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Teacher Retirement Systems:
Research Findings

JANET S. HANSEN
MICHAEL J. PODGURSKY
ROBERT M. COSTRELL



This research brief provides a summary of research findings presented at a national conference, “Rethinking Teacher Retirement Benefit Systems,” in Nashville, Tennessee on February 19–20, 2009. The views expressed in this brief do not necessarily reflect those of sponsoring agencies or individuals acknowledged. Any errors remain the sole responsibility of the authors.

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TEACHER RETIREMENT SYSTEMS: RESEARCH FINDINGS

Janet S. Hansen, Committee for Economic Development
Michael J. Podgursky, University of Missouri - Columbia
Robert M. Costrell, University of Arkansas

This policy brief summarizes findings presented at a February 2009 research conference on teacher retirement systems hosted by the National Center on Performance Incentives (NCPI) at Vanderbilt University's Peabody College. The 2009 conference was the second in a series of NCPI events focusing on findings from recent research on issues related to compensation for those who work in the nation's elementary and secondary schools.

NCPI is a national research and development center for state and local policy and is funded by a five-year \$10 million grant from the United States Department of Education's Institute of Education Sciences. Its mission is to conduct independent scientific research on the role of performance incentives in education. The Center addresses the needs of policy makers who are increasingly interested in innovative compensation plans. Educators, policy makers, and the larger public need to know whether altering traditional compensation practices is an effective path to improving teaching and learning.

The 2009 conference on teacher pensions was organized by NCPI research affiliate Michael Podgursky (University of Missouri) and Professor Robert Costrell (University of Arkansas). Papers commissioned for the conference were funded through generous gifts of an anonymous foundation and the Department of Education Reform at the University of Arkansas.

Teachers, like other professional employees, are financially compensated for their services in two key ways, through current pay, in the form of salaries and benefits such as subsidized health care, and through deferred pay in the form of retirement benefits. Many researchers and policy analysts have devoted substantial attention to current pay. Until recently, almost no studies had examined teacher retirement systems.¹

Research and commentary presented at a February 2009 conference on teacher retirement systems at Vanderbilt University were designed to address the gap in our knowledge about this important element of teacher compensation systems. This research brief summarizes what the conference revealed about teacher retirement policy and about major gaps in the existing knowledge base and suggests directions for future research.

Several themes echoed throughout the conference. First, teacher pensions represent large financial commitments by states and school districts. It is arguable how well prepared pension systems are to meet the promises already made to current teachers and retirees without imposing higher contributions on employers, employees, and/or future taxpayers. Second, the cur-

rent design of teacher pensions creates strong incentives for work and retirement decisions that are not necessarily aligned with efforts to maximize the quality of the teaching force. The few studies conducted so far on the actual behavioral effects of pensions (including those prepared for this conference) find that teachers do respond to these incentives, but the practical impact of that response remains unknown. Third, there is a need for more transparency about the implications of actuarial assumptions and benefit designs on public costs and individuals' pension benefits, in order to understand how well current policies serve public purposes. And fourth, teacher pension policy is made in a highly political environment and is subject to a variety of legal limitations. Would-be reformers will need to address these political and legal issues as well as behavioral, actuarial, and fiscal concerns. ▼

1 The first published econometric study was Joshua Ferguson, Robert P. Strauss, and William B. Vogt, "The effects of defined benefit pension incentives and working conditions on teacher retirement decisions," *Education Finance and Policy* 1 (Summer 2006):316-48.

OVERVIEW OF TEACHER RETIREMENT SYSTEMS

Public school teachers receive retirement benefits primarily through state-wide retirement systems, although a few big-city districts that initially had their own teacher pension arrangements continue to maintain free-standing plans.² Janet Hansen provided an overview of how these teacher retirement systems work.³

Teachers were among the first public-sector workers to be provided with retirement benefits. Teacher pension plans began at the municipal level, but many were later absorbed into state-wide programs when pension coverage extended to general state employees. This legacy continues to be reflected in the three basic forms that state systems take. In the first, program rules on such things as contribution levels and benefits are the same for members from multiple types of public agencies. In the second, a single retirement “system” may be composed of several different plans that cover distinct groups of employees and are discrete entities with their own rules and assets and liabilities. In the third, a state may have a separate, free-standing retirement program for its teachers (and perhaps other school personnel). The three types of retirement approaches are illustrated, respectively, by the Florida Retirement System, the Colorado Public Employees Retirement System (including the Colorado School Plan and two other plans for state and municipal employees), and the California State Teachers Retirement System.

