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Rethinking Teacher Compensation Policies: Why Now, Why Again?

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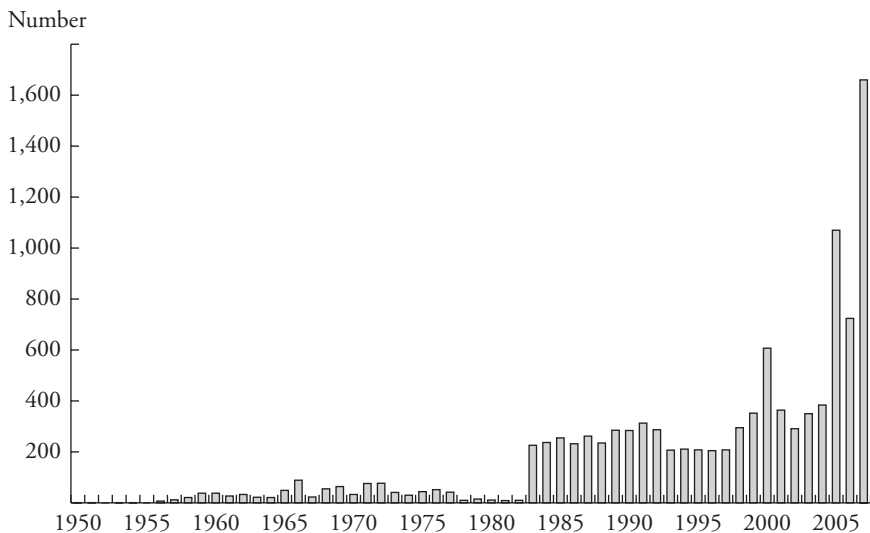
In recent years, teacher compensation reform has resurfaced as a strategy to enhance academic outcomes in the U.S. public elementary and secondary school system. A number of school districts, state education agencies, and national and federal initiatives presently fund the development and implementation of programs that remunerate teachers based on their performance or differentiate teacher pay in response to market conditions. These programs are predicated on the argument that prevailing compensation practices provide weak incentives for teachers to act in the best interest of their students and that inefficiencies arise from rigidities in current compensation policies.

Financial incentives also have been advocated as a viable tool for motivating teachers to higher levels of performance, enticing more effective teachers to join or remain in the teaching profession, and aligning teacher behaviors and interests with institutional goals. Nonetheless, a sturdy and influential base of individuals and organizations remains fundamentally opposed to modifying the single salary schedule.¹ Opponents cite little evidence that pay-for-performance programs make schools better and further note that these programs render schools less effective by crowding out intrinsic rewards; they also say that the education system lacks appropriate measures for evaluating teacher performance.

Efforts to reconceptualize teacher compensation practices have garnered steady, if not increased, attention since the early- to mid-1980s, as illustrated in figure 1-1.² The notable spike in 1983 coincides with release of the influential *A Nation at Risk* report and then-president Ronald Reagan’s proclamation that “teachers should be paid and promoted on the basis of their merit and competence. Hard-earned tax dollars should encourage the best. They have no business rewarding incompetence and mediocrity.”³ Also in 1983 a twenty-one-member congressional task force on merit pay established by Rep. Carl Perkins (D-Ky.) publicly supported and encouraged experimentation with performance-related pay reform. In fact, the U.S. Department of Education responded by allocating more than \$2.5 million to fund seventy-one compensation reform efforts in thirty-seven states that year.⁴

Perhaps surprisingly, research on pay-for-performance programs in the United States has tended to focus on short-run motivational effects, and this research is highly diverse in terms of methodology, target populations, and evaluated programs.⁵ In contrast to the applied natural and human sciences’ practice of drawing causal inferences before policy decisionmaking, the education sector has tended not to rigorously evaluate policy innovations, particularly with respect to teacher pay. As such, the sector would benefit from deliberative assessment of past

Figure 1-1. *Number of References to Teacher Compensation Reform in Popular Media, 1950–2007*



and present reform efforts as a means to differentiate fact from fiction. Now is a salient time to take stock of the teacher compensation reform movement.

The chapters in this volume focus primarily on two of the more prominent (and controversial) types of teacher compensation reform: awards based on pre-determined tasks or outcomes related to teacher and student behaviors (that is, pay for performance), or both; and recruitment and retention incentives or incentives for teaching in a hard-to-staff school or subject (that is, market-based compensation reforms). This introductory chapter presents a brief history of teacher compensation policy reforms and then discusses theoretical and empirical arguments for and against these reforms. The following section summarizes relevant evaluations of pay-for-performance and market-based compensation reforms, paying particular attention to evidence from experimental and quasi-experimental study designs. This chapter concludes with a short summary of the chapters in this volume.

