



Principal Compensation

More Research Needed on a Promising Reform

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University of Washington
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Executive Summary

School reforms and improvements depend crucially on the implementation of strategies at the school level—from human resources to curriculum to parent involvement. And the successful implementation of these strategies in turn depends largely on principal leadership.

Few studies link principal attributes directly to student achievement, and of those that do, some are methodologically limited by data constraints. Tracing the impacts of principals on student achievement is also difficult because their actions may affect students through both direct and indirect avenues. For example, principals may directly affect students through curricular choices and indirectly affect them through hiring decisions that determine the quality of teachers in their schools. Despite these constraints, it is clear that principals have a profound influence: They play a crucial role in shaping their schools' environments, which in turn influences the quality of teachers in them.

Given the importance of principals, and the role of compensation in determining the quality of people who opt to pursue this career path, it is striking how little is known about the structure of principal compensation. We know how much principals are paid nationally on average and relative to teacher salaries, and how this has changed over time. Yet we have only a scattershot picture of issues such as the extent to which principal compensation is linked to specific principal credentials or characteristics, or covered by collective bargaining agreements; whether principals are financially rewarded for taking tough leadership assignments; and whether there is a link between their compensation and measures of their performance.

This report includes new empirical research using national data on principals and their salaries to determine whether there appear to be significant shifts in the way principals are paid over a 10-year period from the 1993–94 school year to the 2003–04 school year. The findings from this work show that principals are rewarded for: having more experience, leading a secondary school, leading an urban or suburban school, leading a larger school, and being in a larger school district. Interestingly, there is relatively little change over time in the factors that explain principal salaries, which provides suggestive evidence that there haven't been major shifts over time in the structure of principal compensation. This is interesting since there is a great deal of discussion of pay for performance for principals so one might assume that there would have been a notable shift toward that pay structure during the 10-year period.

Not surprisingly, numerous difficulties arise when it comes to linking principals' pay to their performance. For example, principals' jobs are multi-dimensional and the linkage of pay to specific performance objectives may cause them to overly focus their time and en-

ergy on achieving those objectives. But it is possible to mitigate these and other concerns, and in general there appear to be fewer obstacles to overcome in comparison with those encountered when implementing pay for performance for teachers.

Linking principal pay to performance may even be an almost necessary precursor to implementing performance pay for teachers. It is not a great leap to suggest that principals can make a better case for performance pay for teachers when they themselves are being judged based on performance, and that teachers are more likely to accept this type of pay reform when they see themselves as being part of a broader system that has these incentives built into it from top to bottom. In other words, teachers may view it as a matter of basic fairness that principals be subject to a pay-for-performance system before they subject themselves to such a system. For these reasons, advocates of teacher pay reforms may wish to also focus on principal compensation reform.

Before principal pay for performance can move forward, we need to better understand how principal compensation affects the quality and performance of the nation's principals. This report recommends four key steps to further our understanding of principal compensation and how it should be reformed:

- **Collection of more detailed data on principal compensation.** The primary explanation for the lack of research linking principal compensation to any measure of principal quality is that national and state-level data covering these areas is unavailable. There is currently no principal equivalent to the information that can be garnered from the U.S. Department of Education's *Schools and Staffing Survey*, which asks detailed questions

of school districts about their teacher pay policies. Collecting additional data on principals would undoubtedly spur new research.

- **Greater experimentation with principal compensation structures.** The only way to learn directly about the best compensation practices for getting talented principals into schools is to study the consequences of variation in the way that principals are paid. We need principal pay experiments in order to figure out what works.
- **Development of detailed and sensible principal pay reform designs.** It is both financially and politically costly for individual school districts to develop their own initiatives from scratch. Model programs should therefore be developed to make reform more accessible to districts.
- **An influx of new money for principal pay initiatives.** School districts need funding for new programs from outside the school district. New funding could be provided by states, the federal government, and private foundations. This would enable districts and principals opting to try a reform to see an immediate tangible benefit from trying something new.

We have good reasons to be concerned about the quality of the nation's principals and the influence of compensation in determining it. We also have reason to believe that compensation reform is a promising strategy for improving principal and subsequently school quality. Yet the near total lack of evidence on the efficacy of reforms, such as pay for performance, points to data and research deficiencies that must be addressed in order for us to learn more about their effects and make sound public policies.

Introduction

The quality of education hinges on the quality of people who lead America's schools, and few would argue with the mantra: "Great American schools require great principals to staff them." School reforms and improvements depend on the implementation of everything from human resources to curriculum, and cooperation between everyone from teachers to parents and community members. But the successful implementation of these strategies depends largely on principal leadership.

Principal quality is not well-documented in a quantitative sense, but existing studies provide good reasons for believing that principal quality plays an instrumental role in determining school performance.

Yet views about how to increase the number of high-quality principals are clearly divergent. Some of the policy impetus has moved in the direction of tightening the training and credentialing of those wishing to become principals, while others suggest that regulations ought to be relaxed in order to minimize the hurdles associated with becoming a principal, thus expanding the pool of talented—and non-traditional—individuals who consider the job of principal.¹

Another common recommendation is for increasing principal pay commensurate with the principal's role as the Chief Operating Officer in a school, and a pay system that is more closely tied to performance.² The argument, which is elaborated on below in the discussion of "principal agent theory," is that schools are a fairly self-contained unit operating within a larger system, and leaders of such units should have incentives that are in line with those of the larger system. One way of doing this is to explicitly connect the compensation of the unit leader (the principal) to the goals of the larger system by adopting a pay-for-performance compensation structure.

The goal of tying principal and teacher pay to performance is supported by the Teacher Incentive Fund, a federal grant program designed to encourage the implementation of innovative performance-based teacher and principal compensation systems in high-needs schools. And, numerous localities, including some larger school systems such as Houston, New York, and Pittsburgh, have or are launching high-profile programs that link some measure of principal performance to their compensation.

Despite the importance of pay in determining the quality of people who opt to pursue a job as principal, and the theoretical appeal of tying principal pay to performance, we know shockingly little about whether giving principals performance incentives does in fact affect school performance, and we lack even basic information about the structure of

how principals are paid.³ This report describes what we do know about principal compensation and discusses its links to teacher pay reform, as well as the prospects for implementing pay for performance for principals, given the political, cultural, and institutional constraints of the K-12 education system.

Principal Compensation

The Case for Principal Pay for Performance

Recent news headlines about principal pay-for-performance plans suggest a growing interest in this compensation structure, and the case for tying principals' compensation to their performance is stronger than the case for doing so for teachers. In fact, there are good reasons to believe that this form of compensation is a necessary complement to implementing performance pay for teachers.

There are also some important reasons to be skeptical about whether performance pay works in education. For example, there has been a long history of school districts implementing, and then abandoning, performance pay for teachers.⁴ Thus, it makes sense to assess some of the reasons why pay for performance, or "merit pay," has not taken hold in the teacher labor market, then evaluate the extent to which they are applicable to thinking about pay for performance for principals.

