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CAN PUBLIC SCHOOLS BE GOVERNED IN A WAY THAT CAUSES THEM TO BE AS PRODUCTIVE AS POSSIBLE?

That's the question for this paper, and the answer is a hedged yes. Compared to current public governance arrangements, other possible forms of governance could create stronger incentives for schools to seek ways of using the money available to them to produce the greatest possible results for children. The hedging part of the answer reflects the limitations of governance: it can create incentives, impose burdens, and rule some actions out, but it cannot fully determine how schools operate and what results they produce. Governance can set goals and create incentives for the people who run schools, but the ultimate results depend on the abilities and effort of school heads and teachers.

Why does productivity matter, and is it worth enduring all the wrenching changes described below? Productivity is an urgent issue today because real resources available for K-12 are shrinking at a time when the economy and globalization demands that children learn more than ever before.

Apart from the current crisis, productivity is a perennial issue: without a focus on productivity no one, at any level of the public education system, can confidently give an affirmative answer to the question, "Did our children get the greatest possible benefit from the money that taxpayers provided to support public education?" Today, the only honest answer anyone can give to that question lies somewhere between "we don't know" and "probably not."ⁱ

For some, a focus on productivity implies something else, a desire to cut public expenditures to some minimum level. As the subsequent analysis will show, a focus on productivity will require new investments and sensitivity to the costs of bringing disadvantaged children up to reasonable standards. Thus a focus on productivity is less likely to drive spending cuts than it is to ensure that any public funds made available – including amounts in excess of what is now spent – will be used to maximum benefit.ⁱⁱ

This paper ends with definite recommendations about how new governance arrangements can promote productivity.ⁱⁱⁱ Many of these ideas are already present, in at least rudimentary form, in leading school districts including New York City, New Orleans, and Denver. These are pursuing a "portfolio strategy" of continuous improvement.^{iv} However, districts following this strategy are exceptions to the norm in K-12 public education. This paper will show how, in the vast majority of localities, current governance arrangements encourage little effort on behalf of productivity. It will also lay out preconditions for productivity, which will establish premises for a proposed new governance system.

GOVERNANCE DEFINED

Governance is the set of arrangements by which actors outside of schools influence their operation. They do so by setting goals, defining desired outcomes, requiring that certain processes be followed, and forbidding (via penalties) certain behaviors. Note that this definition does not include schools' internal governance arrangements – whether they are controlled internally by a teacher collaborative, a principal operating as a sole proprietor, a board of directors, or some other arrangement. As subsequent sections will show, there is no reason to believe that external governance should require that every publicly-funded school have the same kind of internal governance.

In the U.S., external governance of schools consists of rules, goals, administrative processes, and prohibitions established by Congress, state legislatures, the local school board (either alone or via agreements with employee unions), courts, various regulatory agencies, and bureaucracies (e.g. the State Department of Education, and local district central offices). By this definition governance is distinct from leadership, the use of discretion by officials to cause change in the organizations they direct.

In schools, even intimate private ones, one group of adults takes responsibility for the care and instruction of other people's children. There is always the possibility of conflict, between the preferences of parents and the beliefs and habits of teachers.⁷ These conflicts must be anticipated and kept to a minimum by agreements and processes. These agreements, processes, and methods of managing conflicts are governance.

Governance is control of what happens in a school from the outside, whereas leadership is control of what happens in a school from the inside, by its own indigenous principal, teacher cooperative, board, etc. Governance and leadership constitute a yin and yang; within-school leadership can do whatever external governance does not prevent.

PRODUCTIVITY DEFINED

A formal definition of productivity is total output per one unit of input. For schools, *productivity* is total student learning produced per dollar of expenditure. A school, or for that matter any other entity, can be assessed in terms of how much it produces and how much it spends. For a given level of expenditure the school producing the highest outputs in terms of student learning is the most productive; for a given level of output the entity spending the least is the most productive.

Measuring productivity in schools is more complex than measuring the output of a factory for two reasons: first, though it is possible (though as we shall see not easy) to determine how much money a school has to spend and even to take account of benefits from endowments and other capital, it can be much harder to measure the value of donated services. Two schools apparently spending the same amount can differ in how many hours teachers work preparing lessons and grading papers, and the value of free teaching, e.g. by a parent who knows calculus better than any of the teachers. Moreover, as we will discuss below, students' level of preparation and effort, major contributors to schools' productivity, are not reflected in any financial statement.

Second, student outcome measurement is always imperfect. Test score gains and student graduation rates are decent but imperfect proxies for student learning. Other measures are possible and desirable. For example, there is the rate at which a school's graduates are able to pass courses at the next level of education without remediation. There are even graduates' rates of employment and participation in community events.

Such measures, however, become available after students have left the school, too late to remedy emergent problems or to flag unproductive schools for change or replacement immediately, to prevent further losses. Long-term measures can ground schools' claims of ultimate benefits to their students, but they can neither avoid the need for prompt measures of performance.

Prompt measures on factors other than student learning, such as assessments of instructional coherence and faithful implementation of policy, go in the wrong direction, threatening to standardize practice, not encourage innovation. Thus, real-time measures of student outcomes like test scores will continue to dominate productivity calculations. Of course, the more closely correlated with long-term outcomes (graduation, college entry without remediation, employability) those measures are, the better.

Measurement issues are endemic to assessment of schools. This is so of any complex human service, but it does not mean that outcomes shouldn't be measured and judged. There are two apparent alternatives to holding schools accountable for measured student learning gains. The first is to let service providers judge themselves by whatever standards they choose, a process with even more serious sources of bias and error.