A Brief History of Teacher Compensation Policies and Reforms

As the U.S. economy shifted from an agricultural to industrial foundation in the late nineteenth and early twentieth centuries, so too did the role of elementary and secondary public education. The public education system was recast as a way to produce effective citizens, unite society, and prevent crime and poverty. This new purpose and focus, combined with increased professionalism within teaching, enabled reconceptualization of teacher compensation practices, first through the grade-based compensation model and then through the single salary schedule.⁶

The grade-based compensation model paid teachers according to the level of schooling taught, and many of these models rewarded teachers based on annual performance reviews completed by school administration. This “merit pay” approach, however, typically violated procedural and distributive fairness as white males were more frequently awarded merit bonuses than nonwhite male teachers, and female teachers were paid considerably less than white male teachers.⁷ The grade-based compensation model also paid secondary school teachers more than predominantly female elementary teachers.⁸ About one-half of school districts in 1918 included similar merit pay provisions in their grade-based compensation programs.⁹

With the women’s rights movement push for “equal pay for equal work,” school systems began developing and adopting more egalitarian teacher compensation practices.¹⁰ In 1921 Denver and Des Moines introduced the single salary schedule, which since has underpinned teacher pay practices. The single salary schedule determined pay according to two criteria thought to be most

central to teacher productivity—years of service and degree held. It leveled the playing field relative to the grade-based compensation model by paying teachers on the same metric regardless of race, gender, or grade level taught and eliminating merit pay. Highly predictable, the single salary schedule also eased annual salary negotiations between school boards and teachers unions, a particularly attractive outcome considering the strained labor-management relations of this period.

There were individuals who opposed any compensation scheme that did not reward the performance of individual teachers or groups of teachers. Influenced largely by Frederick Taylor's principles of scientific management,¹¹ these individuals advocated for teacher pay systems that provided "as scientifically as possible for the best returns to society for the increasing public investment" by approaching salaries from their "economic and social aspects and not in terms of sentimentality."¹² As noted decades earlier by an Adams County, Pennsylvania, superintendent, Aaron Sheeley, opponents insisted that treating teachers as equals and not accounting for differences in teacher performance offered "a premium to mediocrity, if not to positive ignorance and incompetency."¹³ Nonetheless, by 1950 the single salary schedule was adopted by 97 percent of all U.S. public elementary and secondary school districts and since has remained the dominant method for remunerating public school teachers.¹⁴

Efforts to reform teacher compensation policies have emerged in virtually every decade since the 1950s. Types of reforms can be classified into a handful of categories, including pay for performance, knowledge- and skills-based pay, career ladder programs, and market-based pay (for example, hard-to-staff subjects or schools or recruitment and retention stipends). While not an exhaustive summary, table 1-1 offers definitions and activities of the more prominent reforms proposed in the education sector.

What might not be entirely evident is the fact that pay-for-performance programs can vary markedly. There are a large number of complexities inherent in the design of compensation systems, including: Whose performance should determine bonus award eligibility? What performance indicators will monitor and appraise employee performance? Will the program reward school personnel on a relative or absolute standard? Who is part of the pay-for-performance system? How will bonus awards be distributed to school personnel? Consequently, building a solid research base is necessary for making firm judgments about programs generally as well as for deciding whether specific types of design features have more or less promise.

During the 1980s and 1990s, the focus of compensation reforms typically took the form of either career ladder programs or knowledge- and skills-based pay

Table 1-1. *Types of Teacher Compensation Reforms*

<i>Type of program</i>	<i>Definition and activities</i>
Pay-for-performance	Rewards based on predetermined tasks or outcomes, or both, related to teacher and student behaviors. <i>Input examples:</i> Teacher collaboration, professional development, and lesson preparation. <i>Output examples:</i> Student test scores, graduation rates, dropout rates, student and teacher attendance.
Knowledge- and skills-based pay	Rewards based on completion of teacher activities that are related to the development of knowledge and skills linked to improved student outcomes, as well as demonstration of classroom mastery. <i>Input examples:</i> Portfolio completion, dual certification, graduate degree in subject taught, standards-based teacher evaluation, National Board for Professional Teaching Standards (NBPTS) certification.
Career ladders	Provides new roles for teachers with additional pay and responsibilities as they increase their knowledge and skills. Plans typically involve vertical steps with multiple objectives within each step. <i>Input example:</i> Additional training and professional development, earning advanced degrees, assuming higher levels of instructional responsibility, and mentoring new teachers.
Hard-to-staff subjects	Incentives are targeted to teachers in subject areas where there are shortages, which are based on need at the school, district, or state level. Math, science, and special education are common examples. <i>Input examples:</i> Teachers trained in a high-need subject area teach in a school experiencing that shortage; teachers are compensated for pursuing subject area endorsements in high-needs areas.
Hard-to-staff schools	Incentives are offered for teaching in high-needs schools or districts, typically either high-poverty, low-performing, or geographically remote schools. Like hard-to-staff subject incentives, these incentives are designed specifically to address market factors influences. <i>Input example:</i> Teachers are awarded bonuses for working in high-needs, hard-to-staff schools.
Recruitment and retention awards	Rewards are offered to attract educators to a school and to encourage continued years of service. <i>Input example:</i> Awards are offered for signing a contract to work in a specific school or district. Annual bonuses are offered for each year of continued service in the school or district.

plans. Career ladder programs provided teachers new roles with additional pay and responsibilities, career advancement opportunities believed to encourage retention, and variation in responsibilities and activities designed to “counteract stagnation.”¹⁵ Knowledge- and skills-based pay programs rewarded teachers for successfully completing activities that represent higher levels of expertise and demonstrated

understanding of exemplary teaching practices. Among these activities are portfolio completion, dual certification, earning a graduate degree in subjects taught, or high marks on standards-based teacher evaluations.¹⁶

A large number of states and school districts are exploring recruitment and retention incentives, including rewarding teachers who work in hard-to-staff schools or subjects. Market-based reforms are designed to address the inequitable distribution of highly effective teachers among schools as well as teacher shortages in such subjects as mathematics, science, and special education.¹⁷ Even though the vast majority of states have funded incentive plans around teacher recruitment and retention, as observed by Susanna Loeb and Luke Miller, most of these programs are not well aligned with teacher labor market realities, nor is the receipt of an incentive award usually contingent on teacher effectiveness.¹⁸ Hard-to-staff school and subject bonuses remain at the top of the policy agenda.