The continuing dominance of defined-benefit pension plans for teachers

Whatever administrative form the retirement agency takes, pension benefits for teachers generally look quite similar across the country (with a few notable exceptions). Almost all teachers are covered by defined-benefit (DB) plans, specifically of the “final-average-salary” variety. In such plans,

2 There are two retirement-plan surveys that provide information on the plans in which teachers participate, one (the Public Fund survey) sponsored by the National Association of State Retirement Administrators and the National Council on Teacher Retirement and the other by the National Education Association. According to these sources, district-based retirement plans existed in 2006 in Denver, the District of Columbia, Chicago, Duluth, St. Paul, St. Louis, New York City, Fairfax County (Virginia), Kansas City, and Omaha.

3 She focused on the 59 retirement plans that include teachers and for which data are available from the Public Fund Survey. This includes 51 statewide plans (Washington State has two) and all the district-level plans except Kansas City and Omaha. These 59 plans cover the universe of teachers but represent a very small percentage of all public-sector pension plans covering other types of public employees, which included 221 state plans and 2,433 local ones in fiscal year 2005–06.

4 Most also had the option of making voluntary contributions to a separate “defined contribution” plan for supplemental savings, but these plans were not considered at the retirement system conference.

employers guarantee employees a specified annual retirement benefit based on a formula of the following form:

$$\text{Annual income in 1st year of retirement} = (\text{years of service}) \times (\text{final average salary}) \times M$$

Final average salary is based on anywhere from one to five years (usually three) at the end of a teacher’s career, and *M* is a benefit factor that generally ranges from 1.5 percent to 2.5 percent. For most teachers (as for most workers), these retirement benefits come on top of Social Security benefits. Federal law, however, does not require state and local governments to participate in Social Security (except for the Medicare portion), and teachers in 13 states do not take part in the program.

In fiscal year 2008, teachers in every state and school district except Alaska had a DB pension plan as their primary retirement benefit.⁴ Several states offered “hybrid” plans, combining a DB plan with a defined-contribution (DC) plan. In DC plans, employers guarantee the amount they will contribute each year to a teacher’s individual retirement account but make no promises about the ultimate benefit to be paid. Retirement income depends on the amounts contributed to the retirement account during the working years and on the investment returns earned on those contributions. Three states (Florida, Ohio, and South Carolina) offer their teachers the option of choosing a DC plan as their primary plan rather than participating in the DB plan.

Only Alaska has made a DC plan its primary plan for teachers and other state workers (for those joining their respective state retirement systems after July 1, 2006). Michigan made a DC plan the primary, exclusive pension for state employees in 1997 but did not include teachers in the conversion. A third type of pension plan, the cash-balance (CB) plan, has been rarely used by public employers. Cash-balance plans are legally considered DB plans but they have characteristics of DC plans as well. They provide participants with a notional account reflecting contributions and investment returns; the employer guarantees the rate of return on the account rather than promising specific income benefits. Only Nebraska has adopted a CB plan as the primary plan for regular employees (California has one for part-time teachers). Nebraska’s plan, however, covers only state and local employees, while teachers remain in a traditional DB plan.

Diverging public- and private-sector retirement benefits

Hansen also shows that public- and private-sector pension benefits have been diverging in the past several decades, with many private employers moving away from DB plans and offering most private workers only a DC plan. About one-

quarter of the remaining private-sector workers with DB plans are now in cash-balance rather than guaranteed-income plans. In addition to the guaranteed income that traditional DB plans promise teachers, they offer several other benefits that are now rare in the private sector. These include:

Cost of living adjustments: once they start drawing on their annuities, teachers generally can expect their annual income to be adjusted to help keep up with inflation. The adjustments may be automatic or may be ad-hoc decisions on the part of the legislature or the retirement fund governing board.

