

**“MODERN” EDUCATION FINANCE:  
HOW IT DIFFERS FROM THE  
“OLD” AND THE ANALYTIC AND  
DATA COLLECTION CHANGES IT  
IMPLIES**

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**Abstract**

This article contends that a new concept of education finance has emerged in response to substantial alterations in the U.S. education policy environment. The major distinction between modern and old is that the latter was principally concerned with arrangements of inputs in K–12 schooling. The former, modern-era education finance, is concerned with relationships of inputs to schooling outcomes. This modern education finance paradigm provokes a need for (1) research and data extending into the operations of education itself, not just financing; (2) far more fine-grained information than now exists regarding education inputs, throughputs, and outputs; (3) cohesive concepts for linking these data elements with one another to better understand their interactions; (4) an expanded set of outcome measures; (5) information about how previously public sector, dominant-education offerings interact with expanded private market conditions; and (6) better linkage between K–12 and postsecondary data and analyses.

## **INTRODUCTION**

By what means can student academic performance be elevated and what will it cost to accomplish this purpose? How can achievement gaps between lower- and higher-income students be narrowed, and what education finance and education data collection implications accompany this objective? Which instructional techniques are most cost effective? To what extent can market forces, competition, pay-for-performance incentives, and enhanced provision of schooling elevate student performance and client satisfaction? What combinations of individual training and incentives are most likely to lead to higher teacher productivity? Can elementary and secondary education be better integrated with postsecondary schooling, and do financing arrangements offer solutions for linking these disparate systems?

These questions illustrate the evolving education policy climate and emerging challenges contained in modern K–12 education finance. Scholarly issues and analytic techniques related to contemporary policy challenges are substantially different from those dominating America’s education finance research agendas even two decades ago. The post–World War II concern of most education finance specialists had been directed toward problems of resource input, particularly issues of resource equality. Until the late 1980s, this conceptual shift in education finance, to issues of resource sufficiency and efficiency and the consequences of market competition, exhibited an evolutionary trajectory. However, during the late twentieth century, intensified public expectations for elementary and secondary education achievement, judicial interventions in state school financing, new state school aid programs addressing issues of “adequacy,” the federally enacted No Child Left Behind Act (NCLB), an emergence of a more rigorous scientific paradigm in education research generally, and evolution of strategies for effective school operation have accelerated the rate at which modern is superseding old in education finance. Albeit not quite an abrupt revolution, this transformation has occurred with remarkable speed.

## **MODERN EDUCATION FINANCE: WHAT IS NEW AND HOW THE NEW DIFFERS FROM THE OLD**

There is no clear chronological separation between modern and old where education finance is concerned. Much that can be characterized as old persists and is unlikely to disappear anytime soon. For example, early-twentieth-century funding mechanisms and pupil weighting procedures developed by George D. Strayer, Robert M. Haig, and Paul R. Mort are near mirror images within today’s current performance policy paradigm. Conversely, what can be claimed to be modern has existed in nascent form for a long time. Charles S. Benson’s

**Table 1** Summary Comparison of “Old” and “Modern” Education Finance

| <b>Issue/Dimension</b>                        | <b>“Old” Education Finance</b>  | <b>“Modern” Education Finance</b>  |
|---|---|--|
| Value orientation                             | equity (distributional and taxpayer)  | efficiency/productivity (accountability)                                 |
| Decision dynamic                              | political   | rational and political   |
| Distribution objective                        | per pupil parity  | per pupil sufficiency and performance motivation                         |
| Relative concern for pupil “performance”      | minimal   | high   |
| Equity concern for tax sources and mechanisms | high  | reduced  |
| Linkage to instructional components           | Minimal   | desired  |
| Reliance upon evidentiary basis               | minimal   | desired  |
| Policy system oversight                       | scrutiny of overall revenue amount and distributional equity                          | scrutiny of overall revenue amounts, distributional equity, and outcomes |
| School district incentive                     | maximize income via input manipulation (enrollment census and student classification) | maximize income via input manipulation and outcome maximization          |
| Data orientation                              | state and local districts   | student, classroom, school, district, state, and nation                  |
| Analytic orientation                          | resource comparisons  | resource and performance interaction                                     |

*The Cheerful Prospect: A Statement of the Future of American Education* (1965) proposed integrating vocational and academic track education in an effort to eliminate educational disparity and improve efficiency. Though his writing did not initially leverage reform, it was acknowledged as pivotal in the federal enactment of the Carl D. Perkins Vocational and Applied Technology Education Act (1990) and School-to-Work Opportunities Act (1994).