The present wave of compensation reform is best characterized by an increased focus on rewarding educational outputs, which is a departure from reform models proposed during the 1980s and 1990s that focused heavily on educational inputs and processes.¹⁹ Pay-for-performance programs may use multiple measures to evaluate teacher performance and incorporate elements found in career ladder or knowledge- and skills-based pay plans; however, student outcomes on standardized assessments remain the most heavily weighted factor in determining bonus award eligibility.

Critiques of Teacher Pay-for-Performance Programs

Critics of pay-for-performance programs in education note that there is a great deal of collaboration among teachers. Introducing individual performance rewards, they argue, might reduce incentives for teachers to cooperate and collaborate with one another, thereby reducing rather than increasing school performance.²⁰ The team dynamic also may be disrupted between teachers as well as between teachers and administrators if a teachers' peers are put in a position of evaluating and rewarding their performance. The same may also hold true if the compensation system is designed as a rank-ordered tournament whereby teachers or teams of teachers are competing for a fixed amount of bonus money.

Critics argue further that pay-for-performance plans are destined for failure because teacher performance is more difficult to monitor than performance in other professions. Unlike, for instance, sales or the billable hours of a doctor or

lawyer, a teacher's output is not measured readily in a reliable, valid, and fair manner. Teachers also may disagree about the optimal set of performance goals, or the evaluation system could lack transparency and teachers have no real idea how they are being evaluated. Given these problems, it is argued, the services provided by an individual teacher or group of teachers should not be linked to schooling outcomes, particularly if measures of teacher performance cannot account for the many factors beyond the teacher's control that influence student achievement.

A third criticism concerns the issue of multitasking.²¹ The multitasking problem arises when the performance of a worker comprises multiple dimensions, only some of which are measured and incentivized. If there is a disconnect between an organization's mission and the activity to which incentives are attached, employees may shift work toward the metered, rewarded activity, and away from other important activities. As documented in several studies on minimum competency accountability programs, poorly designed incentive schemes create greater opportunity in the long run for cheating or related opportunistic behavior.²²

In a similar vein, poorly designed reward systems may create perverse incentives whereby teachers may move away from low-performing schools in order to maximize their chances of earning additional pay. For example, North Carolina's school accountability system was found to make the recruitment and retention of high-quality teachers even harder on low-performing schools.²³ Potential unintended consequences related to the teacher labor market are critically important for policymakers and others to consider because proponents of pay-for-performance programs contend a positive compositional effect on the teacher workforce.

Another frequently cited argument against teacher pay for performance concerns individuals potentially losing interest in an activity as they are rewarded increasingly for that activity. Many individuals claim that sufficient incentives already reside in teaching and that the "primary attraction of teaching . . . continues to be the prospect of achieving success with children."²⁴ Introducing external rewards, this literature posits, will discourage risk taking, damage the cooperative nature of teaching, and negatively affect teachers' perception of their own ability.²⁵ Consequently, even if a pay-for-performance program elicits a positive behavioral response in the short run, the crowding out of intrinsic motivation over time may reduce effort, self-esteem, and originality to the point of negatively affecting teacher and school productivity.

Finally, recent compensation reforms have been faulted for focusing excessively on standardized assessments to determine if a teacher earns a bonus award.

In addition to test scores being noisy and volatile performance measures,²⁶ commentators argue that placing an inordinate amount of weight on student test scores is problematic because approximately two-thirds of teachers do not instruct in a single tested grade or subject. The typical student also engages in a large number of activities and classes beyond those subjects tested by a state's NCLB accountability program.²⁷ Thus a pay-for-performance program focused solely on monitoring and rewarding student test scores captures only part of a school's overall mission.

A Conceptualization of Problems with the Single Salary Schedule

Edward Lazear, a major contributor to the "new personnel economics" literature, provides a useful conceptualization of inefficiencies arising from the single salary schedule, and assesses the economics of alternative teacher compensation regimes, which he terms "payment for input" and "payment for output." He argues that payment for output always trumps payment for input in terms of raising overall productivity for two primary reasons: hiring practices and labor market selection.²⁸

In terms of hiring practices, principals and building administrators must use noisy signals of "true" teacher effectiveness, such as years of experience, highest degree held, or past-employer recommendations. The hiring process's informational deficiencies are ameliorated in most professions by employee performance assessments and the close coupling of pay increases to actual productivity. However, the single salary schedule, along with teacher tenure, impedes principals' efforts to align pay and performance after hiring. For example, Brian Jacob reports that approximately 1 percent of all teachers working in urban school districts either are dismissed or do not have their contract renewed each year.²⁹ Once teachers earn tenure, contract nonrenewal can be triggered only by severe malfeasance on the part of the employee and, even then, termination is an arduous, controversial, and costly process.³⁰