The Challenges of Pay for Performance for Teachers

In their widely cited 1986 article, "Merit Pay and the Evaluation Problem: Why Most Merit Pay Plans Fail and a Few Survive," Richard Murnane and David Cohen explore the reasons that many school districts have failed to adopt teacher merit pay, and why, in places that have tried, it generally doesn't endure long after implementation.⁵ They note that teachers' work is complex, and it is therefore difficult to evaluate all that they do.

This, of course, raises issues of fairness in the evaluation process and concerns that those charged to evaluate teacher performance might be arbitrary and capricious in judgment—one of the significant reasons that teachers in 18 case-study districts using some type of incentive plan, 13 of which were monetary, were generally wary of this type of pay structure.⁶

Murnane and Cohen also raise the concern that the multidimensional nature of a teacher's work means that pay linked to particular tasks or a single outcome, such as student test scores, will encourage teachers to focus too much on achieving the reward at the expense of broader educational goals upon which they are not being judged. Finally, they note that merit pay could undermine collaboration by introducing the element of competition into the workplace.⁷

Dale Ballou, in his 2001 paper, “Pay for Performance in Public and Private Schools,” adds an additional obvious, but very important, reason that teacher merit pay has not been more widely utilized: political opposition. In contrast to Murnane and Cohen, he suggests that there is nothing inherent in the nature of the teaching profession that precludes the use of performance pay and points to its greater prevalence in the nation’s non-sectarian private schools to support his argument.

As Joan Snowden suggests in a recent report for the Center for American Progress, “The Future of Teacher Compensation: Déjà Vu or Something New?” the success or failure of a pay-for-performance system is likely to hinge crucially on both the institutional set up of the system and the process by which it is implemented. This would certainly hold true for pay for performance for principals as well, though as I describe below, the issues that must be addressed in developing a workable system for teachers and principals differ somewhat.⁸

Do the Pay-for-Performance Hurdles for Teachers Apply to Principals?

Some of the issues that make pay for performance a difficult technical, cultural, and political hurdle for teachers are certainly pertinent to the debate over performance pay for principals. Principals’ jobs are as multidimensional as teachers’ jobs, and tying principal compensation to specific performance objectives is likely to focus their efforts on achieving those objectives.⁹ But, the hurdles for principals generally appear lower.

For either teachers or principals, one could attempt to prevent an undesirable

narrowing of focus such as an over-emphasis on test preparation by explicitly including a variety of benchmarks in a performance-based contract. The monitoring and evaluation costs of such contracts for teachers would be quite high given the number of teachers employed in a district, whereas such costs in the case of principal contracts are likely to be far more manageable.¹⁰ Principals may also be more inclined than teachers to accept nuanced subjective judgments about their performance that could implicitly account for the many things they do.¹¹

Even the notion of explicitly tying principal pay to test-based measures of student achievement is less problematic than when this notion is applied to teacher pay. When judging schools or teachers, evaluators face the technical challenge of determining how much data is “enough” to make reasonably well-informed judgments about performance.¹² One would not want to make judgments about performance that are simply based on statistical blips, such as students being sick on the testing day, rather than on true changes in student achievement.¹³

This is certainly a concern when it comes to judging whole schools, but it is a much greater concern when it comes to judging individual teachers because the inferences about schoolwide performance in most cases would be based on a great many more students across grades and subject areas. Moreover, in no small part because of the accountability push of NCLB, state data systems are already geared toward evaluating schools, while few currently have the capacity to link individual students to their teachers and track both over time.

In the context of two key issues—collaboration and political obstacles—there

appear to be significantly lower hurdles to implementing performance pay for principals than there are for teachers. While one might raise the concern that performance pay could impede the collaboration of principals across a school district, this does not seem to be as paramount an issue as the collaboration of teachers within a school. There is no close analogy to such things as team teaching or a common planning period when it comes to principals. Similarly, there is no principal analogy to the unified opposition to performance pay that we see from the two major teachers' unions.¹⁴

Not only are there fewer barriers to linking principals' pay to their performance, such a linkage serves as a natural, almost necessary, precursor to performance pay for teachers. In their 2007 working paper, "Teacher Attitudes About Compensation Reform: Implications for Reform Implementation," Dan Goldhaber, Michael DeArmond, and Scott DeBurgomaster report findings from a recent survey of teachers in Washington state, which shows that less than 20 percent report being in favor of merit pay. Not surprisingly, teacher views were highly dependent on their reported level of trust of their principals: Slightly more than 40 percent of those teachers reporting the highest levels of trust favored merit pay.¹⁵

There is no necessary link between a teacher's trust in his or her principal and the structure of that principal's compensation, but it's hardly a leap to suggest that principals can make a better case for performance pay for teachers when they themselves are being judged based on performance. Teachers are more likely to accept this type of pay reform when they see themselves as being part of a broader system that has these incentives built into it from top to bottom.

Beyond the politics of pay reform, it seems somewhat incoherent to focus on performance pay for teachers in the absence of having a similar system in place for principals, since principals arguably have greater control over many of the factors in a school that influence student success. Thus, teachers may view it as a matter of basic fairness that principals be subject to a pay-for-performance system before they subject themselves to such a system. For these reasons, advocates of teacher pay reforms may wish to also focus on principal compensation reform.

Current Principal Pay-for-Performance Programs

One might infer that principal salaries are not generally linked to performance, given that performance-based principal contracts tend to be newsworthy.¹⁶ (See the box on page 8 for a profile of three pay-for-performance systems). Performance-based pay systems typically define performance in terms of student test-score achievement benchmarks or growth. In Houston, for instance, performance is defined exclusively by achievement: The magnitude of a principal's performance bonus is linked directly to the performance bonuses received by teachers in her school.¹⁷

Performance pay systems are not always tied solely to student achievement benchmarks; some plans also reward principals for broader goals such as parental and community involvement with schools. Pittsburgh, for instance, has adopted a two-track system: principals are eligible to receive yearly bonuses worth up to \$10,000 based primarily on the academic achievement gains of their students, but they are also eligible for increases of up to \$2,000 in base pay,

SCHOOL DISTRICT	ELIGIBILITY FOR INCENTIVES	MAXIMUM INCENTIVE AMOUNT	CRITERIA FOR EVALUATION
Houston Independent School District	All Principals	\$9,000 (\$6,000 local funds, \$3,000 federal match)	Bonus based on school's overall performance in meeting incentive goals as measured by the ratio of actual incentives earned over maximum possible incentives in school and teacher performance pay plan.
Pittsburgh Public Schools	All Principals	\$10,000 bonus, \$2,000 pay raise	Bonus based on student achievement (80 percent) and the school's performance in achieving its own school objectives (20 percent). Raise based on mastery of identified best practices.
New York City Schools	All Principals	\$25,000 raise, \$25,000 bonus	Raise based on working three or more years in high-needs schools. Bonus based on school performance and student achievement.

contingent on progress toward achieving 28 different goals.¹⁸

There are good theoretical arguments supporting pay for performance for principals. A well-developed labor economics literature on pay structure, referred to as “principal-agent” theory, suggests that a performance-based component of pay is likely to be an important means of improving productivity under conditions similar to those faced by school principals. Specifically, principal-agent theory is focused on relationships in which one actor—the “principal”—wants another actor—the “agent”—to act on his or her behalf, but has imperfect information on the effort level of that agent.¹⁹

In the case of education, school principals are acting as agents for the school district managers, specifically the school board and superintendent, who themselves are acting as agents for the broader public.