This section presents a brief snapshot of significant conditions that fostered modern K-12 finance’s emergence into policy’s prime time. Table 1 provides a summary characterizing modern and old education finance across eleven comparison dimensions to which this article later returns.

The release of *A Nation at Risk* (NCEE 1983) triggered a sustained period of public concern for and policy-maker attention to higher levels of performance for public schools in the United States. For example, Bill Honig’s election in 1984 as California’s highly visible Superintendent of Public Instruction sent an electoral signal regarding significance of this policy shift. During his campaign Honig claimed that his incumbent opponent had concentrated on access and equity at the price of excellence and higher pupil performance. Honig stayed

true to his campaign promises upon election to office and advocated enactment of elevated pupil performance standards.

Five years thereafter, a highly publicized 1989 summit conference of America’s governors in Charlottesville, Virginia, organized by President George H. W. Bush, resulted in a host of new national and state-level policies. For example, a set of six national goals for educational improvement, later expanded to eight goals during the Clinton administration, were incorporated into legislation by Congress, while heightened performance expectations for students, accompanying accountability provisions for schools and districts, and state student achievement testing programs proliferated at the state level.

Post-*A Nation at Risk* reforms were generally of two kinds. One was heightened expectations including intensified high school requirements, reduction of high school electives, and more stringent college admission standards. This was an era of student motivation efforts such as “No Pass, No Play” and “No Graduate, No Drive” state statutes (Webb, Covington, and Guthrie 1993). In addition, more money flowed to elevate teacher salaries.

The aftermath of the 1989 Charlottesville summit marked a second “post-*A Nation At Risk*” education reform phase. Initial efforts at heightened rigor and spending had resulted in only minimal achievement gains, as indicated by trends in average National Assessment of Educational Progress (NAEP) scores for the nation in reading, mathematics, and science (Campbell, Hombro, and Mazzeo 2000). Emergence of systemic reform, sometimes referred to as standards-based reform, outlined in a seminal article by Smith and O’Day (1991), signaled a second phase. Smith and O’Day’s ideas further propelled policy proposals for aligning components of the educational system, linking standards, statewide standardized student achievement tests, teacher licensing requirements, instructional materials, professional development, state capacity-building subsidies, performance ratings and school report cards, and positive and negative sanctions for achievement progress. These initiatives not only became the hallmark of the Clinton administration’s educational policies (Vinovski 1996) but also facilitated a new understanding that school revenue generation and distribution arrangements were something of an operating precondition, separated from the purposes of schooling under the old education finance paradigm. The emerging understanding emphasized the need to forge a link between these revenue matters and schooling outcomes.

Enactment of NCLB in 2001 solidified concern for schooling outcomes, rather than the prior era’s assumed quality criterion of resource inputs. NCLB poignantly signifies the outcome-oriented production model underpinning modern education finance.

Judicial action has also dramatically contributed to the emergence of “modern” education finance. Following *Rose v. Council for Better Education* (1989) in Kentucky, for example, judicial decisions such as *Campbell* in Wyoming (1995), *Campaign for Fiscal Equity v. State* (2003) in New York, *Lakeview School District v. Huckabee* (2001) in Arkansas, and *West Orange-Cove v. Nelson* (2001) in Texas have reinforced government’s obligation to provide revenues sufficient to ensure that students have an opportunity to achieve elevated standards. The entire revenue sufficiency movement, made possible by the advent of state-promulgated curriculum standards or learning standards, has virtually replaced old-style, dollar-for-dollar parity concerns as an equity basis for judicial intervention. The 1999 National Research Council Report, “Making Money Matter: Financing America’s Schools,” acknowledged this shift by referring to the adequacy movement in litigation as “Equity II” (Ladd and Hansen 1999; Minorini and Sugarman 1999a, 1999b).