Lazear and others have also discerned a more subtle factor regarding the benefits of a pay-for-performance system. A pay-for-performance program will tend to attract and retain individuals who are particularly good at the activity to which incentives are attached and repel those who are not. That is, while incentives can raise the productivity of the typical worker employed, an incentive system also can raise the overall quality of the workforce simply through differential recruitment

and retention of more effective workers. A case study of Safelite Glass Corporation, for example, reported that transitioning the company's compensation system from hourly wages to piece rates was associated with a 44 percent increase in worker productivity, half of which resulted from workers' gravitating to areas where they were most productive.³¹

Similarly, there is a growing concern that the single salary schedule creates a disincentive for the most capable job candidates from entering the teaching profession. A number of studies document that higher-ability college graduates are less likely to enter teaching,³² and that the most academically talented female students are much less likely to enter teaching than forty years ago.³³ A recent provocative study of teacher turnover found evidence that the migration of high-ability women out of teaching between 1960 and the present primarily resulted from the "push" of teacher pay compression, which took away relatively higher earnings opportunities for teachers, as opposed to the "pull" of more lucrative nonteaching opportunities.³⁴ Although remunerative opportunities for teachers of high and low ability grew outside of teaching over this period, Caroline Hoxby and Andrew Leigh argue it was pay compression that accelerated the exit of higher-ability teachers.

Empirical Arguments for Moving Away from the Single Salary Schedule

A growing number of empirical studies estimating the influence of student, teacher, and school characteristics on student outcomes have concluded that teachers are the single most important determinant of student outcomes. Eric Hanushek was among the first scholars to undertake value added analysis of teacher effectiveness.³⁵ Using data collected as part of the Gary Income Maintenance Experiment, a welfare reform experiment in the early 1970s in Gary, Indiana, he assembled a unique longitudinal data file on approximately 1,800 students and their families. The results indicated that the city's most-effective teachers produced 1.5 grade-level equivalents of annual achievement growth in their students, while the least-effective teachers produced only 0.5 grade levels' worth of growth.

Subsequent studies have detected relationships between teacher effectiveness and student outcomes similar to those reported in the Gary study. William Sanders and June Rivers found a difference of 50 percentile points in student achievement between students that encountered three consecutive years of

teachers at or above the 80th percentile of performance and those students that encountered three consecutive years of teachers in the bottom 20th percentile of performance.³⁶ Moreover, using student test score data from Texas, Hanushek and Steven Rivkin reported that a student who encountered five consecutive years of an above-average teacher could overcome the achievement gap in grade 7 mathematics typically found between students on the free or reduced-price lunch program and those from higher-income backgrounds.³⁷

Advances in value added modeling have also elevated researchers' interest and ability to isolate an individual teacher's contribution to student learning and to determine the extent to which teacher, classroom, and school-level characteristics explain variation in student performance. These studies tend to find that teacher effectiveness is largely unrelated to measured teacher characteristics, such as the type of teaching certificate held, level of education, licensing exam scores, and experience beyond the first couple of years of teaching. Dan Goldhaber and colleagues, for example, found that these observable teacher characteristics only explain about 3 percent of the differences in student achievement that are attributable to the teacher.³⁸

The fact that the vast majority of variation in teacher effectiveness cannot be explained by observable teacher characteristics (that is, the type of teaching certificate held, level of education, licensing exam scores, and years of teaching experience) has played a significant role in teacher compensation reform dialogues. Compensation payments for instructional personnel account for approximately 55 percent of current expenditures and 90 percent of instructional expenditures in public K-12 systems. Yet, these dollars are allocated to teachers in ways that are loosely related to student outcomes. Consequently, many critics of the single salary schedule contend there must be a more efficient and productive way to remunerate teachers.

Evaluations of Pay-for-Performance and Market-Based Incentive Programs

This section reviews previous evaluation studies assessing the impact of teacher pay-for-performance and market-based incentive programs, paying particular attention to evaluations relying on rigorous, experimental or quasi-experimental designs. When implemented properly, such designs are ideal for assessing whether a specific intervention truly produces changes in outcomes under study or whether observed changes in outcomes are simply artifacts of pretreatment differences between two or more groups participating in the study.³⁹ The evaluation litera-

ture is surprisingly thin considering the number of schools, districts, and states that have adopted teacher compensation reforms.

Table 1-2 summarizes key characteristics of these studies, including name of the program being evaluated, study period, sample size, the unit of accountability, the measures of teacher performance, and findings. The most rigorous evaluations conducted to date all come from abroad and tend to report a generally positive impact on student achievement. At the same time, it is less clear whether programs actually promoted long-run learning: some studies find that the effects do not persist from one year to the next or that opportunistic behavior on the part of teachers may actually explain alleged improvements. It is also worth noting that the incentive structure facing teachers and schools in some of the locations under study (for example, Andhra Pradesh, India, or rural Kenya) are much different from the operational context found within U.S. public elementary and secondary schools.