The second apparent alternative is to eliminate government oversight entirely, in favor of allowing parents to choose any school on any basis they want. Though there are strong arguments that a full market system would be highly productive in the long run, even this system is likely to be driven by test-based measures of student outcomes. This is so because there is reason to fear that children of naive or inattentive parents would suffer in the short run. That is why voucher proponents like Chubb and Moe suggest that government license schools, and comparable student outcome information be made public at all time.^{vi}

Outcome measurement for schools will always be imperfect. But policy makers have no real alternative but to use them.

Governing schools for productivity means incentivizing and constraining educators so that they seek to maximize their outputs relative to expenditures. Designing a governance system to maximize the amount students learn for dollar of public expenditure involves looking beyond the conventional arrangements. It means considering the possibility that quite different ways of funding and delivering public education could be significantly more productive than those common today.

In order to work toward recommendations for a governance system biased for productivity I will argue 5 points:

1. Our governance system is not biased toward productivity; in fact it is biased against it, hiding real expenditures so there is no way to tell what's productive and blocking any impulses to productivity that exist;
2. A system biased for productivity would be wide open to experimentation but not indulgent of failure;
3. Real productivity can't be attained by ignoring some key skills that students need to master or neglecting students who are expensive to educate;
4. Standards are a necessary element of a productivity-biased governance system, but they must be empirically based and parsimonious; and
5. To get the most out of schools we also have to create incentives for students to put the most they can into learning.

American public schools have complex governance arrangements that push them in many directions, but not toward productivity, i.e. high student learning per dollar spent. It is possible to envision governance arrangements that would promote productivity, but these would be different from the ones that exist at present.

I will show how the governance of K-12 education can be changed to emphasize productivity. But to do that, I must first show how the existing governance arrangements push schools in quite different directions.

OUR GOVERNANCE SYSTEM IS BIASED AGAINST PRODUCTIVITY

Why is our current system not as productive as it could be? The simplest statement is that our governance system does not require, or even in many cases allow, schools to count the cost of what they do. Even if school leaders wanted to make the most effective use of every penny, they would not have the basic information they would need about what different people, resources, and processes cost.

The same is true at the district level. Except in portfolio cities that have adopted student-based funding systems, districts do not keep track of how much is spent at the school level or on centrally-administered programs and services. As a result, they cannot make good productivity calculations. Districts create estimates of how much is spent per school or per pupil, but these depend on simple averaging operations – for a school, total district expenditures divided by the number of students in the district multiplied by the number of students in the school. But these results are at best weakly linked to reality, since 1) central office resources account for half of total spending in a district and these are unevenly distributed among schools; 2) some schools have more resident programs and resources (e.g. tutors, counselors, enrichment specialists) than others; and 3) some schools have more teachers per pupil than others, and 4) many times the teachers in those overstaffed schools are also paid a great deal more than teachers in others schools.

Thus, even if educators wished to track their own productivity, few could do so with the information available.

The lack of data is just the tip of the iceberg. In general, schools are required to take actions and spend money in ways whose cost and effectiveness is not known. Moreover, these mandates must be fulfilled even if people in schools see better ways to use the resources available to them.

I won't try to provide a comprehensive list of such mandates here.^{vii} But examples will help.

Some mandates come from state legislatures, which set days and hours of operation for schools, allocate funding in well defined categories to limit schools' freedom over how they spend their money, set licensing requirements that prevent schools from hiring people without specific training and experience, and mandate school staffing patterns – a teacher for every so many pupils, a minimum administrative structure for a school no matter how small (e.g. a principal, assistant principal, librarian and nurse) and an extra administrator for every so many students above some minimum.

Some come from the federal government, e.g. requirements that teachers paid from federal funds be given some duties and not others, that schools use particular forms of tests to assess student learning, that handicapped children be educated in the least restrictive environment possible but be given whatever extra instructional services they may require without regard for cost or effectiveness.

Some come from court decrees about student body composition, discipline and expulsion, and levels and objects of spending.

Further mandates come from local school boards, which can decide what methods and materials schools may use, decide who will be hired to work in a school and, via collective bargaining agreements made with employee unions, who may work as a teacher, what work they will do, how they will be paid, and what if anything can be done about ineffective teachers. Local school boards also create mandates for particular schools when they intervene in staffing or programming decisions on behalf of constituents.

Nobody would seriously argue that the existing mandates were put in place to make schools more effective or productive. In fact, no single rationale can explain them. When adopted, by courts, legislatures, or school boards, most were justified as reasonable expedients in crisis or concessions to group demands.

Some elements of governance were initially justified as increasing school effectiveness – for example, class size limits, teacher licensing, seat time requirements, and mandates that all schools have a certain administrative structure. However none of these were based on evidence that the mandated actions made all schools more effective, or were more effective than other possible actions costing the same amount.^{viii} Nor were these effectiveness-oriented mandates coordinated in any way. Each was the product of targeted advocacy, not based on evidence that the one measure being advocated would lead to much better school outcomes.^{ix}

No one of the many mandates that govern schools imposes a crushing burden all by itself, but unrelated mandates accumulate over time, as new crises and conflicts arise and are resolved. As new mandates are encoded in law, regulation, district policies, contracts, and court orders, schools are increasingly constrained.

As a result of these mandates:

Funds are tied up in uses whose costs and consequences are not known;

A lot of money is spent on things that satisfy interest groups (e.g. placement of extra staff and programs in particular schools, creation of special liaison units in the central office) or keep labor peace but have little or nothing to do with student outcomes. (e.g. teacher masters degrees, tiny decrements in class size, job protection for less effective senior teachers); and

Uses of funds that might be good in some situations are mandated for situations in which they don't produce any advantage.^x

These aspects of our current governance system tie up money and the work of teachers and students in ways that, from a productivity perspective, are arbitrary. They also prevent experimentation with and adopting potentially more effective ways of using money and the things it buys – time, people, and materials.

