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A Better Way to Pay: Five Rules for Reforming Teacher Compensation

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Abstract

Despite ongoing debates over the adequacy of teacher compensation, the design of merit pay systems, and the structure of pension benefits, there is broad agreement that teacher pay should be designed to recruit—and retain—the highest-quality teachers in a cost-effective manner. Policymakers should avoid across-the-board pay increases, and focus instead on performance pay by easing restrictions on entering the teaching profession and basing tenure decisions on performance in the classroom. Value-added models are helpful in identifying the best teachers, but they should be used cautiously in conjunction with other performance-based measures. Retirement benefits should take the form of 401(k)-style plans to avoid the cost overruns and irrational retirement incentives created by traditional pensions. Finally, policymakers should remember that teacher quality is just one of many factors affecting student achievement.

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Policymakers from across the political spectrum want to get teacher pay right. Despite ongoing debates over the adequacy of total compensation, the design of merit pay systems, and the structure of pension benefits, there is broad agreement that pay should be designed to recruit and retain the highest-quality teachers in a cost-effective manner.

With that goal in mind, this paper outlines five rules for reforming teacher compensation drawn from the recent scholarly literature. In brief, (1) policymakers should avoid across-the-board pay increases; (2) policymakers should instead reform pay systems to reward effectiveness; (3) teacher quality should be measured in part through the judicious use of value-added models, in conjunction with administrator evaluations and other performance-based criteria; and (4) teachers should be transitioned away from traditional pensions and toward 401(k)-style retirement plans in order to avoid runaway costs and perverse retirement incentives.

Finally, (5) policymakers should remember that there are no magic bullets in education policy. Reforming teacher compensation will have real and significant benefits,

Talking Points

- Despite debate about the particulars, both sides of the school reform debate want to improve teacher quality in a cost-effective manner.
- Because the average public-school teacher already receives above-market compensation, policymakers should avoid across-the-board pay raises. Instead, they should focus on rewarding high-quality teachers with targeted salary increases.
- Used judiciously, value-added models of teacher performance are valuable tools to guide personnel and salary decisions, but they should be used in conjunction with other performance-based criteria as well.
- Districts should transition teachers away from traditional pensions, and toward 401(k)-style retirement plans, which offer more transparency for taxpayers and none of the perverse retirement incentives associated with pensions.
- Policymakers should also remember that, as valuable as good teachers can be, no magic bullet exists to transform education in the U.S.

but teaching is only one of many factors that ultimately affect student achievement.

Avoid Across-the-Board Pay Increases

The conventional wisdom in some circles is that the teaching profession is underpaid as a whole, making it impossible to recruit and retain the best teachers. According to this view, an "across-the-board" pay increase—meaning a more generous pay scale that gives every teacher a raise—is necessary to improve teacher quality.

But the teaching profession is not actually underpaid, nor is it an unpopular career choice among college graduates. In fact, total compensation for the average public school teacher is considerably higher than what his or her skills would merit in the private sector. While salaries for teachers are about in line with market levels, retirement and health benefits are much more generous.[1]

In addition, colleges regularly graduate tens of thousands more education majors than there are available teaching jobs.[2] While certain specialized teaching fields sometimes have trouble recruiting applicants, the typical teaching opening attracts dozens of qualified applicants. High rates of teachers quitting their jobs are often lamented, but these rates are no higher than quit rates in professions with similarly skilled workers.[3] And when teachers do leave the profession, they earn slightly *less* on average in their new jobs, not more.[4]

School districts generally have more than enough money to pay teachers adequately, making across-the-board pay increases unnecessary and a waste of scarce resources. Such increases are also inherently blunt instruments—the least effective teachers would be rewarded as much as the most effective ones. Districts need to use their existing funds more wisely, changing how teacher compensation is distributed. This leads directly to the next rule.