The information displayed in table 1-2 further indicates that several large-scale demonstration projects that employ a random assignment study design have been implemented in the United States. The programs vary widely in terms of program design: the Project on Incentives in Teaching experiment focuses on individual teacher-level incentive pay whereby teachers are eligible for bonus awards up to \$15,000 based on their students' achievement gains, while according to New York City's School-Wide Performance Bonus Program, a school must meet predetermined performance targets and then a school-based compensation committee determines how award money will be allocated to school personnel. These projects are still being implemented and no results are available at this time.

There also is very little empirical information about market-based incentive programs, including teacher recruitment and retention stipends and additional pay for working in a hard-to-staff school or subject. Charles Clotfelter and colleagues found that an annual \$1,800 bonus for being certified in mathematics, sciences, or special education and teaching in a high-poverty school reduced mean turnover rates among targeted teachers by 17 percent in North Carolina.⁴⁰ The Massachusetts Signing Bonus Program for New Teachers offered \$20,000 to attract highly qualified individuals into teaching that might not otherwise have chosen to work in the profession (an initial payment of \$5,000, with a remaining \$15,000 to be paid over a four-year period), but the program was found to be less effective at recruiting and retaining new teachers than alternative certification programs.⁴¹ Other policy interventions aimed at recruiting and retaining teachers include offering mentoring and induction programs, improving working conditions, and hiring and transfer programs.⁴²

Table 1-2. *Summary of Experimental and Quasi-Experimental Evaluations of Teacher Pay-for-Performance Programs*

<i>Program</i>	<i>Study design^a</i>	<i>Study period</i>	<i>Sample</i>
United States			
Project on Incentives in Teaching (Nashville, Tennessee)	RCT	2007–09	147 treatment and 152 control teachers (grades 5–8)
Project on Team-Level Incentives in Teaching (Round Rock, Texas)	RCT	2009	41 treatment and 41 control group teams (grades 6–8)
Recognizing Excellence in Academic Leadership Program (Chicago)	RCT	2008–11	32 Teacher Advancement Program (TAP) schools
Schoolwide Performance Bonus Program (New York City)	RCT	2008–09	191 treatment and 131 control group schools (elementary, middle, and k–8); more than 100,000 in grades 3–8
International			
Kenya’s International Christelijk Steunfonds Incentive Program	RCT	1998–99	100 primary schools; 1,000+ teachers; 50,842 students
Andhra Pradesh, India’s Randomized Evaluation Project	RCT	2006–08	300 schools and 68,000+ student observations
Israel’s Ministry of Education’s School Performance Program	RD	1994–97	62 schools (37 nonreligious, 18 religious, and 7 Arab schools)
Israeli Teacher Incentive Experiment	RD	2001	4,109 students and 27 schools
Mexico’s Carrera Magisterial	RD	1998–03	850,000+ classroom-year observations; 810 primary school teachers; 209 secondary school teachers
	RD	2000–02	76,567 teachers and 27,123 schools

a. RCT denotes randomized controlled trial design. RD denotes regression discontinuity design.

Performance measures

<i>Unit of accountability</i>	<i>Measures of teacher performance</i>	<i>Results</i>
Individual	Student test scores in mathematics, reading, social studies, and science	In progress
Group (grade-level teams)	Student test scores in mathematics, reading, social studies, and science	In progress
Hybrid (individual and school)	Mentor review, self-review, master teacher review, administrator review, classroom observations, teacher-developed portfolio, interviews, student test score gains, and overall school performance	In progress
Hybrid (individual and school)	Student test score levels and gains, student, teacher, and principal perceptions of school environment, and external enurmerators' rating of school's instructional climate	In progress
Group (school)	Student test score gains and student achievement levels	Modest, positive effect for high-stakes assessment; no effect on low-stakes assessment
Individual and group (school)	Student test score gains	Modest, positive effect on high-stakes assessment (approx. 0.12 to 0.19 standard deviations after year one and 0.16 to 0.19 standard deviations after year two)
Group (school)	Number of credit units per student, students receiving a matriculation certification, and school dropout rate	Modest, positive effect for average credit hours earned, average science credits earned, average test score, and proportion of students taking Israel's matriculation exam
Individual	Student achievement levels	Modest, positive effect for number of exit exam credits earned in mathematics (increased 18 percent) and in reading (increased 17 percent)
Individual	Educational degrees, years of experience, professional development, principal ratings, content knowledge mastery, student performance on standardized tests	No effect for primary school teachers; modest, positive effect for secondary school teachers (approx. 3 to 15 percent of standard deviation)
Individual	Educational degrees, years of experience, professional development, principal ratings, content knowledge mastery, student performance on standardized tests	Small, positive effects (< 10 percent of standard deviation)

Overview of the Book

The chapters in this volume are presented in three parts: perspectives on teacher compensation reform; incentive system design and measurement; and case studies and reviews of teacher incentive policies. The first part examines teacher compensation reform from multiple perspectives, including economic, legal, political, psychological, and sociological ones. The second part addresses issues related to the development and design of pay-for-performance programs and policies. The third section contains descriptive analyses of teacher mobility in Florida, case studies of incentive programs in North Carolina and the Little Rock School District in Arkansas, and a comprehensive review of educational policies in developing countries that change teacher incentives in an effort to improve the quality of schooling. Collectively, the chapters that make up this volume provide the foundation for understanding many of the historical and current issues associated with teacher pay reform.