True, some educators refuse to be overwhelmed by mandates and ignore any that get in the way of serving students effectively. But these are the rare risk-takers. Most educators know the safest course is to work within the mandates, philosophically accepting the limits imposed as the cost of working in a public institution. Traditional educators' culture, which has grown up around the objective fact of heavy regulation, is acquiescent; that's why the press so lionizes the rare principal or teacher who will take bold actions despite the incentives to play it safe.

Unless they want to risk violating express requirements, law, contract, or policy, school and district leaders can't:

Change the way students are grouped;

Shift money from non-instructional to instructional uses (e.g. from transportation, facilities rent);

Hire experts to teach subjects that regular teachers are poorly prepared to teach;

Make trade-offs between the use of live teachers and on-line resources that may do a better job of teaching some subjects (e.g. advanced math and physics, which are often taught by teachers who have not mastered the subjects themselves); and

Trade off between a costly but mandated use of funds and a less costly but equally effective one.^{xi}

These options – the things our current governance system prevents educators from doing – are the very things that must happen if schools are to become more productive. In other service sectors, where market competition forces organizations to fund the most productive approach to serving their clients, analogous changes in organization and methods have allowed significant productivity gains.^{xii}

PRODUCTIVITY MEANS EXPERIMENTATION, ABANDONMENT OF FAILURES

Productivity requires flexibility that our governance system does not permit – freedom to make new uses of people, time, and money that adapt to the needs and capacities of learners and teachers, and freedom for parents to choose schools that match their children's needs and abilities. But flexibility itself is an insufficient condition for productivity. Educators also need incentives to prefer more over less effective uses of money and resources, and to search assiduously for new ideas from whatever source they might be available. For family choices to matter, schools must be free to offer different approaches to learning.

In education policy circles there are always stories to the effect that waivers of governance constraints are seldom used. Interpretations differ depending on the commentator's bias – the mandates are perfect and nobody needs to change them; educators have no ideas; educators fear that waivers will be snatched away at the next shift of the political winds; or school leaders don't want to chance the displeasure of stand-pat teachers and parents. There is some truth in each of these interpretations. What unites them all is incentives. School leaders don't take advantage of waivers because doing nothing is safe and making major changes is risky.

In any field, productivity improvement requires incentives – possible rewards for finding a much better way to do something, and real penalties for ignoring opportunities to improve. Such incentives are weak to nonexistent in a sector governed by mandates.

However, positive incentives are strong in a sector in which:

- Performance is closely monitored and publicly graded;
- Unit leaders are free to experiment with new modes of staffing and production;
- Highly successful leaders and organizations can get opportunities to do exciting things and make more money;
- New organizations can enter the field, compete with existing units, and potentially draw away their customers and money; and
- Laggard units – those that neither experiment for themselves nor adopt good ideas developed elsewhere – are constantly at risk of failing and going out of existence.

This is true whether the units are businesses or schools and whether “improvement” is defined in terms of output without regard to cost, or in terms of productivity, achieving the best possible ratio of outputs to monetized inputs.

The conclusion of this paper will show how these factors can be built onto a governance system that emphasizes productivity as a goal.

BEST USE OF MONEY IS NOT THE WHOLE STORY

Productivity, literally the ratio of outcomes to inputs, can't be the whole story in education. Taken literally, the most productive school or educational program could be one that produces very little, but at even smaller cost. Educational performance standards – estimates of what a student must know at a particular age in order to be on track to complete a post-secondary education and gain the skills necessary to make a living in a competitive economy – put a floor under the minimum acceptable outcomes.

Once the threshold of meeting performance standards is met, should productivity be the dominant measure of merit? Again the answer is not straightforward. For the same reason citizens all have an interest in supporting the education of other people's children (i.e. it promotes a decent and democratic society and fosters economic stability and growth), so should citizens want children to be well educated, even beyond minimum standards. Of course citizens also have interests in limiting the costs of education, so they might not want to pay for a phenomenally more effective and productive education system that also cost many times what they are now paying.

Imagine a far-fetched example: a combination of instructional technologies that taught children 10 times as much as the next most effective system, but also cost 8 times as much. The new system would be both more effective and more productive than the next best alternative, but citizens might well decide they couldn't pay for it.

Thus, in public education, the goal of productivity is not absolute, but constrained. Productive schools and instructional programs must at least meet reasonable standards (i.e. minima below which students are at some risk of not being able to succeed at the next higher level of education or in the labor market). Above that minimum and up to the limit of what citizens are willing to pay, the most productive school or method is the most desirable. A governance system built around these considerations would need some capacity for setting standards and for offering citizens the opportunity to decide how much they were willing to pay for forms of education that produced better outcomes but cost more.

In order for school leaders and districts to have incentives to innovate and adopt the most productive practices, we need a governance system built to:

Track student outcomes so they can be calculated by pupil, by school or instructional program and by student group (e.g. age, sex, race, urban-suburban location);

Track expenditures and public funds so that productivity can be calculated;

Create income and job satisfaction opportunities for people who develop highly productive schools that meet or exceed the minimum standards; and

Withdraw public support for schools that produce less than a set minimum or cost more than a set maximum.