Table 2 summarizes content characteristics of significant court cases for the time period encompassing the transition from the old education finance to the modern. From trial testimony and judicial decision content analysis one can see how expansive both the consideration of courts and expectations for education finance have become.

The transition from prior considerations of taxpayer and per pupil spending equity to a new focus on resource sufficiency and system efficiency has not always been smooth. Court opinions and legislative expectations often outstrip the current capacity of social science research to deliver satisfying responses to policy questions (Guthrie 2004). Furthermore, whereas education finance experts once needed to know only about taxation and distribution formulas, now they are expected to be conversant regarding matters as diverse as achievement testing, teacher qualification, student disabilities, links between poverty and academic performance, historical evolution of education and education finance, remedial instruction, class size effects, school organization, instructional strategies, performance incentives, privatization and outsourcing, economies of scale, cost function analysis, school governance, program evaluation, leadership effectiveness, and personnel deployment.

### **INSIDE THE MODERN EDUCATION FINANCE REFORM PARADIGM**

Education financing is now a principal instrument for mediating pursuit of educational policy and has moved from the periphery of policy-maker concern to a far more central role. This section describes the two principal school improvement or education reform strategies—systemic alignment and economic dynamics—that have emerged in the past decades to build a foundation for how the emerging modern education finance has begun to conceptualize linking resources to elevated student academic performance.

**Table 2** A Quarter-Century Selection of Significant “Old” and “Modern” Education Finance Court Cases Classified by Complaint, Trial Testimony, and Decision Content

| <b>Court Case/<br/>Schooling<br/>Facet</b> | <b>Robinson<br/>(NJ)<br/>1969</b> | <b>Serrano<br/>(CA)<br/>1972</b> | <b>Seattle<br/>(WA)<br/>1978</b> | <b>Edgewood<br/>(TX)<br/>1989</b> | <b>Rose<br/>(KY)<br/>1989</b> | <b>Campbell<br/>(WY)<br/>1994</b> | <b>CFE<br/>(NY)<br/>2000</b> | <b>West Orange<br/>(TX)<br/>2004</b> | <b>Lakeview<br/>(AR)<br/>2004</b> | <b>Abbeville<br/>(SC)<br/>2005</b> |
|--|-----------------------------------|----------------------------------|----------------------------------|-----------------------------------|-------------------------------|-----------------------------------|------------------------------|--------------------------------------|-----------------------------------|------------------------------------|
| Per pupil \$ parity                        | X                                 | X                                | X                                | X                                 | X                             |                                   |                              |                                      |                                   |                                    |
| Taxpayer equity                            | X                                 | X                                | X                                | X                                 | X                             |                                   |                              |                                      |                                   |                                    |
| “Adequate” \$ resources                    |                                   |                                  |                                  |                                   | X                             | X                                 | X                            | X                                    | X                                 | X                                  |
| “At-risk” funding                          |                                   |                                  |                                  |                                   | X                             | X                                 | X                            | X                                    | X                                 | X                                  |
| Class size                                 |                                   |                                  |                                  |                                   | X                             | X                                 | X                            | X                                    | X                                 | X                                  |
| Teacher salaries                           |                                   |                                  |                                  |                                   | X                             | X                                 | X                            | X                                    | X                                 | X                                  |
| Teacher qualification                      |                                   |                                  |                                  |                                   | X                             | X                                 | X                            | X                                    | X                                 | X                                  |
| Curriculum standards                       |                                   |                                  |                                  |                                   | X                             | X                                 | X                            | X                                    | X                                 | X                                  |
| Scale economies                            |                                   |                                  |                                  |                                   | X                             | X                                 | X                            | X                                    | X                                 | X                                  |
| Preschool availability                     |                                   |                                  |                                  |                                   | X                             | X                                 | X                            | X                                    | X                                 | X                                  |
| Student achievement                        |                                   |                                  |                                  |                                   | X                             | X                                 | X                            | X                                    | X                                 | X                                  |