Young ages for normal retirement: many teachers can retire with full benefits while still in their fifties.

Early retirement benefits: teachers can generally retire earlier than the normal retirement age and receive reduced pension benefits.

Retiree health benefits: virtually all public employers offer some health benefits to their retirees, although these are quite variable from plan to plan and can range from benefits that are fully paid for by employers to premiums that are entirely the responsibility of the retiree.

Unlike private workers, public-sector employees are generally required to make annual contributions to their pension plans, in addition to the contributions made by employers on their behalf. Employee contributions can be as high as 12.5 percent.

Robert Clark and Lee Craig found that teacher retirement benefits have grown over the past 25 years, contrary to the experience of private-sector workers. For a retiree with 30 years of service, the typical teacher pension plan in 2006 replaced about 10 percent more of his or her final income than it did in 1982. (There are state-to-state differences, though, with two states, Florida and South Dakota, having lower replacement rates now than in 1982.) Governments have lowered the age and service requirements for early and normal retirement, raised the “M” in the pension benefit formula, and reduced the number of years in the final salary averaging period. Not surprisingly, pension plans for teachers not covered by Social Security in both 1982 and 2006 replaced more of teachers’ salaries than did plans for retirees also receiving Social Security benefits.

As teacher retirement benefits have grown, they have also become more costly. Robert Costrell and Michael Podgursky found that the costs of these benefits (as a percent of earnings) to public sector employers is higher than retiree costs paid by private employers and that the gap between public- and private-sector costs has been widening.

Clark and Craig investigated the factors that might explain differences in benefits among individual plans over the last quarter century. Population growth, perhaps a proxy for

economic development more broadly defined, was one factor associated with greater state generosity in their public pension plans. The degree of public-sector unionization was positively associated with the level of pension replacement rates in 1982, but not in 2006. Teachers who were in plans that did not include other state employees received higher replacement rates. This result is consistent with the public choice literature, which generally finds that smaller well-defined bargaining groups are better able to extract rents from public-sector employers than larger, broader groups.

Retiree health benefits

Robert Clark, in a separate paper, examined retiree health plans for teachers. These have taken on new prominence in light of recent accounting rules, which are for the first time making the true costs of these plans transparent.

In the 1960s and 1970s, many public and private employers began offering retiree medical plans, a benefit that was made cheaper for employers after Medicare was enacted in 1965. By federal law, Medicare is the primary payer of health care for retirees. Employer-provided plans are the secondary payer upon Medicare-eligibility, but for those who retire before age 65 (as teachers typically do), these plans are the primary payer.

Initially, employers accounted for the costs of the retiree health benefit by reporting their annual health care expenditures for retired (as well as active) employees. In effect, retiree health care was being funded on a pay-as-you-go basis. In 1989, the Financial Accounting Standards Board (FASB), which issues accounting standards for private firms, required private employers to begin reporting accrued liabilities associated with the promise of retiree medical benefits. The new rules revealed that many large companies had billion-dollar commitments resulting from their promises of medical coverage to retirees. Private employers began dropping retiree health plans; by 2002 only 13 percent of private establishments had them.

Most public employers continued to offer retiree medical plans, and the costs remained largely hidden. In 2004, however, the Governmental Accounting Standards Board (GASB) required that public employers report retiree health plan liabilities in the same manner as private employers. GASB also required that public employers measure and report any implicit subsidy that is being provided to retirees who pay the “full cost” of a medical premium that is calculated as the average cost of all participants in the state’s health plan for active and retired workers.