STANDARDS – PARSIMONIOUS AND ADAPTABLE ONES – ARE NECESSARY

Standards are necessary for any system that makes judgments about whether a particular school or approach to instruction is benefiting children enough to continue receiving public funds. But the wrong standards can be harmful in two ways: first, if they set performance expectations that will be hard to change, even as the actual skills and knowledge children need change; and second, if they require schools to spend time and money teaching all children topics that are not strictly necessary for success in further education and employment.

When standards are set well, they constitute reasonable estimates of what students will need to know when they move from school to the adult world. Of course those estimates are uncertain; as economic and technical change drives higher education and employment, standards must keep up.

But when they are log rolled (e.g. “I’ll support your proposal that all students learn two foreign languages if you support my proposal that all students take classes in art and music appreciation.”), standards can become disconnected from what students need to know. This can impose costs on schools that reduce their productivity.

To promote productivity, standards must avoid making mandatory what is, considering what absolutely all students need to know, optional. A system oriented to productivity must not constrain schools’ use of time and money arbitrarily. To the degree that schools are forced to do things that don’t pay off they divert resources from indispensable subjects.

The line between the necessary and the optional is hard to set. Americans can easily agree that they want some students to be able to become painters, sculptors, actors, composers, and musicians. But is that goal advanced any more by teaching all students to some moderate level of skill, or by allowing those with the greatest interest and aptitude to pursue the subjects to a high degree of mastery?

Americans can also agree that all students should be prepared to participate in the democratic process. But does that mean that everyone must know particular things about history, democratic theory, rhetoric, or economics? Citizens might want these things taught as expressions of values, whether or not they affect school or adult outcomes.

Of course there is real uncertainty about what forms of knowledge will be used later and what won't. And that's the point. To be as productive as they can be, schools should be constrained only by certainties. And there are some certainties: reading for comprehension, evaluating arguments, mastering arithmetic, basic probabilities, algebra, knowing enough about the human body to maintain one's health, these are probably among the indispensable standards. These also give bases for setting standards for age levels below high school graduation, if it is clear that students who don't develop precursor skills before same age are unlikely to gain them later.

The list of skills needed for certain should be empirically based, and it can be empirically challenged, if new technologies change the way people live and work.

This argument for narrowing standards is not necessarily an argument for narrowing schooling. Elective subjects can motivate some students to stay in school and work hard in core classes. Schools may use such electives as motivators for their students or as ways of practicing core skills. Schools should be able to differ in what they offer and how they motivate and enrich their students. But such subjects are inappropriate for the standards on which schools' productivity is compared.

Of course voters or elected officials might decide to pay all schools to provide subjects that are not demonstrably connected to their productivity, e.g. civics, competitive sports, band, student government. But officials must know that by requiring schools to spend money on such things they are almost certainly reducing productivity.

The current development of common core standards could provide the common empirical basis for assessing the outcomes side of productivity. The conservative backlash against national common core standards is motivated in part by concern that standards will be set to advance the interests of liberals and educators, and not reflect what students really need to know. These are real concerns. But if schools are to be held accountable for performance, and improved through competition – things conservatives favor – there must be some standards.

But conservatives are right that badly set standards could cement into place an erroneous view of what students will need to know in the future, and that standards that are good for today could become quickly outdated. Instead of just saying "no!" critics would be on stronger ground insisting that standards be empirically based and regularly adapted in light of economic and technological changes.^{xiii}

STUDENTS ARE A FACTOR IN PRODUCTIVITY

Schools are not factories fashioning inert material. They get good results only to the degree that they engage and interest students, and encourage them to work hard in order to learn. All else equal, the school that motivates students to pay attention, do the work assigned and go further on their own will be the most productive.

Students vary individually in their motivation, interest, self-discipline, and willingness to engage; moreover, some come to school with much more knowledge and skill than others. This is so at any level of education, not just when students enroll in regular school at age 5 or 6.

Students also vary in how they respond to different environments. KIPP-style schools can be highly motivating to children who need constant reminders about how to listen and engage others, work hard, and show what they have accomplished. These schools' rituals and rewards also give students a sense of belonging, as does the "tough love" approach teachers are trained to adopt. These same features are not likely to be similarly motivating to privileged students of similar age who have long since learned how to play the student role but value acting cool and are cynical about rituals.

Thus, the school that elicits the most effective effort from students might differ from one setting to another. For any group of students, a highly productive school is one that both has a very effective way of building knowledge and skills and can motivate students to pay attention, study hard, and think.

A governance system that seeks productivity must be open to different ways of eliciting students' contribution. Under a governance system that rewards productivity, schools will seek the best way to motivate their particular students. In some cases the best way to motivate might also be a low cost way to teach, e.g. one using technology to individualize instruction. But that might not always be the case. Some students might not persist with on-line instruction, and need to be constantly monitored and instructed in small face-to-face groups. The latter group would cost more to educate, and the most productive approach to teaching them might be much more expensive (and less productive) than the best method for another group.

Differences in this aspect of schooling can have costs: it could be that the best way to elicit student effort in one setting is expensive, and raises overall costs but less than it does productivity. In another setting, requirements for motivating students might be so minimal or easy to implement that the schools' costs are practically limited to the delivery of instruction.

Thus, all the problems that beset comparisons of schools' effectiveness – especially the effort to take account of levels of knowledge and motivation associated with different groups of students—also apply to productivity assessment.

A bias for productivity does not change the fact that it can take more money to educate some children than others. However, it is far from clear that we now know enough to say how much extra "weight" to attach to one student versus another. This is so largely because our current system does not allow broad experimentation with different combinations of instructional methods and approaches to student motivation. A second reason is that we have not developed the ability to categorize students any more finely than by race, age, sex, income, primary language, and place of residence. These factors probably matter for the costs of education, but it is likely that students within one of these categories will differ widely in preparation and motivation. Two students who look alike might respond best to different school environments and instructional methods. To develop the most productive set of schools possible at any given time, we have to know vastly more about the optimal match between individual students and particular learning opportunities.