Perspectives on Teacher Compensation Reform

In chapter 2, Dan Goldhaber examines the political positions of the National Education Association (NEA) and the American Federation of Teachers (AFT), how both organizations' views align with teachers' attitudes toward pay reform, and how these organizations influence the design and implementation of teacher compensation reform. He reports that the NEA and AFT "are generally opposed to teacher pay reforms, but diverge in terms of their specific positions on reform." For example, the NEA has opposed pay for performance and additional compensation to attract or retain individuals for hard-to-recruit positions, while the AFT has shown greater willingness to consider deviations from the single salary schedule.

In chapter 3, James Ryan assesses legal obstacles associated with creating differential pay programs for teachers. Although the legal landscape is fairly open to the creation of differential pay programs, according to Ryan, the key message regarding differential pay is compliance with federal guidelines for programs that are federally funded and consent of teachers unions where required by state law. Legal requirements also pertain to the individual rights of due process and protection against discrimination. The clearer and more objective the differential pay criteria, the less likely a program is to be subjected to legal challenges.

In chapter 4, Michael Podgursky offers a market-based perspective on teacher pay. Podgursky focuses on the interplay between the supply of and the demand for teachers and assesses the effects of policies that influence the teacher labor market. This market is characterized by rigidities that impede its efficient operation,

resulting in chronic shortages by teaching field, disproportionate assignment of novice teachers to poor children, and failure to reward more effective teachers. Tenure and district size interact with the single salary schedule to exacerbate the schedule's contribution to inefficiency. These concerns are reflected in the growing attention paid by school districts to market-based and output-based pay reforms. Podgursky notes, however, that the use of alternatives to the rigid steps and lanes of the single salary schedule remains fragmentary and uneven.

In chapter 5, Richard Rothstein contends that education policymakers are not sufficiently aware of the costs and benefits of performance incentive systems. He reports that while supporters of test-based accountability for school personnel cite the private sector as a model, compensation systems in the private sector, though commonly including incentive pay, generally do not rely heavily on quantitative output measures to reward professionals. Because performance rewards are based too heavily on quantitative measures in the education sector, educators often engage in what Rothstein characterizes as three common distortions: mismeasurement of outputs; mismeasurement of inputs; and reliance on untrustworthy statistics.

Incentive System Design and Measurement

In chapter 6, Daniel McCaffrey, Bing Han, and J. R. Lockwood discuss the complex process of designing a system to award teacher bonuses on the basis of student achievement results. As evident in the step-by-step decisions that accompany designing performance-pay systems, including creating a student achievement database and choosing measures of teacher performance, the process of system design is more challenging than most districts and states may anticipate. McCaffrey and colleagues emphasize, "Most value added research to date has focused on the statistical properties of the measures from the perspective of methodological research rather than from the perspective of an algorithm that translates raw administrative data on students and teachers into dollars provided to individual people. The latter perspective forces consideration of many complex issues that are often taken for granted in pure methodological research and thus have not yet been given sufficient consideration."

In chapter 7, Derek Neal presents three challenges for public schools related to the design of incentive pay systems: the limits of performance statistics; the challenge of constructing performance rankings; and the decision to reward teacher or school-level performance. He considers which incentive pay designs may be more or less successful in the public education system, concluding incentive systems that measure and reward schoolwide performance based on rank order

tournaments of comparable schools are likely the optimal strategy. The great myth about incentive pay, according to Neal, is that it brings “business practices” or “competitive pressures” to bear on the public education system. Consequently, he argues that in the absence of truly competitive market conditions, incentive pay is often rendered inefficient and ineffective, at least in its modern-day design and implementation.

In chapter 8, William Sanders, Paul Wright, and Warren Langevin examine whether estimates of teacher effectiveness are consistent when teachers transition between schools servicing different student populations. Although the number of teachers who moved from lower poverty to higher poverty schools was small, the authors report prior effectiveness still predicted effectiveness in the new school for these teachers, as it did for teachers who moved to schools with similar percentages of poor students. Situating their findings in the context of recent education dialogues, Sanders and colleagues conclude that “value added measures of teacher effectiveness should be included as a major component in determining which teachers are to be offered incentives to move to high-needs schools. Teachers selected on the basis of a policy that heavily weights prior value added estimates are more likely to be effective in facilitating academic growth for students, after moving to a new school, than teachers who are selected based on traditional credentials.”

In chapter 9, Lori Taylor, Matthew Springer, and Mark Ehlert describe the teacher pay-for-performance programs implemented as part of the Governor’s Educator Excellence Grant (GEEG) program in Texas. Most schools implemented an egalitarian award distribution structure. Actual bonus awards distributed to teachers ranged from \$75 to \$15,000, with nearly 80 percent of teachers who earned a bonus award receiving less than \$3,000. Taylor and colleagues also examined a number of teacher and school characteristics that could be associated with the type of educator incentive program developed and adopted at a particular school. Given variation in plan designs, and the leading role that teachers played in designing and approving the incentive pay plans, their analysis offers important insights into the nature of compensation reforms that educators perceive to be acceptable.