### **Systems Alignment**

One major reform strategy hinges upon the presence of measurable academic expectations or curriculum standards and an assortment of instructional and accountability components aligned in pursuit of these standards. The production components in this model involve dimensions such as educator time, class size (a dimension of teacher time spent with students), instructional materials and textbooks, student achievement testing, time on learning tasks, preservice teacher training, parent and community engagement, leadership training, personnel and institutional performance reports, professional development, in-school peer group characteristics, and in-school and out-of-school extracurricular activities for students.

This systems-alignment strategy presumes that much regarding good instruction is already known and that appropriate coherence between various instructional components can result in higher levels of student academic learning. Also, components of this strategy lend themselves to being operationalized into an instructional alignment measure that can be considered either as a dependent variable, in an effort to discern policy system conditions providing the greatest or best alignment, or an independent variable, to determine alignment consequences for pupil performance.<sup>1</sup>

### **Economic Incentives**

The other principal reform model takes schooling and instruction to be a “black box,” perhaps one that is currently impenetrable or unknowable. Market and economic incentive advocates contend that a specification of expected outcomes and an appropriate system for measuring and sanctioning school success in producing desired student outcomes will productively guide actions of those inside the black box. Under such assumptions it is less necessary than in a systems-alignment strategy to understand the nature of throughputs. However, it is still crucial to understand the nature of outputs. It is also more important to understand interactions of various market components (e.g., supply; consumer information; performance incentives for students, teachers, schools, and districts; competition effects; and market regulation) in the economic-incentive model than in the systems-alignment model.

In policy circles competition is often posed as an alternative reform strategy since market dependence is seen as a major incentive. The ability of clients to seek different schools, presumably schools more consistent with personal preferences, is taken to be a market incentive to motivate instructional providers.

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1. For more information on means for measuring “alignment” and the metrics involved see Porter (2002).

In essence, providers either perform to clients’ expectations or lose market share and accompanying resources.

While it is important to distinguish between these two intervention models (the sets of tools used to determine their effectiveness overlap partially, but not completely), a reader should not gain a misimpression that the two models are mutually exclusive. There are ways by which they can be combined. For example, an operator of a private school is presumably interested in having instructional components aligned in order to be effective. Although a systemic alignment strategy does not preclude reliance upon client choice systems or performance awards and punishments for teachers or schools in the public sector, systemic-alignment advocates seldom recommend performance incentives for students, teachers, schools, or school districts.

## **RESEARCH AND DATA COLLECTION IN A MODERN EDUCATION FINANCE ERA**

The fulfillment of modern education finance’s quest for elevated outcomes, pursuit of higher academic standards, means for enhancing instruction, incentives for performance, and desire for greater cost-effectiveness depends upon superior understanding of research and data collection. This requires scholars to be capable of not only integrating new and old education finance concepts but also forging new paths of inquiry to generate more valid and reliable conclusions and guide twenty-first century policy-making decisions.

### **Fusing Modern and Old in Research**

There are three categories of recurring research and policy issues that carry over in part from the old and still stem from modern. These categories, and the data needs they portend, are described below.

#### ***Equity***

Even if the early-twenty-first-century policy pendulum has swung somewhat away from equity and more forcefully toward sufficiency and efficiency matters, parity issues remain. There continue to be interests among advocates and analysts in knowing what schools and districts spend per pupil and what similarly situated taxpayers and various levels of government and revenue sources contribute toward school spending. Also, revenue and spending figures need to be informed by inflation, overtime, and by regional cost differences. Classification of data by student characteristics such as household income level, ethnicity, race, language proficiency, disability, grade level, district type, and school type, public or private, all continue as action and policy agenda items.