A productivity-biased system would also avoid spending money re-teaching students things they already know. Repeat teaching is expensive and counter to student motivation. A highly productive school would not let a student slip behind in summer so that it had to re-teach materials. This might require a different school year with less of a hiatus at any time, or mandatory on-line refreshers in the summer.

A system biased for productivity would not hold some students down just because other students hadn't mastered skills that they have. To the degree possible, schools should try to save money by avoiding repeat teaching, and use the time of advanced students efficiently. Cost savings on this basis are not easy to capture in schools that spend all their money on staff, and staff can only teach so many classes each day and must be paid even if some students already know what they teach. But it is more possible in schools using on-line resources, where costs are fixed and income rises with enrollment. To a degree, advanced students in schools that can assign them flexibly can take advanced subjects, and avoid boredom. Those schools could take credit for advanced students' further learning, so their measured productivity should increase. This approach should motivate students and their parents especially if the advanced courses could earn them free college credits or early graduation. I will also suggest below how students whose K-12 education costs less than a defined minimum be allowed to use some of the savings to defray college costs.

The implications for a productivity-biased governance system are profound.

First, that government must be prepared to spend more to get some children up to minimum standards than others;

Second, that the system must be built on the assumption of uncertainty: our current system has prevented the cycle of innovation, experimentation and selection necessary to identify highly productive approaches to instruction and student motivation and match students to them appropriately; and

Third, that the governance system must have a heavily analytical focus, constantly seeking to refine what we know about what kinds of instructional experiences and motivation are most effective and least costly in helping particular students reaches standards.

TOWARD A PRODUCTIVITY-BIASED GOVERNANCE SYSTEM

In an earlier paper I sketched out a governance system that would be more open to innovation and continuous improvement than the present one.^{xiv} It was designed to meet five criteria, all of which are necessary but not sufficient, for a productivity-biased governance system. The five criteria, and four additional requirements for a governance system built to optimize productivity, are summarized below.

1. *Based on Elected Representation:* In America, elections confer legitimacy. Though appointed officials might be more focused and consistent, the voters must ultimately play some role. The key is to allow voters to select key decision-makers but to limit the frequency of elections, insulate elected officials from short-term pressures, and constrain what elected officials can do so that they cannot micromanage schools.^{xv}
2. *Open to Strong Executive and Professional Action:* Elected representatives need to oversee the system but no one benefits from having the schools so dominated by rules or intrusive oversight that professionals cannot do their best for children, or subject to such intrusive oversight that school leaders cannot focus on instruction. The same is true at the system level: superintendents and other top administrators need the freedom to attack problems quickly and decisively.
3. *Intolerant of Inequity and Neglect:* Since 1964, American public education has been required, both by law and public expectation, to avoid assigning poor and minority students to inferior schools, to avoid admissions discrimination based on race, and to close gaps on achievement and opportunity. In practice, public school systems do not always meet these expectations. But the expectations remain. A desirable future governance system must not just make formal commitments to equity; it must be designed to keep them.

4. *Efficient*: Public education uses two kinds of scarce resources, children’s precious time and taxpayer money. Children have only one chance to be, say, nine years old, and once wasted that opportunity can never be regained. The same is true of public money; it can’t be spent twice. Thus careful marshaling of both private (students’ time) and public resources is both necessary and legitimate.

5. *Performance-Based and Adaptable to New Needs and Possibilities*: It is not enough for public education to offer schools that look well staffed and equipped. A good system must therefore be one that seeks high performance and admits uncertainty: school effectiveness is to be sought not assumed. For governance, this assumes that the system is naturally skeptical, not cocksure, and seeks and uses evidence about what is working and what is not.

These criteria set the stage for a governance system biased toward productivity, but they are not sufficient. To ensure that schools use public funds and children’s times as productively as possible, and always search for ways to become more productive, a governance system must meet five additional criteria:

6. *Transparent about expenditures at all levels and their links to student gains.*

7. *Holds schools accountable for their productivity, not just effectiveness.*

8. *Provides incentives for students and families to use resources productively.*

9. *Encourages schools to use services provided by others when they increase student productivity.*

10. *Adapts funding available in light of what it costs to deliver the most productive forms of instruction.*

EXPENDITURE TRANSPARENCY

The need for transparency about expenditures is straightforward: to assess the productivity of a school or instructional program it is necessary to know everything that is spent on it, as well as how much students learn. The additional complication introduced above, that it must be possible to assess productivity of different schools and programs for different groups of students, requires a degree of granularity that current public education accounting systems cannot provide.

Use of these data to inform decisions at the system level – about unproductive schools or instructional programs to be closed, productive ones to be reproduced, and better targeting of schools and programs to particular groups of students – would require that expenditures be followed to the child level and be merged with outcomes data in the same school year that they were generated. The state and school district would also need capacities for detailed analysis to find and take action on evidence of productivity outliers.

Schools would also need the same data to assess their own productivity, overall and for particular pupils, and to identify highly productive on-line or other alternative programs to which they might assign students for whom courses offered by the school were not productive.

These requirements imply significant investment in data and analytic systems at the state and local levels, whether employees or contractors do the work.