School principals know more about the day-to-day goings-on in their schools than their supervisors, and many of the things that they do to make the school successful are difficult and costly to measure directly. One way to deal with this problem is for the district to structure an incentive scheme, such as pay that is linked to one or more measures of stu-

dents’ educational achievement, which will persuade the agent to act according to the best interests of the district. For those who adhere to the principal-as-CEO analogy,²⁰ the fact that this pay structure is widely used as a means of making the financial well-being of CEOs contingent on the success of their firm’s stock returns suggests that principal pay for performance might also apply in the field of education.²¹

Given the dearth of systemic information on the use of principal performance pay, it should come as no surprise that there is virtually no data on how, or whether, this pay structure affects student achievement. In fact, there is only one readily available quantitative study that links a principal’s compensation to student achievement: Brewer’s 1988 paper, which finds that student achievement rises when principals are paid more, and paid more relative to their teachers.²²

What’s more, there doesn’t seem to be a single large-scale quantitative study linking the pay structure of principals to any measure of performance that includes student achievement. In the private-sector literature, by contrast, it is quite common to tie compensation to a measure of output. In fact, estimates suggest that well over 90 percent of private sec-

tor firms use some type of pay-for-performance plan for salaried employees, and studies generally suggest that these compensation strategies do lead to higher levels of productivity, in part, perhaps by increasing the likelihood of attracting and retaining high quality employees.²³

A natural question that arises is how large the performance component of an employee's contract should be to encourage higher levels of effort. Individuals care about their *expected* income. When there is an uncertain outcome, as is the case with performance-based pay, they judge the likelihood that they will receive a performance bonus based on the course of action they choose.

To motivate employees to exhibit the right kind of effort—that is, effort toward outcomes that are in line with the objectives of the firm or organization—it is important that the performance component of a contract: 1) be linked to outcomes that are important to the organization; 2) be deemed by employees to be achievable and a fair evaluation of their effort level; and 3) have a bonus sufficiently large to motivate behavioral changes.

Significant education literature touches on the first and second points raised above, which I discuss in more detail below. But given the dearth of principal pay-for-performance studies, very little direct information is available to use in determining the appropriate size of a principal's performance incentive.²⁴

In the context of CEO pay, estimates suggest that CEO pay tends to vary by about \$3.25 per \$1,000 change in shareholder wealth, an amount that Michael Jensen and Kevin Murphy characterize as small in their 1990 paper, "Performance Pay and Top-Management Incentives."

But, as Henry Tosi, Steve Werner, Jeffrey Katz, and Louis Gomez-Mejia note in their 2000 review, "How Much Does Performance Matter? A Meta-Analysis of CEO Pay Studies," this may only be seen as small because it is the one direct measure of pay for performance. Boards of directors may also judge and compensate CEOs based on other objective job performance measures and make subjective assessments of an executive's performance.

In education, of course, there is no direct parallel to financial outcomes, such as sales or stockholder wealth, making it difficult to tell how the performance-pay plans observed in education compare to those in the private sector. But at a deeper level, there is no "right" performance incentive amount: Theory simply argues that the expected amount of a bonus must exceed the cost to employees of changing their effort level, but the size of the performance bonuses in several high-profile programs do not appear to be trivial. For example, the \$3,000 to \$4,000 of the bonus explicitly tied to student achievement in Pittsburgh will amount to approximately a 3 percent to 4 percent pay increase for the average principal, and in Houston the average payout for those who received a \$4,800 bonus represents approximately 6 percent of a principal's base pay.

Existing Research on Principal Compensation

Few data sources provide detailed systemic information on the use of various principal compensation structures such as whether principals are on a salary schedule, or whether performance incentives are included in their contracts. But speculation, along with some quantitative evidence, is that the salaries of most principals are based primarily on

a step and grade system, which is quite similar to the single salary schedule that defines teacher salaries in the great majority of school districts.

Districts define the terms differently, but the step and grade system generally signifies that principals who achieve a particular grade will almost automatically receive annual increases in salary based on additional years of experience.²⁵ The major difference between principal and teacher salary schedules is that the grades, or lanes, for principals are generally based, in part, on both the grade-level of a school—elementary, middle, or high—and the judgments of administrators—usually the district superintendent—whereas the grades in teacher salary schedules are usually based on teachers’ educational attainment.

So what do we know about the determinants of principal compensation? The answer is very little. Probably one of the best sources of up-to-date yearly information about principal salaries is the *National Survey of Salaries and Wages in Public Schools*, administered yearly since 1973 by Educational Research Service.

The ERS survey shows the average salary of principals for the 2006–07 school year to be \$82,414 for those leading elementary schools; \$87,866 for those leading middle schools; and \$92,965 for those leading high schools. It also shows that over the preceding five years principal salaries have roughly kept pace with inflation.²⁶

As Susan Sclafani and Marc Tucker report in their 2006 paper, “Teacher and Principal Compensation: An International Review,” the role and compensation structure for principals varies across countries. In some countries principals earn little more than teachers, but in

most others they earn substantially more. For example, in Australia’s large government secondary schools, principals’ salaries are in the neighborhood of twice what teachers earn, whereas principals in Germany, where they function as a head teacher with some additional administrative duties, earn only a small amount more than teachers.

In the United States, the principal salaries reported by ERS are about 70 percent above what an average elementary school teacher earns.²⁷ This may sound like a significant differential, but it’s worth noting that the average contract year for principals, 225 days, is typically longer than the 187-day average contract year for classroom teachers. The average daily rates of the two—\$369 for principals and \$264 for teachers—have only a 40 percent differential, which is not nearly as different as the annualized salaries.²⁸

Given that the highest paid principal salaries only exceed the highest paid teachers’ salaries by 40 percent, it is unlikely that many school districts have salaries that are in line with one of the Fordham Foundation’s 2003 compensation reform suggestions that “principals’ base pay be at least 150 percent of what their schools’ highest-paid teachers receives.”²⁹ Unfortunately, without more information on the structure of principal compensation, it is difficult to know whether becoming a principal looks like an attractive financial option to teachers, other district employees, or to potential non-traditional principal candidates.

New Empirical Evidence on Principal Compensation

Probably the best information about the policies and practices of America’s schools comes from the *Schools and Staffing*

Survey. The survey, sent out to a nationally representative sample of over 13,000 of the nation's schools during the most recent survey in 2003–04, provides a snapshot at various points in time (currently school years 1987–88, 1990–91, 1993–94, 1999–2000, and 2003–04).³⁰ The SASS is also being administered in 2007–08, but the data are not yet available.