### ***Adequacy***

Discerning the extent to which a finance system provides sufficient opportunity for students to acquire specified schooling objectives, “adequacy” requires access to information regarding student performance, legislated arrangements, and system resources. Student performance measures should be manifold, including academic achievement, participation and persistence, and behavior (discipline). Per pupil spending can be attributed by district, but attribution by school is even better. (In the future, it will probably become important to have per pupil budgets and accounting.) Also needed are data regarding characteristics of pupils (race, household income, language proficiency, and disability), regional or geographic cost differences, teacher salary information, administrative expenditures, instructional supply spending, and a host of other expenditure objects. Measures of school facilities also are needed. Finally, determining “adequacy” also necessitates information regarding system arrangements such as school size and remoteness and state regulations for activities such as teacher licensing and pupil, school, and district accountability.

### ***Efficiency and Productivity***

Determining what instructional programs and arrangements are effective and, further still, those that are cost-effective requires an ability to link data sets across performance and resources. Measures of pupil performance must be associated with resources such as a defined program (e.g., reading or mathematics), teacher time, instructional materials, staff development, school and class size, pupil–professional ratios, teacher characteristics, students’ socioeconomic status and other relevant personal and household characteristics, and bounded program descriptions (expectations, pedagogy, and content) that measurably separate one instructional format from another.

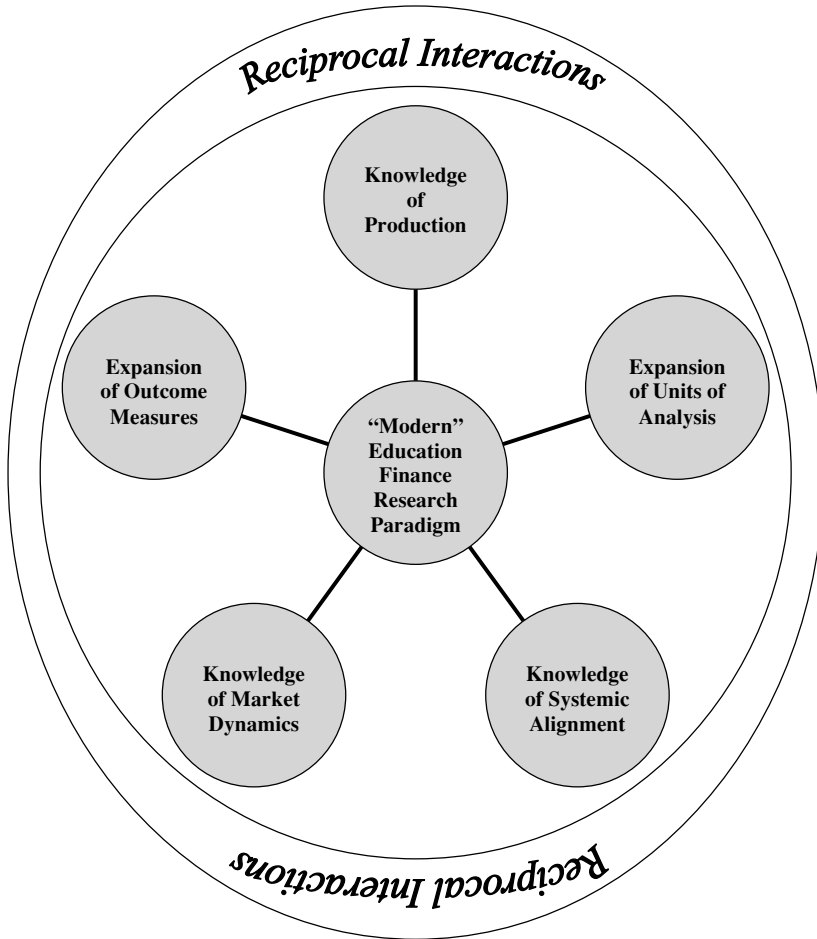
### **Modern Education Finance Research and Data Collection Needs**

Principal differences in data collection and research demands, when contrasted with conventional finance predecessors, occur on five dimensions. The graphic model in Figure 1 depicts education system processes and highlights new data items that need to be unraveled to promote a more fine-grained understanding of schools within the modern education finance paradigm. Space is insufficient here to undertake an exhaustive description of each of these dimensions; however, in Figure 1 we have illustrated each.

