C. Questions specific to performance pay

What do we know about the relationship between teacher compensation and teacher quality?

Federal priorities, as noted in Race to the Top, Teacher Incentive Fund, and *American Recovery and Reinvestment Act* guidance, have provided an impetus for state and local education agencies to improve public school teacher quality. These federal priorities have shifted the focus beyond the concept of teacher quality identified in the *Elementary and Secondary Education Act,* as reauthorized by the *No Child Left Behind (NCLB) Act* of 2001, to the concept of teacher effectiveness.

Ensuring teacher quality and effectiveness is a complex endeavor. The National Comprehensive Center for Teacher Quality describes four lenses for examining teacher quality *(teacher qualifications, teacher characteristics, teacher practices, and teacher effectiveness)* (Goe & Stickler, 2008) and offers a five-point definition for teacher effectiveness (Goe, Bell, & Little, 2008, p. 8):

- "Effective teachers have high expectations for all students and help students learn, as measured by value-added or other test-based growth measures, or by alternative measures.
- "Effective teachers contribute to positive academic, attitudinal, and social outcomes for students such as regular attendance, on-time promotion to the next grade, on-time graduation, self-efficacy, and cooperative behavior.
- "Effective teachers use diverse resources to plan and structure engaging learning opportunities; monitor student progress formatively, adapting instruction as needed; and evaluate learning using multiple sources of evidence.
- "Effective teachers contribute to the development of classrooms and schools that value diversity and civic-mindedness.
- "Effective teachers collaborate with other teachers, administrators, parents, and education professionals to ensure student success, particularly the success of students with special needs and those at high risk for failure."

Researchers frequently cite teacher salary increases as an effective way to attract, retain, and reward effective teachers. However, in contrast to the prevailing sentiment, teacher salaries have steadily declined relative to salaries in the non-teacher labor market since the early 1980s (see Bacolod, 2007; Goldhaber, 2001; Loeb & Page, 2000). There also has been a decrease in the average quality of teachers entering the profession (Hanushek & Rivkin, 2007).

Although the relationship may not be causal, Hanushek and Rivkin (2007) measured teacher

quality using teacher scores on standardized tests and the selectivity of their undergraduate institutions. Their research uncovered a link between declining teacher quality and declining teacher salary over a specific time period. Thus, the renewed federal emphasis on teacher quality, and teacher effectiveness in particular, impels policymakers, researchers, and school administrators to focus on whether increasing teacher wages improves teacher quality and student performance.

A large body of research explores the effect of teacher salary increases on the recruitment of high-quality novice teachers; however, the findings vary. Some research suggests that offering higher salaries increases the size of the teacher applicant pool (see Goldhaber, 2001; Lankford, Loeb, & Wyckoff, 2002) but does not necessarily result in more highly skilled teachers entering the classroom (see Ballou, 1996; Ballou & Podgursky, 1997; Goldhaber, 2001; Hanushek, Kain, & Rivkin, 1999). In addition, Figlio (2002) found this pattern in non-unionized districts but not necessarily in unionized districts. Hanushek et al. (1999) speculate that, although the teacher applicant pool may be larger, principals are not able to identify the best teachers, and therefore, average teacher quality does not improve. The researchers contend that the practice of hiring based on objective measures, such as years of experience and level of education, may be responsible for this trend because these characteristics are not highly correlated with teacher quality.

In contrast, other studies have found that higher wages, relative to wages in the nonteacher labor market, entice teachers who score highly on standardized tests (e.g., the SAT or ACT) to enter the teaching profession. Some researchers contend that standardized test scores are a better indicator of teacher quality than years of experience or level of education (Hanushek & Rivkin, 2007). In a study on the effect of female labor markets on teacher quality, Bacolod (2007) found that higher relative salaries increase the probability that women in the top quintile of the IQ distribution—as identified by a composite IQ score formed using multiple measures of teacher quality, including standardized test scores, undergraduate institution selectivity, and positive assortative mating characteristics—enter the teaching profession. Ferguson and Gilpin (2009) also found that higher relative salaries attract teachers who scored in the top quintile on their SAT or ACT. Thus, if standardized test scores are an effective indicator of quality, then higher relative salaries could improve teacher efficacy.

Several studies have examined the effect of higher salaries—relative to the wages in the nonteacher labor market—on the recruitment of teachers from highly selective universities. Some research has shown that, like a teacher's standardized test scores, the selectivity of a teacher's college or university is a better indicator of teacher quality than years of experience or level of education (Ferguson & Gilpin, 2009; Hanushek & Rivkin, 2007; Hoxby & Leigh, 2004). The evidence suggests that fewer teachers from highly selective universities enter the teaching profession when relative wages are low (Bacolod, 2007; Corcoran, Evans, & Schwab, 2004; Figlio, 1997; Hoxby & Leigh, 2004; Lazear, 2003). Research also suggests that low relative wages actually increase the probability that individuals from less selective universities enter the teaching profession (Bacolod, 2007; Corcoran et al., 2004; Ferguson &

Gilpin, 2009; Hoxby & Leigh, 2004). This research implies that higher relative wages may increase teacher quality by encouraging more highly skilled individuals to enter the teaching profession.

Does evidence suggest that higher salaries would attract more highly skilled individuals to the teaching profession?

Although there are a limited number of studies that address the impact that higher salaries would have on attracting higher quality teacher candidates into the profession, researchers have given a great deal of attention to determining the effect that higher salaries have on existing teachers, whether it be across-the-board salary increases or performance-based compensation. Most of the research on this topic uses value-added models to determine whether higher salaries result in increased student achievement. Similar to evidence on novice teachers, the results of the research are often contradictory, making it difficult to determine a definitive impact of higher salaries on teacher quality. Some research has shown that increased teacher pay through a variety of methods—salary increases, performance bonuses, or recruitment incentives—results in better student achievement on end-of-grade tests (Ferguson & Gilpin, 2009; Hanushek et al., 1999; Lazear, 2003). In addition, Loeb and Page (2000) find that wage increases reduce the dropout rate, which could be an indicator of teacher effectiveness as defined by Goe et al. (2008). Hanushek, Kain, and Rivkin (1999) hypothesize that higher pay may improve student achievement by encouraging teachers to exert more effort in an attempt to compensate for their higher salaries, though more research is needed in this area before a connection can be made.

Researchers have mixed recommendations, however. Some researchers contend that increasing teacher salaries may not be worth the investment. For example, some evidence indicates that the impact of salary changes is nominal compared to the impact of nonpecuniary factors, such as teacher working conditions or the percentage of students who are eligible for free or reduced-price lunch (see Ferguson & Gilpin, 2009; Hanushek et al., 1999). In addition, Goldhaber (2001) argues that because teachers sort themselves based on nonpecuniary factors, salary increases will not have an effect on the distribution of teachers and, therefore, will leave some students without access to high-quality teachers. Using this research as a basis, some contend that it may be better for policymakers, state officials, and school administrators to concentrate on changing nonpecuniary factors rather than increasing teacher salaries.

The research cited suggests that there may be a relationship between salary and the quality of both novice and experienced teachers. However, there are also other factors, including principal's ability to identify quality teachers and the effect of poor working conditions, that may have an effect on the benefits of increasing teacher wages. With this research in mind, states or districts should not rely solely on higher salaries to improve teacher quality when implementing performance-based compensation systems. They should also be cognizant of the nonpecuniary factors that influence teacher quality and systemically integrate measures to address these factors into their human capital management frameworks.

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