Informing Teacher Incentive Policies

In chapter 10, Jacob Vigdor offers findings from a case study of North Carolina’s ABCs of Public Education, a program that awards teachers with bonuses of up to \$1,500 for schoolwide student test score gains, and examines whether the ABC program has improved student performance or lowered socioeconomic and racial

achievement gaps or achieved both. He finds that even though the program appears to have an effect on test scores in high-stakes subjects, the effect does not appear on low-stakes assessments, while it also appears that socioeconomic and racial achievement gaps have increased over time. When offering lessons learned from North Carolina's experience with the performance incentive program, Vigdor reports, "Above all else, the results . . . suggest that incentive programs, when adopted in an effort to raise the performance of disadvantaged students, can be a two-edged sword. If teachers perceive bonus programs as yet another factor making jobs in advantaged schools more attractive, increased turnover rates in low-performing schools are a predictable consequence. This unintended side effect could be avoided so long as teachers perceive the bonus program as a fair reward for their effort, rather than a reward for student background or other inputs over which they have no direct control."

In chapter 11, Martin West and Matthew Chingos study the relationship among teacher effectiveness, mobility, and attrition in Florida. The authors find that the least effective teachers are somewhat more likely to leave in the first years of their careers and that schools with traditionally high-performing students do a far better job than most schools of retaining their most effective elementary school teachers and encouraging what appears to be voluntary departures or dismissals of the least effective teachers. In light of the fact that incentive policies in education often treat financial incentives for performance and retention as separate issues, West and Chingos propose exploring combining the two by offering larger performance incentives in hard-to-staff schools as a potentially promising approach to improve both overall teacher productivity and allocation of the most effective teachers across schools.

In chapter 12, Marcus Winters and colleagues report findings from an evaluation of the Achievement Challenge Pilot Project (ACPP) in Little Rock, Arkansas. ACPP ties performance bonuses to individual student fall-to-spring gains on a standardized student achievement test, ranging from \$50 per student (0–4 percent gain) up to \$400 per student (15 percent gain). In practice, ACPP's mechanism for awarding teacher bonuses yielded payouts ranging from \$1,200 up to \$9,200 per teacher per year. The authors report that ACPP appears to have improved student achievement and to have done so more for students of teachers who were previously less effective at producing learning gains. In addition, while teacher attitudes toward the program were generally supportive of ACPP, political activity by the union led to a change in the membership of the school board, and the new majority voted to cancel Little Rock's pay-for-performance system.

In chapter 13, Paul Glewwe, Alaka Holla, and Michael Kremer review a number of educational policies in developing countries that change teacher incentives in an effort to improve the quality of schooling. The review focuses on policies that attempt to improve the quality of schooling by improving working conditions to encourage teachers to come to work; providing direct payment to teachers based on their attendance or their students' performance; and altering teacher incentives by changing how schools are managed. Although the evidence tends to suggest incentives can result in desired changes, Glewwe and colleagues point out that more research is needed before making generalizations. They also address many aspects related to the design of incentive policies that can greatly affect teacher and system responses such as empowering local communities to hire teachers versus providing communities with information on student and teacher performance.

Notes

1. On July 5, 2008, for example, when then-Senator Barack Obama accepted the National Education Association endorsement for the Democratic presidential nomination, a crowd of more than 9,000 union leaders and members in attendance booed when he acknowledged support of performance-related pay incentives. For a more complete review of teachers unions, collective bargaining agreements, and compensation reform, see Randall W. Eberts, "Teacher Unions and Student Performance: Help or Hindrance?" *Future of Children* 17, no. 1 (2007): 175–200; Richard J. Murnane and Jennifer L. Steele, "What Is the Problem? The Challenge of Providing Effective Teachers for All Children," *Future of Children* 17, no. 1 (2007): 15–43; Jane Hannaway and Andrew J. Rotherham, "Collective Bargaining in Education and Pay for Performance," Working Paper 2008-11 (Nashville, Tenn.: National Center on Performance Incentives, 2008).
2. Data were obtained from a beta technology developed by Google that searches archived news information and generates data on the incidence of a particular topic being covered in the media. The search engine examines content from the more than 4,500 paid and unpaid subscription sources counting only one "hit" per story when a story was covered in several media outlets. For more information, visit <http://news.google.com/archivesearch/about.html>.
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4. Richard M. Brandt, *Incentive Pay and Career Ladders for Today's Teachers: A Study of Current Programs and Practices* (SUNY Press, 1990).
5. Michael Podgursky and Matthew Springer, "Teacher Performance Pay: A Review," *Journal of Policy Analysis and Management* 26, no. 4 (August 2007): 909–50.
6. Jean Protsik, *History of Teacher Pay and Incentive Reform* (Washington: Educational Resources Information Center, 1995); Richard J. Murnane and David Cohen, "Merit Pay