### ***Knowledge of Production***

More complete modeling techniques and enhanced knowledge of instructional, operational, and organizational strategies are needed to realize modern

Figure 1



Needed Components and Interactions for “Modern” Education Finance Research Paradigm

education finance’s call for understanding relationships between educational inputs, throughputs, and outputs. For many years scholars have relied on traditional education production forms that depend on repurposed production attributes from the private manufacturing sector, where known ratios of inputs to outputs exist (see, for example, Cohn and Geske 1990; Betts 1996; Monk and Rice 1999). Education is a multiproduct enterprise where technology used to produce different attributes may not permit aggregation, thus necessitating that each outcome has a separate or individual production function. As a result, complexity of “real” education production function is at the mercy of the spectrum of characteristics embedded in the “raw material” (students) available to “producers” (schools).

It is probable that a schooling production function is highly individualized and presently resides in an unstable black box comprising multiple idiosyncratic interactions between, and characteristics possessed by, individual teachers and individual students. As Guthrie and Rothstein (1999) noted, models lacking any recognition of education-relevant production components that can be reasonably presumed or empirically proved to enhance students' skills, knowledge, and capacity development can tell us only what resource levels were generally associated with acceptable achievement (with inefficient practices removed, to the extent known), not what resource level would be necessary, if used efficiently, for this outcome.

### ***Expanded Outcome Measures***

Policy relevant outcome measures depend crucially upon one or many quantifiable variables or proxies closely paralleling and encompassing characteristics embodied in a desired production outcome. A great majority of studies, for example, rely on some combination of standardized achievement test scores as an outcome measure. However, test scores are “potentially noisy and unstable measures” (Ballou 2002, p. 12) that may catch only a narrow swath of education system purpose.

Most state statutes list tens of other desired cognitive and noncognitive outcomes. These include, for example, performance dimensions such as citizenship, music, art, physical fitness, patriotism, personal honesty, and punctuality. Though recent research is beginning to examine causal relationships between educational attainment and such education-related outcomes as citizenship (Milligan, Moretti, and Oreopoulos 2004; Dee and Levine 2004), standardized test scores are not understood sufficiently to be assumed appropriate for capturing our education system's whole intent when influencing contemporary policy decisions. As a result, it is imperative that more complete outcome measures that more accurately reflect the broader intent of education are collected.

### ***Knowledge of Education Market Dynamics***

One of the two previously referenced major reform strategies, market dynamics, requires yet a different kind of information to measure its effectiveness. In addition to most of the aforementioned measures regarding pupils, households, and resources, choice necessitates measures of supply and competition. These involve private and public providers and competition classifications of schools regarding charter, magnet, or “attendance geographically restricted” status.

### **Summary**

Data collection can be expensive. However, direct costs are seldom the expensive part of the undertaking. Actual incremental costs of a data collection effort are infrequently more than a few tenths of a percent of total education operational spending, even when student academic testing is put into the cost equation (U.S. General Accounting Office 2004). Larger costs are associated with transactions and local, state, and other school-affiliated officials' time when asked to comply with requests for information. It is the multitiered governmental mosaic relied upon by the United States to operate its schools that exacerbates transactional expenses. The possible (mis)perception by information suppliers that requested data are of little or no value to them in their or their institutions' immediate operation adds to the burden and sometimes distorts the validity of the data collected.

Some data are needed for administrative oversight and legal compliance (e.g., minimal teacher salaries and percent of local district budget spent on instruction and administration). Where such administratively required information is also useful for research and analytic purposes, then marginal collection costs are low. It is when data providers are seldom end users that incremental collection costs are intensified and accuracy is stretched. These costs, both financial and psychological, necessitate an efficient data collection operation.

### **CONCLUSION**

Total costs for America's public schools have risen to almost \$3 billion an operating day; and as a result, the policy community anticipates that education finance is becoming a lever, manipulation of which might maximize education system purposes. This is the backdrop and principal propellant behind the increasing policy system insistence that resources be linked with outcomes. It is this linkage that is shaping “modern” education finance.

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