Pay Teachers for Their Performance, Not for Their Resumes

Economists and education scholars have known for decades that the standard resume characteristics—level of education, certifications or licenses, and experience beyond the first few years of teaching—have essentially zero power to predict how much students learn from a given teacher.[5] In other words, a teacher with a doctorate degree, every certification and license available, and 15 years of experience is no more likely to be a high performer than a teacher with a B.A., the minimal certification, and five years of experience.

Nevertheless, most public-school systems set teacher pay based rigidly on exactly those resume characteristics that have little relationship to quality. When a teacher receives a master's degree, he receives a pay raise. When he simply works another year, he receives a pay raise. But when his students consistently learn more than students in other classes, this teacher all too often gets nothing in return.

Measurement of teacher performance has been bolstered in recent years by the emergence of the value-added model (VAM). The idea behind VAMs is that teachers make a distinct contribution (they add value) to their students' learning experience. Capturing that contribution in quantitative terms is challenging. Researchers cannot simply test students after the school year is finished, holding teachers responsible for everything their students learned. After all, students vary in ability and preparation when they come to a teacher's classroom, and those factors will affect how much they learn over the course of the year. A proper VAM uses both pre-tests and post-tests to track student progress with each teacher, attempting to measure

1. Jason Richwine and Andrew G. Biggs, "Assessing the Compensation of Public-School Teachers," Heritage Foundation *Center for Data Analysis Report* No. 11-03, November 1, 2011, at http://www.heritage.org/research/reports/2011/10/assessing-the-compensation-of-public-school-teachers.
2. Eric A. Hanushek, "The Economic Value of Higher Teacher Quality," National Bureau of Economic Research *Working Paper* No. 16606, December 2010, p. 1.
3. Douglas N. Harris and Scott J. Adams, "Understanding the Level and Causes of Teacher Turnover: A Comparison with Other Professions," *Economics of Education Review*, Vol. 26 (2007), pp. 325–337.
4. Richwine and Biggs, "Assessing the Compensation of Public-School Teachers," pp. 10–11, and Matthew M. Chingos and Martin R. West, "Do More Effective Teachers Earn More Outside of the Classroom?" *Education Finance and Policy*, Vol. 7, No. 1 (Winter 2012), pp. 8–43.
5. A review of the literature dating back to the 1970s indicates little to no effect of resume characteristics. Eric A. Hanushek, "The Economics of Schooling: Production and Efficiency in Public Schools," *Journal of Economic Literature*, Vol. 24, No. 3 (September 1986), pp. 1141–1177, http://web.missouri.edu/~podgurskym/Econ_4345/syl_articles/hanushek_1986_JEL.pdf (accessed April 13, 2012). For a modern study, see: Stephen G. Rivkin, Eric A. Hanushek, and John F. Kain, "Teachers, Schools, and Academic Achievement," *Econometrica*, Vol. 73, No. 2 (March 2005), http://www.econ.ucsb.edu/~jon/Econ230C/HanushekRivkin.pdf (accessed April 13, 2012).

not a student's total achievement, but what an individual teacher added to it.

Even the pre-test/post-test model by itself is insufficient, since circumstances outside the classroom—say, an unstable family life—could affect the rate at which students learn during individual school years. For this reason, VAMs also control for as many student demographic factors as possible, usually including race, gender, and family circumstances.

It is important to understand both the benefits and limitations of VAMs established by a large body of past research. VAMs are "noisy" indicators of teacher quality, meaning they contain much random error, but they are far from useless. VAMs add important information about teacher quality, but they should always be used in conjunction with administrator evaluations and other performance-based measures. Despite intense scholarly debates over the issue, large numbers of both VAM enthusiasts and VAM skeptics are likely to agree with this view.[6]

VAMs have reliabilities of roughly 0.4.[7] A "reliability" in this context is the year-to-year correlation between a teacher's VAM scores—in other words, how strongly associated getting a good VAM score is with getting another good score the following year. A reliability of zero would suggest that VAM scores are just random, with nothing interesting to say about teacher effectiveness, while a reliability of 1.0 would indicate a perfect year-to-year relationship.