- and the Evaluation Problem: Why Most Merit Pay Plans Fail and Few Survive,” *Harvard Education Review* 56, no. 1 (1986): 1–17.
7. Gary A. Adkins, “Pros and Cons and Current Status of Merit Pay in the Public Schools,” Virginia Association of Teacher Educators, Radford, Va. (Eric Resources Information Center No. ED238-162), 1983; Jerome Cramer, “Yes. Merit Pay Can Be a Horror, but Few School Systems Have Done It Right,” *American School Board Journal* 170, no. 28 (1983): 33–34.
 8. Fenwick English, “History and Critical Issues of Educational Compensation System,” in *Teacher Compensation and Motivation*, edited by Larry Frase, pp. 3–26 (Lancaster, Pa.: Technomic Publishing, 1992).
 9. *Ibid.*
 10. Hazel Davis, “Teachers’ Salaries,” *Review of Educational Research* 13, no. 3 (1943): 276–84.
 11. D. J. B. Mitchell, D. Lewin, and E. E. Lawler, “Alternative Pay Systems, Firm Performance, and Productivity,” in *Paying for Productivity: A Look at the Evidence*, edited by Alan S. Blinder (Brookings, 1990).
 12. Arthur B. Moehlman, *Public School Finance* (New York: Rand-McNally, 1927).
 13. Allan Odden and Carolyn Kelly, *Paying Teachers for What They Know and Do: New and Smarter Compensation Strategies to Improve Schools* (Thousand Oaks, Calif.: Corwin Press, 1992).
 14. Protsik, *History of Teacher Pay and Incentive Reform*; Murnane and Cohen, “Merit Pay and the Evaluation Problem”; English, “History and Critical Issues of Educational Compensation System.”
 15. Cresap, McCormick, and Paget, Inc., *Teacher Incentives: A Tool for Effective Management* (Washington: National Association of Secondary School Principals, 1984).
 16. Michael Beer and Mark D. Cannon, “Promise and Peril in Implementing Pay-for-Performance,” *Human Resource Management* 43 (2004): 3–48; Robert L. Heneman and Gerald E. Ledferd Jr., “Competency Pay for Professionals and Managers in Business: A Review and Implications for Teachers,” *Journal of Personnel Evaluation in Education* 12, no. 2: 103–21.
 17. Cynthia D. Prince, *The Challenge of Attracting Good Teachers and Principals to Struggling Schools* (Arlington, Va.: American Association of School Administrators, 2002); Cynthia D. Prince, *Higher Pay in Hard-to-Staff Schools: The Case for Financial Incentives* (Arlington, Va.: American Association of School Administrators, 2002).
 18. Susanna Loeb and Luke C. Miller, *A Review of State Teacher Policies: What Are They, What Are Their Effects, and What Are Their Implications for School Finance* (Palo Alto, Calif.: Institute for Research on Education Policy and Practice, Stanford University, 2007).
 19. Dale Ballou and Michael Podgursky, *Teacher Pay and Teacher Quality* (Kalamazoo, Mich.: W. E. Upjohn Institute for Employment Research, 1997); Dale Ballou and Michael Podgursky, “Let the Market Decide,” *Education Next* 1 (spring): 1–7; Eric A. Hanushek, “The Failure of Input-Based Schooling Policies,” *Economic Journal* 113 (February 2003): F64-F98.
 20. Murnane and Cohen, “Merit Pay and the Evaluation Problem.”
 21. Bengt Holmstrom and Paul Milgrom, “Multitask Principal Agent Analyses: Incentive Contracts, Asset Ownership, and Job Design,” *Journal of Law, Economics, and Organizations* 7 (1991): 24–52.; Jane Hannaway, “Higher Order Skills, Job Design, and Incentives: An Analysis and Proposal,” *American Educational Research Journal* 29 (1992):

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 27. The Center for Educator Compensation Reform, which provides technical assistance around the design and implementation of Teacher Incentive Fund grants, funded by the U.S. Department of Education, offers guidance on ways to address this challenge [Cynthia D. Prince and others, “The Other 69 Percent: Fairly Rewarding the Performance of Teachers of Non-Tested Grades and Non-Test Subjects” (Washington: Office of Elementary and Secondary Education, U.S. Department of Education, 2009)].

28. Edward Lazear, "Performance Pay and Productivity," *American Economic Review* 90, no. 5 (2000): 1346–61; Edward Lazear, "Paying Teachers for Performance: Incentives and Selection," Working Paper (Palo Alto, Calif.: Stanford University, 2001); Edward Lazear, "Teacher Incentives," *Swedish Economic Policy Review* 10 (2003): 197–213.
29. Brian A. Jacob, "The Challenges of Staffing Urban Schools with Effective Teachers," *Future of Children* 17, no. 1 (2007): 129–53.
30. See, for example, stories related to New York City's Teacher Reassignment Centers, which are estimated to cost in excess of \$35 million per year and have become the focus of a forthcoming documentary film, "The Rubber Room."
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41. Edward Liu, Susan Moore Johnson, and Heather G. Peske, "New Teachers and the Massachusetts Signing Bonus: The Limits of Inducements," *Educational Evaluation and Policy Analysis* 26, no. 3 (2004): 217–36.
42. Jennifer Imazeki, *Attracting and Retaining Teachers in High-Need Schools: Do Financial Incentives Make Sense?* (San Diego State University, 2008); Cassandra M. Guarino, Lucrecia Santibanez, and Glenn A Daley, "Teacher Recruitment and Retention: A Review of the Recent Empirical Literature," *Review of Educational Research* 76, no. 2 (2006): 173–208; Jacob, "The Challenge of Staffing Urban Schools with Effective Teachers."