ACCOUNTABILITY FOR PRODUCTIVITY, NOT JUST EFFECTIVENESS

Under a productivity-biased governance scheme, schools would be held accountable for productivity, particularly in educating children to meet ambitious standards. Though highly effective schools would be unlikely to be closed, productivity would be a tiebreaker. If, for example, two existing schools were serving an area suffering population decline and one had to close, the more productive one would stay open. Local Boards could also close a reasonably effective school if a group offering a dramatically more productive approach challenged its charter renewal.

Schools would be the entities held accountable under this governance scheme. Teachers working for a school would gain income and job security, depending on whether the school was so productive that it could expand or make money selling its services to other schools; they could also lose out if their school was closed for low productivity or abandoned by parents who found something better. However, no one outside the school could determine who was hired or how much they were paid. That would all depend on the school's success and how central individual teachers were to it.

Making the school the accountable unit means that families would have choices among chartered schools but they would not be able to break the entire backpack up into many parts and spend it at their own initiative. Schools would remain responsible for whether students meet standards and for the productivity of the standards-related learning opportunities they provide. Schools could also seek to attract parents by offering many options for remediation and enrichment, whether or not these are linked to the standards.^{xvi} As the next section will show, once students had met standards, their families could gain more direct access to the funds in their child's backpack.

INCENTIVES FOR STUDENTS AND FAMILIES

Student and family motivation is the great unsolved mystery of public education. As schools are now organized, students either come motivated or they don't; teachers can reach a few via personal contact, but many are unreachable. A governance system designed around productivity could give students and families new incentives, and give schools new opportunities to experiment with student motivation, but it could not guarantee that the problem would be solved for every student.

A productivity-biased governance system could do two things:

1. Provide real financial incentives for students to use their time (and thus public funds) as productively as possible.
2. Allow schools to learn about and get access to materials and techniques that have increased the productivity of students in other schools.

As discussed above, students need incentives to work hard and master necessary material quickly, and parents need incentives to make sure they do. A governance system could approach this by letting families benefit from student productivity, by letting them share in the savings from courses not taken or months of school not needed. Schools also need to benefit from their students' productivity, so the savings could be divided equally.

Family incentives could reward students who were able to avoid or cut short course-taking by passing rigorous proficiency exams. Then, funds saved could be shared between the school and the family, with the student's share going into an account that could be used to pay for instruction at any time the student or her parents chose, for the rest of her life. A student could use the money for elective courses not available at or through her school, or keep the money to pay for higher education.^{xvii}

This proposal obviously applies to secondary students. However, some parents might see the advantage in sending their children to elementary school in an advanced state of preparation and using the savings for lessons (e.g. in art, dance, or instrumental music) not available at the school or saving for college.

For this to be possible schools would have to be able to realize savings when individual children test out of a course. That might not be possible for conventional courses taught by teachers in classrooms, but it could work for on-line courses or tutorials that schools could buy on a per-capita basis. The fact that both schools and families could benefit financially from this arrangement creates an incentive for schools to use courses that charge a constant amount per-capita as much as possible.

One possible problem with these incentives is that privileged families might be more likely to realize savings than disadvantaged families, which have fewer opportunities to build students' skills out of school. However, since the pupil-based funding would be weighted for the difficulty of educating children with particular characteristics, all families could have financial incentives to prepare and support their children.

Of course schools would also benefit when students who based on their demographic characteristics are expected to need remediation, pass their courses on time. Insofar as student weighted funding takes account of the likelihood of remediation, schools that prevent course failure could have extra money to share with families. To realize these benefits schools would need to take advantage of the quick feedback on skills acquisition now available from on-line assessment and diagnostic programs, which impose some costs. However, as children progress through school the advantages of not falling behind will accumulate. Ultimately schools that do this for their disadvantaged students could avoid the most unproductive possible kind of expenditure, on preventable special education placements.

These incentives would also encourage schools to look for methods to encourage students to attend, do the work, and learn rapidly. Schools that built student skills and motivation could attract, and share financial benefits with, parents.

SCHOOLS USING ONE ANOTHER'S SERVICES

All the ideas in the preceding section presume the ability of schools to make available a wide variety of courses and enrichment experiences. This is impossible if a school spends all its money on employees and a fixed curriculum. But it is possible if schools consider themselves gatekeepers between students and the vast number of learning experiences available for per-capita fees on-line and from other schools.

Mike Johnston and I have expanded on this idea of schools as brokers of learning experiences elsewhere.^{xviii} The arrangements suggested here create strong incentives to search for the best way to meet any student's need, and to be indifferent about whether a student takes a course delivered by his home school or some other source. Most schools will continue to offer adult supervision, counseling, and tutoring, and some will develop instructional specialties that both

keep their students at home and draw students enrolled elsewhere. But to be competitive, especially under an accountability system that takes account of productivity, schools will need to organize themselves for nimbleness, directly delivering only those courses and other aspects of the student experience at which they are good, and “buying” others from other schools or vendors. Thus, a school might employ teachers in English and arts, and buy physics and math instruction, and extracurricular experiences like outdoor leadership and advanced sports instruction, from others.

In effect, schools will constitute a marketplace for instructional programs and other services, each trying to be an excellent provider (and thus seller) of some things and a buyer of others.

Unproductive schools face severe penalties, including loss of students and possible loss of their charters. Should a school also be penalized in lesser ways, e.g. by fines, if its students don’t do very well, but not badly enough for the local board to revoke its charter? I have argued elsewhere^{xix} that hair-trigger penalties for schools that run into minor trouble would discourage risk-taking and discourage people with promising but not yet proven ideas to enter the market. The productivity perspective does not alter this conclusion.

