/authors/62).

The two edited books, *Stretching the School Dollar* and *Smart Money*, include chapters by CRPE author Marguerite Roza, who also co-authored the Fordham policy brief that summarizes the "Stretching" book (the "Smart Money" book also includes chapters from Miles and from CRPE director Paul Hill). Further, *Smart Money* is edited by Jacob Adams, formerly of CRPE.

24 We believe that the sole exception may be some of the chapters in the *Smart Money* edited collection, but other documents may have gone through informal or internal review before publication.

25 Roza was with CRPE until May of 2010, when she became a senior data and economic advisor at the Gates Foundation.

26 An anonymous external reviewer of earlier drafts of this policy brief pointed out to us that Roza and Hill actually appear to mischaracterize Baumol's hypothesis. The hypothesis, the reviewer noted, is that "labor-intensive industries, like education, do not reap productivity gains from capital investments to the extent that other industries do. This is not because labor-intensive industries are relatively inefficient. It's just as a property of the production process. As productivity increases in other sectors, wages increase. But because labor-intensive industries cannot be expected to achieve the same productivity gains, increasing wages mean the costs of producing the same in those industries goes up over time. Again, this is not a matter of inefficiency in labor-intensive industries. If we accept the possibility of Baumol's disease, then the typical argument that spending per pupil has increased while test scores have not cannot be interpreted as inefficiency. It might be Baumol's disease (or in fact several other explanations). Thus, if you believe that historical data on spending and outcomes imply that public schools are inefficient, you have to argue that education is not (or least need not be) subject to Baumol's hypothesis."

27 Martin, K. (2011, April 20). "Fact-Challenged Policy." *The Seattle Journal*. Retrieved November 6, 2011, from http://www.theseattlejournal.com/2011/04/20/fact-challenged-policy/.

28 Because lower-scoring subgroups have disproportionately grown numerically over this time, these improvements are watered down when looking at overall numbers. See, for example, Barton, P.D. & Coley, R.J.,(2010). *The Black-White Achievement Gap: When Progress Stopped*. Princeton, NJ: Educational Testing Services. Retrieved November 6, 2011, from http://www.ets.org/Media/Research/pdf/PICBWGAP.pdf.

29 Although the book is listed as a resource on the Department's website, the hyperlink takes visitors not to the book but rather to the AEI page for an event it hosted that ultimately generated both the brief and the book (http://www.aei.org/event/100164) The event was called "A Penny Saved: How Schools and Districts Can Tighten Their Belts While Serving Students Better."

30 Duncan, A. (2010, November 17). *The New Normal: Doing More with Less -- Secretary Arne Duncan's Remarks at the American Enterprise Institute*. Retrieved November 6, 2011, from http://www.ed.gov/news/speeches/new-normal-doing-more-less-secretary-arne-duncans-remarks-american-enterprise-institut.

31 See Duncombe, W. & Yinger, J. (2007). Does School District Consolidation Cut Costs? *Education Finance and Policy*, *2*(4), 341-375.

Howley, C., Johnson, J., & Petrie, J. (2011). *Consolidation of Schools and Districts: What the Research Says and What It Means*. Boulder, CO: National Education Policy Center. Retrieved September 10, 2011, from http://nepc.colorado.edu/publication/consolidation-schools-districts.

32 Almost by definition, there are relatively few students served by these remote, sparsely populated districts. This means that even if the cost per pupil is very high, the overall impact on total school spending may be very small.

33 Baker, B. D. & Ramsey, M. J. (2010). What we don't know can't hurt us? Evaluating the equity consequences of the assumption of uniform distribution of needs in Census Based special education funding. *Journal of Education Finance*, *35*(3), 245-275.

34 Baker, B. D. (2009). Within-district resource allocation and the marginal costs of providing equal educational opportunity: Evidence from Texas and Ohio. *Education Policy Analysis Archives*, *17*(3). Retrieved November 6, 2011, from http://epaa.asu.edu/ojs/article/view/5/5.

Baker, B. D., & Elmer, D. R. (2009). The Politics of Off-the-Shelf School Finance Reform. *Educational Policy*, *23*(1). 66-105.