Unfortunately, the SASS survey asks only one specific question about principal compensation “What is your current ANNUAL salary for your position at this school before taxes and deductions?” Nevertheless, it is still possible to use the SASS to assess how various factors affect the salaries that principals report receiving.

Sherrilyn Billger uses the question in her 2007 paper, “Principals as Agents? Investigating Accountability in the Compensation and Performance of School Principals” to investigate the relationship between principal salaries and accountability (for example, whether a principal's school receives a performance report from the district). She finds that principals receive lower salaries in schools that are required to meet state and local school district accountability goals and/or in those states or districts that rate school performance.³¹

Of course, it is difficult to assign causality in studies like this: There may be a direct link between a principal's compensation and the accountability system they are subject to, but it's also possible that districts or states that implement accountability also happen to have fewer resources to pay principals or to use their resources differently, such as to create smaller classes.

This report uses the SASS to examine the extent to which observable principal

characteristics such as degree and experience, and school context such as the size and demographics of a school, explain the variation in reported principal salaries (the econometric model is spelled out more precisely in Appendix A).

The argument for this focus is that the more strongly these attributes predict salaries, the less likely that salaries are dependent on other factors not included in the model. For example, there are no direct measures of performance or of the difficulty of the job assignment in the model, so the portion of principal pay that is performance-based will be seen in the residual—the portion of the variation that is unexplained by the factors included in the model.

This is a somewhat speculative way of assessing the extent to which factors such as performance determine principal compensation, since the residual reflects variation in salary that is due to all factors not included in the model.³² In fact, I am reluctant to infer much from this model alone at a single point in time. But, an examination of the results in the context of other K-12 salaries or over time is likely to be more revealing. Specifically, it is more plausible that differences in the explained and unexplained portion of the variation between models predicting teacher and principal pay show the relative extent to which observable factors predict salaries of each type of school employee.

This is informative since we know that few school systems deviate from the single salary schedule when it comes to paying teachers.³³ And, changes over time in the explained portion of the variation in principal salaries are suggestive of changes over time in the structure of their compensation.

The specific findings for models predicting principal salaries in three school years—1993–94, 1999–00, and 2003–04—while not discussed in great detail here, are reported in Appendix Table A1.³⁴ In general, the findings for principal salaries are broadly consistent both with being on a salary schedule and with findings that have been reported elsewhere. For example, more experience is rewarded; urban and suburban principals receive substantially higher salaries than those in rural schools; principals in larger districts or leading larger schools receive higher salaries; and secondary school principals receive higher salaries than those leading elementary schools.³⁵

The portion of variation in principal salaries that is explained by the observable variables in the model is about 45 percent during each of the three years. Similar research on teacher salaries suggests that observable factors—degree and experience levels being the most important—typically explain over 60 percent of the variation in salaries, so these results do suggest that principals are more likely than teachers to have performance-based contracts, or at least have compensation determined by factors other than those included in the model. Yet the consistency in the estimates across survey years means there is little evidence of any major shift over time in the structure of principal compensation.³⁶

Existing Research on Principal Quality

Few studies link principal attributes directly to student achievement, and of those that do, some are methodologically limited due to data constraints.³⁷ Among the more sophisticated are Randall W. Eberts and Joe A. Stone's 1988 study,

“Student Achievement in Public Schools: Do Principals Make a Difference?” which shows that principal actions play an important role in influencing student achievement at the elementary level; and Dominic Brewer's 1993 study, “Principals and Student Outcomes: Evidence from U.S. High Schools,” which shows principals' actions to influence students' high school achievement.

Eberts and Stone find that more experienced principals, and those with experience in administration (not as a principal), have higher levels of student achievement in their schools. Interestingly, those with higher degrees actually have *lower* student achievement. They also find that principals tend to have higher levels of student achievement in their schools if they are judged to be instructional leaders by their own and their teachers' perceptions as evidenced by their participation in the math curriculum and teacher in-service programs, and if they are judged to be effective at identifying and resolving conflicts.³⁸

Contrary to expectations, however, Eberts and Stone find that a measure of active leadership—which measures the average of the separate perceptions of teachers and a school's principal of whether the principal shows “active leadership”³⁹—and teacher survey responses about how well principals and teachers work together show negative impacts on student test achievement.

The Eberts and Stone study certainly suggests that principals play a key role in student achievement, but one should be cautious about over-interpreting the results. The problem with studying the role of principal behavior—or perceptions of behavior, as in the case of Eberts and Stone—in a non-experimental setting is

that it is unclear whether it is the behavior that influences achievement, or that principals react to the conditions at their school by behaving in particular ways. For example, principals at schools with high-achieving students may have fewer conflicts and consequently be perceived to be better at resolving conflict and may have more time to become involved in curriculum and in-service decisions.

Principals and Teacher Quality

Tracing principals' effects on student achievement is difficult because there are multiple avenues through which their actions may have an impact. For example, principals may directly affect the quality of teachers in their schools through hiring, as in Milwaukee. Brewer finds that principals' selection of teachers is a key influence on student achievement. His study suggests that student achievement rises when a greater share of teachers are appointed to the school during a principal's tenure. Specifically, a 10 percent increase in the percentage of teachers appointed during a principal's term is predicted to increase the gain in student achievement by over 10 percent.

It is unclear in the data used for the study whether principals had direct control over the selection of teachers. However, it is quite likely that even the principals who do not directly choose their staffs have a significant say in hiring decisions. They certainly play an important role in helping to shape the school environment that, in turn, influences the number and quality of prospective hires.

Hiring is very important, as a number of recent studies illustrate the wide variation in teacher effectiveness and the fact that easily observable teacher qualifications,

such as degree and experience, in general do a poor job of predicting their performance.⁴⁰ This implies that what makes teachers particularly effective or ineffective is likely to be individual attributes that are difficult to quantify: enthusiasm for class material, ability to show students connections between what they learn in school and their lives outside of school, help provided to students after school, and so on. These are the very type of attributes we hope principals identify during the hiring process, and nurture among teachers working in their schools.

Principals and the Educational Environment

Teachers, particularly those who are highly qualified, often have many school employment options, and it is not surprising that teachers typically seek employment in pleasant workplace settings.⁴¹ Outside of the type of students in the school, it is principals that play perhaps the most important role in creating such environments.

Survey and case-study research suggests that teachers greatly value competent, supportive, innovative, and fair principals who place the well-being of students at the forefront of a school's agenda.⁴² Further, some quantitative work suggests that working condition differences such as class sizes, preparation time, and a collaborative environment, and so on may play a more important role in determining teachers' employment location decisions than salary differences, and principals themselves shape the working conditions through their interactions with teachers.⁴³

Not only do principals help determine who opts to teach at a particular school, more often than not they are also charged

with evaluating teacher performance and suggesting professional development. Thus, they have access to the tools that can influence teacher productivity. Principals are also sometimes responsible for the choice of a curriculum, and they often take the lead in implementing school reforms and have been shown to be key to sustaining them.⁴⁴ The Eberts and Stone research, for instance, shows that principals have an indirect effect on student achievement through their influence on teacher time spent on instruction and the focus of teacher in-service programs.