FUNDING LEVELS ADAPT TO COSTS OF THE MOST PRODUCTIVE APPROACH

A productivity-biased governance system would be oriented to spending enough to support the most efficient system of instruction available. Understanding that what is most efficient for one group of children might not be so for other groups (e.g. well-supported native born middle class children vs. immigrants from war-torn countries who had missed some years of school) the system would try to link spending levels to student characteristics. It would, then, employ a weighed student funding system whose weights were determined by the cost of the most efficient known approach for a given group of children.

Any resemblance between this approach to determining spending levels and the “adequacy” arguments made by some to escalate spending on U.S. schools is illusory.^{xx} Spending levels would be based on the most efficient, not the average or the most expansive approach to meeting the needs of a given group of children.

Weights for particular groups would be set according to demonstrated performance, not (as in the case of adequacy arguments) on simulations of what programs of unknown character might achieve. Thus, weighing would be conservative. Today, weights for disadvantaged children would likely be based on the cost of delivering simple but highly focused and disciplined instructional programs, resembling traditional Catholic parochial schools or newer “no excuses” models like KIPP.

However, this funding system would encourage research and development on new approaches, especially for the education of children whom no existing set of schools serves well. The R and D itself could be sponsored by foundations, investors, and the federal government, as will be proposed below. But when new approaches, for example combinations of in-person and computer based instruction with specific ancillary supports, prove uniquely productive for a particular group of students, the governance system needs to adapt to the evidence. That can mean increasing spending for particular groups of students, at least until something equally effective and less expensive comes along.

CAN THIS HAPPEN?

Re-orienting our public education system to emphasize rather than ignore productivity would be a complicated endeavor. This is so largely because being oblivious to productivity is so deeply ingrained in the way we govern, finance, and assess public education today.

However, those in favor of a productivity-biased education governance system don't exactly have to start from scratch. Many of the system elements described above – pupil-based funding and accounting, school-level control of spending, public oversight of schools based on performance rather than compliance, schools' freedom to experiment with new modes of staffing and teacher compensation, and openness to new providers and technologies – are present in New Orleans and other "portfolio school districts." A portfolio school district is one that provides families the best choices among schools possible, using a combination of strategies – including traditional direct operation, chartering, and contracting out to private providers and on-line schools – and is willing to close low performing schools no matter who operates them and open the best new school possible no matter what the source. State laws, most recently in Ohio, are also being changed to create new freedom to experiment in search of more effective forms of schooling.^{xxi}

Productivity requires changes beyond those being tried now, especially creating data bases that permit simultaneous analysis of school spending and student outcomes, and assessment of schools on how much they produce per dollar spent. These changes will require new data management capacity and analytical routines that, though obviously technically feasible, will not be easy to build.

Can productivity become the focus of a coalition strong enough to transform state and local policy?^{xxii} Only time will tell. Groups that oppose experimentation with new schools, new uses of technology and money, and performance-based school accountability will regard a focus on productivity as a further step in the wrong direction.^{xxiii} Groups that favor those changes might like the idea but be unwilling to make the investments, and reluctant to accept the possible demands for increased taxpayer funding of public education, that a focus on productivity might bring.

Some might argue that a focus on productivity is premature – that entrepreneurs need to be drawn to education by the promise of generous funding, and that cost control should come only after effective new instructional systems are developed and proven. This view ignores the fact that innovators and entrepreneurs are already hard at work in K-12 education, developing new ways of enhancing student and teacher productivity via personalization, close tracking of student progress, and immediate remediation for students who fall behind. Policy factors, including state caps on the numbers of charter schools and inequitable funding arrangements, are the main barriers to further spread and refinement of such innovations.

This is not to say that there is no need for foundations and government to promote research and development – on new data systems and analytics, and on new uses of instructional technology – that would make a focus on productivity possible. A proposed new federally funded advanced research projects agency ED/DARPA,^{xxiv} modeled after the Defense Advanced Research Projects agency, the source of extremely valuable innovations like cruise missiles and stealth technology. Ed/ARPA could pay the development and demonstration costs of revolutionary new instructional systems, could accelerate progress.

Whether Americans can adopt a productivity-biased governance system depends on how strongly leaders outside of education are convinced that we need to use every penny of public expenditure to the benefit of children. In the abstract, that proposition is irresistible. But in practice it involves politically difficult changes, and requires all parties to acknowledge profound uncertainties about what will ultimately work for different groups of children, and what it will cost.