For comparison, the reliability of SAT scores for individual high school students is around 0.9.[8] Clearly, VAMs are noisy indicators of teacher quality—informative, but far from perfect—which is why scholars emphasize that they be used judiciously.

A natural fear is that VAMs will be fundamentally unfair to good teachers who happen through random chance to get poor ratings, leading some groups to oppose VAMs entirely.[9] But some perspective is necessary here. Pay is *already* set according to criteria that bear little relationship to teacher quality. VAMs are not just random numbers. They do tell us something worthwhile about teacher quality, and using this information judiciously can make the pay system better.

Screen Teachers More Intensely *After* Hiring Them

School districts should be less discriminating in choosing new teachers, but *more* discriminating in deciding which veteran teachers receive tenure. This approach may seem counter-intuitive, but it logically follows from the fact that resume characteristics cannot predict teacher success. Unlike the standard warning about investment funds, for teachers the best predictor of future results *is* past performance. Administrators cannot know how effective a potential teacher is until that teacher gets into a classroom. Teachers who show strong performance should quickly move up the pay scale, while those who perform poorly should be let go or denied raises.

But teacher screening is backward, economists Douglas O. Staiger and Jonah Rockoff recently noted in the *Journal of Economic Perspectives*.[10] Schools erect significant "barriers to entry," meaning they make it difficult for people to acquire the necessary qualifications, such as a teaching license, to even apply for a teaching position. Unfortunately, as described

6. Indeed, there exists much more common ground between both scholarly camps than is often acknowledged. For example, the left-leaning Economic Policy Institute published a long report detailing the many ways that VAMs could be misleading. But the conclusion of the report states, "While those who evaluate teachers could take student test scores over time into account, they should be fully aware of their limitations, and such scores should be only one element among many considered in teacher profiles." This is not exactly a full-throated denunciation. Richard Rothstein, Helen F. Ladd, and Diane Ravitch, et al., "Problems With the Use of Student Test Scores to Evaluate Teachers," Economic Policy Institute, August 27, 2010, http://www.epi.org/publication/bp278/ (accessed April 13, 2012).
7. Douglas O. Staiger and Jonah Rockoff, "Searching for Effective Teachers with Imperfect Information," *Journal of Economic Perspectives*, Vol. 24, No. 3 (September 2010), pp. 97–118.
8. College Board, "Test Characteristics of the SAT: Reliability, Difficulty Levels, Completion Rates," 2011, p. 1, http://media.collegeboard.com/digitalServices/pdf/SAT-Test-Characteristics_of_SAT_2011.pdf (accessed April 13, 2012).
9. The National Education Association (NEA) held this position until last year, when it endorsed some form of testing, though it is not clear if any of the current VAMs meet its standards. Jason Koebler, "NEA Says Testing May Play Role in Teacher Evaluations," *U.S. News & World Report*, July 6, 2011, http://www.usnews.com/education/blogs/high-school-notes/2011/07/06/nea-says-testing-may-play-role-in-teacher-evaluations (accessed April 13, 2012). The NEA has continued to publish articles that are heavily critical of performance-based assessment. See, for example, John Rosales, "Pay Based on Test Scores?" National Education Association, http://www.nea.org/home/36780.htm (accessed April 13, 2012).
10. Staiger and Rockoff, "Searching for Effective Teachers with Imperfect Information."

earlier, these qualifications have little impact on teacher performance. The result is that many potentially good teachers choose not to invest the time to overcome the barriers. After artificially limiting the number of teacher applicants with barriers to entry, schools quickly grant young teachers job security and regular pay raises regardless of performance.