Anthony Bryk and Barbara Schneider aptly illustrate some of the difficult-to-

quantify dynamics through which principals can have an influence on school performance in their 2002 book, *Trust in Schools: A Core Resource for Improvement*. This in-depth study of student achievement and school change in Chicago schools documents that the level of effective social relationships, termed “relational trust,” in schools is far more important than curricular or pedagogical reforms for improving student achievement. It also shows that the role principals play in establishing a trusting and supportive environment—not only between principal and teacher, but among teachers, and between schools and parents—is important as well.

Conclusions and Policy Recommendations

Theory, empirical evidence, and common sense all point to principals as an ingredient—perhaps the *key* ingredient—in establishing the conditions that make successful schools. Given the importance of principals, and the role of compensation in determining the quality of people who opt to pursue this career path, it is shocking that we know so little about principal compensation.

Beyond average salaries and how they compare to those for teachers, we know little else. This means that, outside of a few high-profile examples, we have virtually no systemic knowledge about the structure of principal compensation including the extent to which compensation is linked to specific principal credentials or characteristics, or covered by collective bargaining agreements; whether principals are financially rewarded for taking tough leadership assignments; and whether there is a link between their compensation and measures of their performance. It should come as no surprise that a researcher is recommending more research on a topic, but, in this case, the need is profound.

A major explanation for the lack of research linking principal compensation to any measure of principal quality is that national and state-level data covering these areas is unavailable. There is currently no principal equivalent to the information that can be garnered from the U.S. Department of Education's *Schools and Staffing Survey*, which asks detailed questions of school districts about their teacher pay policies. There is no doubt that the collection of additional data on principals would spur new research.

Given the important connections between principal and teacher compensation reform, those focusing energy on teacher pay should also pay attention to the structure of principal pay. The only way to learn directly about the best compensation practices for getting talented principals into schools is to study the consequences of variation in the way that principals are paid. To put it more bluntly, we need principal pay experiments in order to figure out what works.

Experimentation is politically risky, but one could imagine at least two complementary ways get it jump-started. The first is to develop detailed and sensible principal pay reform designs. It is no surprise that one of the most widely implemented teacher pay reforms is the Teacher Advancement Program, for it is far less costly for a district to implement something that is well-known and credible than to develop an initiative

from scratch.⁴⁵ The second is to put new money—from outside the school district—on the table so that districts and principals opting to try a reform could see an immediate tangible benefit from trying something new.⁴⁶

The bottom line is that we have good reasons to be concerned about the quality of

the nation's principals and the influence of compensation in determining it. The near-total lack of evidence on the efficacy of reforms, such as pay for performance, points to data and research deficiencies that need to be addressed in order for us to learn more about their effects and make sound public policies.

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Appendix A: Details on Analysis of the Schools and Staffing Survey

Tables A1, A2, and A3, describe (and provide sample statistics for) the variables used in the analyses from the three waves of the Schools and Staffing Survey (1993–94, 1999–00, and 2003–04). Table A4 provides the coefficient estimates from an ordinary least squares (OLS) regression predicting the log of teacher salaries. The coefficient estimates should be interpreted as the proportionate change in principal salaries (because the dependent variable is in log form) resulting from a 1-unit change in an explanatory variable. Thus, for example, principals who were previously assistant principals are estimated to earn 6 percent to 8 percent more than those who did not serve as an assistant principal prior to becoming a principal.

TABLE A1: VARIABLE DESCRIPTION AND DESCRIPTIVE STATISTICS FOR 1993–94 SCHOOLS AND STAFFING SURVEY (SASS)

VARIABLE	VARIABLE DESCRIPTION/SURVEY QUESTION	MEAN	SD
<i>Principal (N=9,098)</i>			
In (Salary)	Question 25: What is your current annual salary for your position at this school before taxes and deductions? (Variable: A495). NOTE: The natural log of principal salary taken in order reduce the influence of outliers.	10.88	0.24
Age	SASS Created Variable: Principal’s age. Calculated by subtracting respondent’s birth year from 1993. (Variable: AGE)	48.56	6.54
Male (=1)	Question 27: Are you male or female? (Variable: A890)	72.16	
White (=1)	Question 28a: What is your race? White (Variable: A895)	88.27	
Hispanic (=1)	Question 29: Are you of Hispanic origin? (Variable: A905)	3.29	
Experience as a Teacher	SASS Created Variable: Total years of the principal’s experience as a teacher. Calculated by summing years of teaching experience before and after becoming a principal. (Variable: TCHEXPER)	12.33	6.93
Experience as a Principal	SASS Created Variable: Total years of the principal’s experience as a principal. Calculated by summing years employed as a principle of this or any other school. (Variable: PRNEXPER)	8.55	7.31
Beyond Master’s Degree (=1)	Created Variable: Dummy variable indicating whether principal’s highest degree is above a master’s degree. SASS created variable HIDEG: (0) No degree; (2) Associated or Bachelor’s degree; (3) Master’s degree; (4) Above Master’s degree.	35.55	
School Position Before Principal	Serial of questions (Questions 14b.1-14b.7) asking, “Before you became a principal, did you hold the following positions? (Y/N)” Department head (hdept); Curriculum specialist or coordinator (coord); Assistant principal or program director (asstprin); Guidance counselor (guidcou); Library media specialist/ Librarian (librar); Athletic coach/Athletic director (coach); Sponsor for student clubs, debate teams (sponsor). (Variable: A230, A240, A250... A300)	hdept—23.22 coord— 14.76 asstprin— 56.83 guidcou— 8.97 librar— 1.00 coach— 32.55 sponsor— 32.14	

TABLE A1: VARIABLE DESCRIPTION AND DESCRIPTIVE STATISTICS FOR 1993–94 SCHOOLS AND STAFFING SURVEY (SASS) (CONTINUED)