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- i See for example a recent analysis of productivity of U.S. school districts by the Center on American Progress. Boser, Ulrich, *Return on Educational Investment A District-by-District Evaluation of U.S. Educational Productivity*, Washington DC, 2012.
- ii This is the spirit of Education Secretary Arne Duncan's speech about the "new normal" in education –a constant search for more productive ways to educate children. Duncan points out that there are two ways to make education more productive: reduce waste and do more of what works and less of what doesn't. See *The New Normal: Doing More with Less – Secretary Arne Duncan's Remarks at the American Enterprise Institute*, November 17, 2010.
- iii For a source of complementary but somewhat different recommendations, focused on maximizing the use of on-line technologies in public K-12 education, see Chubb, John E., *Overcoming Governance Challenges in K-12 Online Learning*, in Finn, Chester E. and Daniela Fairchild, *Education Reform for the Digital Era*, Washington, the Thomas Fordham Institute 2012, pp.99-134
- iv Cities adopting a portfolio strategy seek more productive ways of educating children, particularly the most disadvantaged, and are indifferent whether these arise in existing district-run schools or in charters, on-line schools, or other innovative instructional delivery systems. For a detailed account of the portfolio strategy see Hill, Paul T., Christine Campbell, and Betheny Gross, *Strife and Progress: Portfolio Strategies for Managing Urban Schools*, Washington D.C., Brookings Press, 2012.
- v As I have shown elsewhere, conflict in K-12 education is rooted in the facts that children cannot fully understand or advocate for their own long-term interest in education, but all the adult groups associated with schools also see children's interests through lenses colored by their own self-interest. See Hill, Campbell, and Gross, 2012, chapter 4.
- vi Chubb, John E and Terry M. Moe, *Politics, Markets, and America's Schools*, 1990, Washington, Brookings Press. See also Moe, Terry M. and Paul T. Hill *Moving to a Mixed Model: Without an Appropriate Role for the Market, the Education Sector Will Stagnate,* in *The Futures of School Reform*, Jal Mehta, Robert B. Schwartz and Frederick M. Hess (eds.). Cambridge: Harvard Education Press 2012.
- vii See also Murphy, Joseph, *Governing America's Schools: The Shifting Playing Field*, *Teachers College Record* Volume 102, Number 1, February 2000, pp. 57–84
- viii Some governance constraints arise from perennial problems, e.g. schools' tendency to under-serve handicapped children and to try to hand pick the easiest to educate so they can look good. Rules to protect students against discrimination are perennial and unavoidable governance constraints for public schools. However, many of the conflicts that led to governance constraints are transitory. Issues arise, are resolved, and their resolutions encoded in law, policy, or contract. These requirements stay in place even when the problems are no longer present or the parties to conflicts that gave rise to them are no longer active.
- ix For a more complete account on the constraints imposed on experimentation and flexible use of public funds see Hill, Paul T., Marguerite Roza, and James Harvey, *Facing the Future: Financing Productive Schools*, Seattle, Center on Reinventing Public Education 2008.

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- x For an exhaustive account how funds are now used and the opportunity costs imposed by regulatory, contractual, and accounting constraints, see Roza, Marguerite, *Educational Economics: Where do School Funds Go?* Washington D.C., The Urban Institute Press, 2010.
- xi Again, the cities pursuing the portfolio strategy are exceptions to these generalizations.
- xii See, for example, Triplett, Jack E. and Barry P. Bosworth, *Productivity Measurement Issues in Services Industries: "Baumol's Disease" Has Been Cured*, New York, Federal Reserve Bank of New York Policy Review, Sept 2003 p. 23-33
- xiii For a mature perspective on this point see Finn, Chester E., *The War Against the Common Core*, *Education Next*, March 5, 2012.
- xiv Hill, Paul T., *Picturing a Different Governance Structure for Public Education* in Manna, Paul and Patrick McGuinn (eds.). *Rethinking Education Governance*, Washington D.C, Brookings Press 2012 (forthcoming).
- xv Mayoral takeovers have been cited as ways to distance school policy from everyday politics, but they do not eliminate elected representation. Mayors themselves are elected, and can be voted out of office when voters become unhappy with their school policies, as D.C. Mayor Adrian Fenty learned in 2010. New York Mayor Michael Bloomberg, with virtually unlimited powers over New York City Schools, moderated some of his positions in preparation for his third-term re-election campaign in 2009. In Cleveland, where state law established mayoral control of schools, citizens vote periodically on whether to return control to an elected school board – an arrangement that makes all-powerful mayors consider public sentiments. Mayors are accountable for many issues other than education, and that can make them less responsive to single-issue groups. But they ultimately answer to voters, which means that mayoral control is a form of elected representation.
- xvi I have argued elsewhere that parents really can't be held accountable for unproductive uses of public funds – they can't be fined or have their children taken away – but schools can. Thus, the insistence on schools serving as the manager of funds and purchaser of services, at least to the point that students meet standards. See Hill, Paul T., *School Finance in the Digital Learning Era*, in Finn, Chester E. and Daniela R. Fairchild, *Education Reform for the Digital Era*, Washington D.C., The Thomas W. Fordham Institute 2012. See especially pp. 91-95.
- xvii Today, students who pass AP exams at high enough levels to gain college credits get some form of this reward. However, it is available only to the most advanced students at the best-staffed schools. The incentive proposed could be available for any student who could pass a proficiency exam in any course.
- xviii Hill, Paul T. and Mike Johnston, *In the Future, Diverse Approaches to Schooling*, *Phi Delta Kappan*, November 2010 vol. 92 no. 3 43-47
- xix *School Finance in the Digital Learning Era* 2011

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^{xx} For an explanation of the “adequacy” rationale now in use in school finance litigation, see Hanushek, Eric & Alfred A. Lindseth, *Schoolhouses, Courthouses, and Statehouses: Solving the Funding-Achievement Puzzle in America’s Public Schools* (2009), Princeton, Princeton University Press.

^{xxi} For a full account of the portfolio strategy and its main exemplars, see Hill, Campbell and Gross, op. cit. 2012. In a forthcoming book with Ashley Jochim I propose an even more rigorously productivity-oriented governance system See Hill and Jochim, *Within Bounds: A Democratic Constitution for Public Education*, Chicago, University of Chicago press, forthcoming 2014.

^{xxii} For more on political strategy toward a new productivity-oriented K-12 governance scheme see *Within Bounds*, Chapter 8.

^{xxiii} See Baker, B.D., Welner, K.G. (2011) *Productivity Research, the U.S. Department of Education, and High Quality Evidence*. Boulder, CO: National Education Policy Center. Retrieved August 5, 2012 from <http://nepc.colorado.edu/publication/productivityresearch>.

^{xxiv} See Obama Unveils Education Research Initiative Modeled on DARPA, <http://www.edweek.org/ew/articles/2011/02/14/21arpa-ed.h30.html> Downloaded June 26, 2012.