Staiger and Rockoff argue that schools should significantly relax entry requirements, but then reserve permanent positions for only the top 20 percent or so who perform best during their tryout period, which could be as short as one year. The natural concern here is that inexperienced teachers will grow to a larger proportion of the overall teacher workforce, but Staiger and Rockoff show through reasonable data simulations that the gains from high tenure standards easily outweigh the costs of greater inexperience.

Implementing their exact model would be difficult—a large and steady stream of potential teachers would be needed to compete each year—but the guidelines espoused by Staiger and Rockoff are exactly right: Make entry to teaching easier but achieving tenure harder.[11]

Transition Teachers from Traditional Pensions to 401(k)-Style Plans

Most public-school teachers participate in a traditional "defined-benefit" (DB) pension plan, so called because benefits are guaranteed to come in the form of regular, fixed payments at retirement. In contrast, private-sector workers typically have defined-contribution (DC) plans, such as a 401(k). Employers may make regular contributions to workers' DC plans, but no specific amount is guaranteed at retirement.

Generally speaking, DB plans in the public sector are a bad deal for taxpayers. Since benefits accruing to today's workers need not be paid now, states can promise generous benefits without feeling the full fiscal impact for years or even decades. Benefits to workers are guaranteed, meaning taxpayers are ultimately responsible for any shortfalls in their states' pension systems—and there are many shortfalls.[12]

Furthermore, the complex calculations needed to compare the value of DB plans with DC plans makes it nearly impossible for voters to decide whether public-sector benefits are excessive compared to private-sector benefits, with public-sector advocates sometimes citing simplistic data points that confuse the situation even more.[13]

DB pensions are also problematic from the perspective of recruiting and retaining teachers. Economists Robert Costrell and Michael Podgursky have examined how the structure of DB pensions creates incentives that pull teachers into the profession at certain ages and push them out at others, with no accompanying economic rationale.[14]

The incentives exist because teachers do not build up pension wealth smoothly as they progress through their careers. Young teachers accrue very little in benefits, but mid-career teachers around age 50 quickly begin to add very large sums to their pension wealth. After that spike in accruals, pension wealth eventually begins to *decrease* with more years on the job, as teachers who are still working cannot start collecting benefits until they retire.

These pull-push dynamics add perverse incentives to workers' decisions about whether to enter and when to exit the teaching profession. Young people unsure about a career in teaching are discouraged from giving it a try, knowing that they may want to leave after a few years and have to forgo most or all of their pension benefits. Mid-career teachers tired of teaching may nonetheless stay on in order to reach the age of peak accruals. Finally, teachers of retirement age are pushed to leave the workforce—even if they are good teachers who still enjoy their jobs—lest they pay a large penalty in the form of forgone pension payments.

These incentives cannot be justified from an efficiency perspective. A much better system, such as a 401(k)-style DC plan, would provide retirement benefits to teachers that

11. An example of the backwardness of current policy is the No Child Left Behind (NCLB) law passed in 2001. NCLB requires states to ensure that all teachers are "highly qualified." One part of the "highly qualified" definition is that all teachers be fully licensed by their states. Licenses, as discussed earlier, are an unnecessary barrier to entry. At the same time, NCLB does not reform teacher tenure rules that allow even the least effective teachers to remain in their jobs.
12. "By any measure, nearly all state and local pension plans are underfunded." Congressional Budget Office, "The Underfunding of State and Local Pension Plans," *Economic and Budget Issue Brief*, May 2011, p. 1, http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/120xx/doc12084/05-04-pensions.pdf (accessed April 13, 2012).
13. Two of the simplistic data points are the average pension payment and the amount that states put into their pension funds each year. Both can be dramatic underestimates of the real value of public pensions. For more, see Jason Richwine, "The Real Cost of Public Pensions," Heritage Foundation *Backgrounder* (forthcoming).
14. Robert M. Costrell and Michael Podgursky, "Distribution of Benefits in Teacher Retirement Systems and Their Implications for Mobility," *Education Finance and Policy*, Vol. 5, No. 4 (Fall 2010), pp. 492–518, http://www.mitpressjournals.org/doi/pdf/10.1162/EDFP_a_00015 (accessed April 13, 2012).