VARIABLE	VARIABLE DESCRIPTION/SURVEY QUESTION	MEAN	SD
<i>School (N=8,767)</i>			
Total Student Enrollment	Question 8: What was the total number of students enrolled in this school around the first of October? (Variable S0255)	608.14	490.50
Percentage of White Students Enrolled	Created Variable: Number of white students enrolled divided by the total number of students. (Variable: [S0425/ S0255] x 100)	72.08	30.77
Percentage of Hispanic Students Enrolled	Created Variable: Number of students of Hispanic or Latino origin divided by the total number of students. (Variable: [S0415/S0255] x 100)	7.48	16.44
Pupil-Teacher Ratio	Created Variable: Total student enrollment divided by the number of full-time equivalent teachers. NOTE: Taken from the 1993–94 Common Core of Data produced by the National Center for Education Statistics.	17.10	15.49
Percentage of Students Eligible for Free Lunch	Created Variable: Number of students eligible for the free lunch program divided by total student enrollment, multiplied by 100. NOTE: Taken from the 1993–94 Common Core of Data produced by the National Center for Education Statistics.	28.77	22.62
School Level	SASS Created Variable: Three-category level of school based on grade levels offered as reported by the school. Categories include elementary, secondary, and combined elementary and secondary. See the SASS codebook for a detailed description of the variable SCHLEVEL.	Elementary—48.37 Secondary—41.15 Combined—10.47	
<i>School District (N=4,993)</i>			
Total Student Enrollment	What was the total number of students enrolled in this district around the first of October (Variable: D0255)	5650.13	20841.80
Urbanicity	SASS Created Variable: Three-level variable measuring a district's location: primarily serves a central city of a Metropolitan Statistical Area (MSA)—city of at least 50,000 population, etc. (coded as urban), serves a MSA but not primarily its central city (coded as suburban), and does not serve a MSA (coded as rural). See the SASS codebook for a detailed description of the variable METRO.	Urban—7.71 Suburban—37.91 Rural—54.38	
Region	SASS Created Variable: Census Region where the district is located. Categories include: Northeast—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont; Midwest—Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin; South—Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia; West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming. (Variable: REGION)	Northeast—19.45 Midwest—30.00 South—30.38 West—20.17	

TABLE A2: VARIABLE DESCRIPTION AND DESCRIPTIVE STATISTICS FOR 1999–00 SCHOOLS AND STAFFING SURVEY (SASS)

	VARIABLE DESCRIPTION/SURVEY QUESTION	MEAN	SD
<i>Principal (N=8,524)</i>			
In (Salary)	Question 25: What is your current annual salary for your position at this school before taxes and deductions? (Variable: A0226). NOTE: The natural log of principal salary taken in order reduce the influence of outliers.	11.06	0.23
Age	SASS Created Variable: Principal's age. Calculated by subtracting respondent's birth year from 1999. (Variable: AGE_P)	49.19	6.98
Male (=1)	Question 26: Are you male or female? (Variable: A0227)	64.30	
White (=1)	Question 27a: What is your race? White (Variable: A0228)	87.07	
Hispanic (=1)	Question 28: Are you of Hispanic origin? (Variable: A0230)	4.08	
Experience as a Teacher	SASS Created Variable: Total years of the principal's experience as a teacher. Calculated by summing years of teaching experience before and after becoming a principal. (Variable: TCHEXPER)	13.94	7.35
Experience as a Principal	SASS Created Variable: Total years of the principal's experience as a principal. Calculated by summing years employed as a principal of this or any other school. (Variable: PRNEXPER)	8.89	7.72
Beyond Master's Degree (=1)	Created Variable: Dummy variable indicating whether principal's highest degree is above a master's degree. Derived from Question 24: What is the highest degree you have earned? (1) Associated degree; (2) Bachelor's degree; (3) Master's degree; (4) Education specialist or professional diploma (at least one year beyond master's level); (5) Doctorate or first professional degree. (Variable: A0225)	43.65	
School Position Before Principal	Serial of questions (Question 6d.1-6d.7) asking, "Before you became a principal, did you hold the following positions? (Y/N)" Department head (hdept); Curriculum specialist or coordinator (coord); Assistant principal or program director (asstprin); Guidance counselor (guidcou); Library media specialist/Librarian (librar); Athletic coach/Athletic director (coach); Sponsor for student clubs, debate teams (sponsor). (Variable: A0058-A0064, respectively)	hdept—41.22 coord—22.27 asstprin—68.10 guidcou—8.85 librar—1.36 coach—42.02 sponsor—59.64	
<i>School (N=8,432)</i>			
Total Student Enrollment	Question 9f: Around the first of October, how many students enrolled in grades K-12 and comparable ungraded levels—Total students. (Variable S0101)	637.22	550.55
Percentage of White Students Enrolled	Created Variable: Number of white students enrolled divided by the total number of students. (Variable: [S0097/ S0101] x 100)	68.64	32.32
Percentage of Hispanic Students Enrolled	Created Variable: Number of students of Hispanic or Latino origin divided by the total number of students. (Variable: [S0096/S0101] x 100)	9.67	18.71
Pupil-Teacher Ratio	Created Variable: Total student enrollment divided by the number of Full-time equivalent teachers. NOTE: Taken from the 1999–00 Common Core of Data produced by the National Center for Education Statistics.	14.46	5.74
Percentage of Students Eligible for Free Lunch	Created Variable: Number of students eligible for the free lunch program divided by total student enrollment, multiplied by 100. NOTE: Taken from the 1999–00 Common Core of Data produced by the National Center for Education Statistics.	29.84	23.27
School Level	SASS Created Variable: Three-category level of school based on grade levels offered as reported by the school. Categories include elementary, secondary, and combined. See the SASS codebook for a detailed description of the variable SCHLEVEL.	Elementary—48.72 Secondary—42.16 Combined— 9.12	

TABLE A2: VARIABLE DESCRIPTION AND DESCRIPTIVE STATISTICS FOR 1999–00 SCHOOLS AND STAFFING SURVEY (SASS) (CONTINUED)

	VARIABLE DESCRIPTION/SURVEY QUESTION	MEAN	SD
<i>School District (N=4,690)</i>			
Total Student Enrollment	Question 5a: Around the first of October, what was the total number of students enrolled in this district in all grade levels. (Variable: D0456)	6734.62	26238.00
Urbanicity	SASS Created Variable: Three-level variable measuring a district’s location: large or mid-size central city (coded as urban), urban fringe of a large or mid-size central city (coded as suburban), and small town/rural (coded as rural). See the SASS codebook for a detailed description of the variable URBANID.	Urban—10.96 Suburban—37.40 Rural—51.64	
Region	SASS Created Variable: Census Region where the district is located. Categories include: Northeast—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont; Midwest—Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin; South—Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia; West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming. (Variable: REGION)	Northeast—17.70 Midwest—30.72 South—30.53 West—21.04	

TABLE A3: VARIABLE DESCRIPTION AND DESCRIPTIVE STATISTICS FOR 2003–04 SCHOOLS AND STAFFING SURVEY (SASS)

	VARIABLE DESCRIPTION/SURVEY QUESTION	MEAN	SD
<i>Principal (N= 8,143)</i>			
In (Salary)	Question 45: What is your current annual salary for your position at this school before taxes and deductions? (Variable: A0263). NOTE: The natural log of principal salary taken in order reduce the influence of outliers.	11.18	0.24
Age	SASS Created Variable: Principal's age. Calculated by subtracting respondent's birth year from 2003. (Variable: AGE_P)	49.47	7.91
Male (=1)	Question 41: Are you male or female? (Variable: A0254)	60.26	
White (=1)	Question 43a: What is your race? White (Variable: A0256)	87.45	
Hispanic (=1)	Question 42: Are you of Hispanic or Latino origin? (Variable: A0255)	3.76	
Experience as a Teacher	SASS Created Variable: Total years of the principal's experience as a teacher. Calculated by summing years of teaching experience before and after becoming a principal. (Variable: TCHEXPER)	13.44	7.26
Experience as a Principal	Question 1: Prior to this school year, how many years did you serve as the principal of this or any other school? (Variable: A0025)	8.01	4.25
Beyond Master's Degree (=1)	Created Variable: Dummy variable indicating whether principal's highest degree is above a master's degree. Derived from Question 9: What is the highest degree you have earned? (1) Associated degree; (2) Bachelor's degree; (3) Master's degree; (4) Education specialist or professional diploma (at least one year beyond master's level); (5) Doctorate or first professional degree; (6) no degree. (Variable: A0039)	39.37	
School Position Before Principal	Serial of questions (Question 6a-6g) asking, "Before you became a principal, did you hold the following positions? (Y/N)" Department head (hdept); Curriculum specialist or coordinator (coord); Assistant principal or program director (asstprin); Guidance counselor (guidcou); Library media specialist/Librarian (librar); Athletic coach/Athletic director (coach); Sponsor for student clubs, debate teams (sponsor). (Variable: A0030-A0036, respectively)	hdept—39.97 coord—20.82 asstprin—69.25 guidcou—8.07 librar—1.20 coach—42.61 sponsor—59.27	
<i>School (N=7,991)</i>			
Total Student Enrollment	Question 5f: Around the first of October, how many students enrolled in grades K-12 and comparable ungraded levels were – Total students. (Variable S0422)	643.36	542.72
Percentage of White Students Enrolled	Created Variable: Number of white students enrolled divided by the total number of students. (Variable: [S0420/S0422] x 100)	67.14	32.03
Percentage of Hispanic Students Enrolled	Created Variable: Number of students of Hispanic or Latino origin divided by the total number of students. (Variable: [S0417/S0422] x 100)	10.86	19.44
Pupil-Teacher Ratio	Created Variable: Total student enrollment divided by the number of Full-time equivalent teachers. NOTE: Taken from the 2003–04 Common Core of Data produced by the National Center for Education Statistics.	15.62	9.45
Percentage of Students Eligible for Free Lunch	Created Variable: Number of students eligible for the free lunch program divided by total student enrollment, multiplied by 100. NOTE: Taken from the 2003–04 Common Core of Data produced by the National Center for Education Statistics.	33.60	23.77
School Level	SASS Created Variable: Three-category level of school based on grade levels offered as reported by the school. Categories include elementary, secondary, and combined. See the SASS codebook for a detailed description of the variable SCHLEVEL.	Elementary—49.82 Secondary—39.29 Combined—10.89	

TABLE A3: VARIABLE DESCRIPTION AND DESCRIPTIVE STATISTICS FOR 2003–04 SCHOOLS AND STAFFING SURVEY (SASS)

	VARIABLE DESCRIPTION/SURVEY QUESTION	MEAN	SD
<i>School District (N=4,421)</i>			
Total Student Enrollment	Question 2: Around the first of October, what was the total number of students enrolled in this district in all grade levels. (Variable: D0050)	6917.36	29217.00
Urbanicity	SASS Created Variable: Three-level variable measuring a district's location: large or mid-size central city (coded as urban), urban fringe of a large or mid-size central city (coded as suburban), and small town/rural (coded as rural). See the SASS codebook for a detailed description of the variable URBAND03.	Urban—12.15 Suburban—44.20 Rural—43.66	
Region	SASS Created Variable: Census Region where the district is located. Categories include: Northeast—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont; Midwest—Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin; South—Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia; West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming. (Variable: REGION)	Northeast—17.48 Midwest—30.51 South—30.69 West—21.31	

TABLE A4: LOGGED PRINCIPAL SALARY AS A FUNCTION OF PRINCIPAL, SCHOOL, AND DISTRICT CHARACTERISTICS

VARIABLES	1993–94		1999–00		2003–04	
	<i>Coef. Est.</i>	<i>Std. Error</i>	<i>Coef. Est.</i>	<i>Std. Error</i>	<i>Coef. Est.</i>	<i>Std. Error</i>
Principal						
Age	.004***	3.699e-4	.004***	3.531e-4	.003***	3.580e-4
Male	.055**	.007	.008	.005	.014**	.005
White	-.005	.007	.013	.007	.019**	.007
Hispanic	-.046***	.012	-.024*	.010	-.007	.012
Experience as Teacher (yrs)	-.003***	3.017e-4	-.002***	2.985e-4	-5.296e-4	3.399e-4
Experience as Principal (yrs)	.003***	3.424e-4	.002***	3.155e-4	.003***	3.734e-4
Beyond Master's Degree	.039***	.004	.061***	.004	.064***	.004
School Position Before Principal						
Department Head	.010*	.005	-.011**	.004	-.010*	.004
CurrIm. Specialist/Coordinator	.036***	.006	.009	.005	.013*	.005
Assistant Principal	.067***	.004	.073***	.004	.076***	.005
Guidance Counselor	-.013*	.007	-.002	.007	-.008	.007
Librarian/Media Specialist	-.038*	.019	-.045**	.016	-.002	.018
Athletic Coach/Director	-.008	.005	-.009	.004	-.002	.005
Sponsor for Student Club	.010*	.004	.010*	.004	.004	.004
School						
Total Student Enrollment	1.251e-4***	4.870e-6	1.172e-4***	4.550e-6	1.170e-4***	4.680e-6
Percent White Student Enrolled	-.001***	9.606e-5	-.001***	9.812e-5	-.002***	1.078e-4
Percent Hispanic Student Enrolled	-1.577e-4	1.562e-4	9.468e-5	1.397e-4	5.639e-6	1.447e-4
Pupil-Teacher Ratio	-1.250e-4	1.338e-4	.002***	4.063e-4	2.869e-4	2.316e-4
Students Eligible for Free Lunch	-.001***	1.284e-4	-.002***	1.271e-4	-.002***	1.292e-4
School Level^a						
Secondary	.017**	.005	.022***	.005	.014**	.005
Combined	.058***	.007	.049***	.007	-.031***	.007
School District						
Total Student Enrollment	4.480e-9	2.164e-8	-2.215e-9	1.831e-8	9.845e-8***	2.316e-8
Urbanicity^b						
Urban	.095***	.007	.112***	.006	.100***	.007
Suburban	.136***	.009	.124***	.005	.091***	.005
Region of U.S.^c						
Midwest	-.136***	.007	-.106***	.007	-.104***	.008
South	-.216***	.006	-.175***	.007	-.197***	.007
West	-.112***	.007	-.105***	.008	-.137***	.008
Constant (y-intercept)	10.714	.020	10.816	.020	11.057	.021
Explained Variance (R2)	0.453		0.455		0.438	
Sample Size	9098		8524		8143	