accrue at a constant rate each year.[15] The system would be neutral toward entry and exit behavior. If school districts do wish to provide incentives for the best teachers to stay in the profession, they should use targeted wage increases, as described in the pay-for-performance section above.[16]

Maintain Sober Expectations

The above recommendations will help to recruit and retain high-quality teachers in a way that is helpful for students and cost-effective for taxpayers. Just as important as the first four recommendations, however, is this fifth. It is easy to fall into the mindset that pulling all the right levers or pushing the right set of buttons will lead to a breakthrough impact, in which below average students are systematically converted to above average ones or the U.S. vaults to the top of the world's school rankings. Education policy does not work that way.

The academic achievement of any given student is greatly affected by his natural intellectual ability, his motivation, the encouragement coming from friends and relatives, the time and resources he has to devote to schoolwork, and a host of other factors. Many of these factors are outside the control of schools, meaning that teacher impact—though significant and important—is still inherently limited.

The widely cited (though still unpublished) working paper by Raj Chetty, John Friedman, and Jonah Rockoff provides a sense of how high-quality teachers can impact long-term student outcomes.[17] After making a compelling case that their measure of teacher quality is largely unbiased, they calculate the long-term benefits to students of having a good teacher in one class in one year. By moving from a teacher at the 50th percentile of quality to one at the 84th percentile (an increase of one standard deviation), the average student can expect to increase his chances of attending college by one half of one percentage point, and to increase his annual earnings at the age of 28 by $182.

These gains could be greater if students took multiple classes with excellent teachers, and the aggregate effects would be a boon for the overall economy. Nevertheless, the effects on individual students seem small. A great teacher can certainly help the average student, but that teacher will not cause the student to become brilliant or rich. Policymakers can and should work to improve teacher quality through pay reform, but always with the understanding that there is no magic bullet for education reform.

Conclusion

Creating a teacher compensation system that rewards the best teachers in a fiscally responsible manner is a broadly shared goal. To that end, policymakers should avoid across-the-board pay increases, focusing instead on performance pay by easing restrictions on entering the teaching profession, and basing tenure decisions on performance in the classroom. Value-added models are helpful in identifying the best teachers, but they should be used cautiously in conjunction with other performance-based measures. Retirement benefits should take the form of 401(k)-style plans to avoid the cost overruns and irrational retirement incentives created by traditional pensions. Finally, policymakers should remember that teacher quality is just one of many factors affecting student achievement.

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15. An alternative model that would satisfy Costrell and Podgursky's concerns is called a cash balance (CB) plan. Essentially a DB plan with some DC attributes, a CB plan presents workers with individual accounts that grow at guaranteed rates of return. Employer contributions to the accounts come from a pension fund maintained in the same way as a regular DB plan. CB plans are highly attractive compared to DB plans, as they can be structured to provide constant accruals that directly link contributions to benefits. Because returns are guaranteed, however, the value of CB plans is still not as transparent as in DC plans.
16. There are obviously many other issues involved in transitioning to DC plans that cannot be addressed in this short paper. For a good summary, see Scott A. Beaulier, "From Defined Benefit to Defined Contribution," Mercatus Center *Working Paper* No. 11-37, September 2011, http://mercatus.org/sites/default/files/publication/Defined_contribution_Beaulier_WP1137_0.pdf (accessed April 13, 2012).
17. Raj Chetty, John N. Friedman, and Jonah E. Rockoff, "The Long-Term Impacts of Teachers: Teacher Value-Added and Student Outcomes in Adulthood," National Bureau of Economic Analysis *Working Paper* No. 17699, December 2011, http://obs.rc.fas.harvard.edu/chetty/value_added.pdf (accessed April 13, 2012).