^a referent category is elementary school; ^b referent category is rural school district; ^c referent category is Northeast
 * p<.05; **p<.01; ***p<.001

Endnotes

- 1 See Hess and Kelly (2005) on the need to tighten principal training requirements, and The Fordham Foundation (2003) for the opposing viewpoint.
- 2 See Fordham Foundation (2003) and National Council on Teacher Quality (2007).
- 3 A large body of literature shows a link between earnings and occupation choice (Boskin 1974; Polacheck and Horvath 1977; Siow 1984; Willis and Rosen 1979; Zarkin 1985). For more on research linking pay to performance, see, for instance, Milkovich and Wigdor (1991), Mitchell et al. (1990), or Weitzman and Kruse (1990).
- 4 See Goldhaber (2006).
- 5 They also interviewed teachers and administrators in six school districts with longer-term use of merit pay and found that each of the six districts were thought to be among the most successful in their areas, and that these districts served homogeneous populations of students. The authors, however, were unconvinced by the information provided to them that the quality of instruction was affected by the districts having merit pay.
- 6 See Hatry, Geiner, and Ashford (1994).
- 7 Hatry et al. (1994) also found teachers in districts that had implemented merit pay expressed unhappiness over increased competition between teachers.
- 8 For a review of recent state efforts to implement pay for performance for teachers, see Robin Chait, 2007, "Current State Policies that Reform Teacher Pay: An Examination of Pay-for-Performance Programs in Eight States" (Washington: Center for American Progress).
- 9 Of course this is not necessarily a negative outcome, rather it depends on society's collective judgments about the value of those objectives.
- 10 This may explain why some current principal incentive experiments, such as the one in Pittsburgh, include a variety of measurable benchmarks (Smydo, 2007).
- 11 This is both because principals themselves are usually called upon to make such judgments about teachers when doing evaluations, and because they, in virtue of receiving far higher salaries than teachers, may be more willing to accept the "risk" associated with performance pay (Goldhaber et al., forthcoming, 2008).
- 12 See Goldhaber (2006).
- 13 For more on this issue, see Kane and Staiger (2001).
- 14 See Goldhaber (2006).
- 15 Trust on the survey was measured based on teacher responses (a four point scale: Strongly Disagree, Disagree, Agree, Strongly Agree) to the following two statements: "The principal at my school is an effective manager who makes the school run smoothly," and "The principal looks out for the personal welfare of the faculty members."
- 16 For examples of such news headlines, see Elliot (2003), Mathews (1999), Mellon (2007), and Smydo (2007).
- 17 See Houston Independent School District (2007).
- 18 See Smydo (2007).
- 19 See Dixit (2002), Gibbons and Murphy (1990), Jensen and Murphy (1990), and Laffont and Martimort (2002).
- 20 It may be more appropriate to consider the superintendent to be the educational analogue to the CEO, but a focus on superintendent compensation is outside the scope of this report.
- 21 See Gibbons and Murphy (1990) and Jensen and Murphy (1990).
- 22 Brewer's estimates suggest that raising a principal's relative salary by 5 percent would increase the mean student's gain in achievement by just over 20 percent.
- 23 See Bretz and Milkovich (1989) on use of performance pay in the private sector; Lazear (1996), Mitchell et al. (1990), and Weitzman and Kruse (1990) on the impacts of performance pay on productivity; and Milkovich and Wigdor (1991) for the impacts on recruitment and retention. For a review of performance-based pay, see Blinder (1990).
- 24 This is an important issue as there is some evidence that the small size of performance bonuses is one factor that has led to dissatisfaction with teacher merit pay (Murnane and Cohen, 1990).

- 25 For some examples of the contracts that define principal salaries, see <http://www.mcps.k12.md.us/departments/publishing-services/PDF/MCAASP.pdf> and <http://www.mcps.k12.md.us/departments/publishing-services/PDF/MCAASPSupplement.pdf>, for Montgomery, MD; <http://www.ccas.net/1Negotiations/CCASAna2005-2009.pdf> for Clark County, NV; and http://www2.dadeschools.net/employees/labor_union/dcsaa/index.htm, http://laborrelations.dadeschools.net/pdfs/DCSAA-2006-09_Addendum.pdf, and http://salary.dadeschools.net/salhbk/pdf/044-X8_percent20Quartiles.pdf for Miami, FL.
- 26 See Cooke and Licciardi (2007). From 2002–03 to 2006–07, the Consumer Price Index averaged a 2.6 percent increase per year whereas the increase in average principal salaries averaged 2.5 percent per year.
- 27 Unfortunately, there appears to be little systemic information about how principal and teacher salaries compare in charter schools.
- 28 See Cooke and Licciardi (2007). There were relatively few changes in these reported ratios over the preceding five years.
- 29 Fordham Foundation (2003). *Better Leaders for America's Schools: A Manifesto*. May, 2003. p. 38.
- 30 See <http://nces.ed.gov/pubs2006/2006313.pdf>.
- 31 Unfortunately, although Billger controls for individual principal attributes in estimating their salaries, the effects of these are not reported.
- 32 See Arias et al. (2001), Ballou (2001), Ballou and Podgursky (1997), and Billger (2007) for examples of studies that rely on similar interpretations of the residual.
- 33 Goldhaber et al., forthcoming, 2008.
- 34 Nor does Inot discuss the *teacher* salary findings in any detail here, as this report focuses on principals; but in general, the findings on the factors predicting teacher salaries reflect the existing literature quite closely (see Ballou, 2001; Chambers, 1998; and Goldhaber et al., forthcoming, 2008).
- 35 See, for example, Cooke and Licciardi (2007) and Williams (2006).
- 36 See Chambers (1996 and 1998), Chambers and Fowler (1995), and Goldhaber et al. (forthcoming, 2008).
- 37 For example, see Glassman (1984 and 1992) and Hallinger et al. (1996).
- 38 The variables used by Eberts and Stone are “composite” variables (amalgams of different variables) so it is difficult to define precisely which principal behaviors are thought to improve student outcomes.
- 39 Eberts and Stone do not describe this variable in more detail.
- 40 See, for instance, Boyd et al. (2006); Goldhaber (2007); Goldhaber et al. (1999); Kane et al. (2006); Rivkin et al. (2005).
- 41 A school's environment is likely to be particularly important given that most school systems do not offer teachers differential pay (often referred to as “combat pay”) for the difficulty of their job assignment. For a more in-depth discussion of this issue, see Goldhaber (2006).
- 42 For instance, see Bryk and Schneider (2002) and Humphrey et al. (2005).
- 43 See Bacalod (2007). For survey results that speak to the reported importance of principal leadership, see <http://www.teachingquality.org/publications/reports.htm>.
- 44 See Cooley and Shen (2003), Eberts and Stone (1988), and Moffett (2000).
- 45 For more information on the Teacher Advancement Program, see <http://www.talentedteachers.org/tap.taf>
- 46 The federal government's Teacher Incentive Fund is a good example of how this new money may be structured to go to districts opting for pay reforms.

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