As states have begun to comply with the new GASB rules,

Teacher retirement benefits have grown over the past 25 years, contrary to the experience of private-sector workers.

it has become apparent that many states have large unfunded actuarial accrued liabilities (UAALs)⁵ in absolute value and relative to total state expenditures, debt, and population of each state. The new GASB rules do not require states to move toward pre-funding retiree health plans or to establish trust funds for these plans, but several states have established such trusts. Ohio is one of several states that have maintained trust funds for its retiree health plans for several decades, albeit at a low level of funding.

States often limit participation in retiree health plans to

individuals who meet some minimum years-of-service requirement, and the proportion of the premium paid by the retiree may also be linked to years of service, with lower premiums for longer-serving teachers.

If public-sector employers continue to pay for retiree health care plans on a pay-as-you-go basis, the U.S. Government Accountability Office estimates that the annual cost of these plans to state and local governments will rise from 2 percent of employee salaries in 2006 to 5 percent in 2050. ▼

FINANCIAL SUSTAINABILITY OF RETIREE BENEFIT SYSTEMS

Both Hansen and Clark raised questions about the financial sustainability of retiree benefit systems. Hansen focused on the level of unfunded liabilities in pre-funded pension plans, while Clark highlighted retiree health benefit promises, which to date have been met mainly on a pay-as-you-go rather than a pre-funded basis. Hansen reported that, under current accounting procedures, total teacher pension assets were adequate to cover about 85 percent of liabilities, but in 26 of 59 plans, this ratio was below 80 percent in 2007, before ongoing turmoil in financial markets took a huge toll on financial investments. Clark noted that determining the unfunded liability for teacher retiree health plans is difficult, but the evidence available on some state plans showed substantial differences in the unfunded liabilities across states in addition to large liabilities in some plans.

Several characteristics of pension policy-making pose challenges to the financial sustainability of pension plans. Two in particular include:

Employers' failure to make actuarially required contributions (ARC). Actuaries determine each year how much state and local governments need to contribute to pay for the new liabilities accrued each year as well as the cost of paying off a portion of any unfunded liabilities. Governments, however, frequently fail to make these contributions in full.

Unfunded "benefit bumps." Lawmakers often increase pension benefits, especially when economic times are good and investment returns are outpacing immediate needs. They often fail, however, to pay sufficient attention to the long-term costs of these new benefits.

Laurence Kotlikoff raised in dramatic fashion a more far-

reaching concern relating to financial sustainability. He argued that accounting and reporting practices of many public pension plans (as well as for other statements of financial positions of federal, state, and local governments and many financial and non-financial private enterprises) are "fundamentally fraudulent" and meet the definition of Ponzi schemes.

Key to this characterization is the allegation that pension plans among others are presenting annual assessments of their financial condition that value assets and liabilities using procedures that have little connection to market values. Clark raised similar concerns about the reporting of health care liabilities. Current pension accounting practices call for calculating the present value of liabilities that will come due over a long period of time using a discount rate that reflects the expected rate of return on the investments that will fund those liabilities. Hansen reported that in 2007 these rates ranged from 7.25 percent to 8.5 percent in teacher pension plans, with the mode at 8 percent.

Financial economists such as Kotlikoff believe that this discount rate, which reflects the riskiness of the assets in the investment portfolio, is inappropriately high. They argue that a more appropriate discount rate would be one that is more closely tied to relatively risk-free investments because of the fixed pension promises that have been made to plan participants. A lower discount rate would increase the size of reported liabilities and would make the under-funding of pension plans look much worse than it currently does. If current pension plan contributors are only being asked to make contributions sufficient to meet pension obligations under unrealistically rosy assumptions, when today's bills finally come due they will have to be paid by future contributors (and perhaps the general taxpayer).

Why is this arrangement like a Ponzi scheme? According to Kotlikoff, the problematic characteristic of a Ponzi scheme is the failure to disclose the market value of the assets, as in now-infamous financier Bernie Madoff's scheme, which led investors to believe their income was generated by such assets, instead of being funneled from other investors. In this respect, the undervaluation of pension liabilities is similar; it misrepresents the

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⁵ An unfunded actuarial accrued liability (UAAL) is the difference between all actuarial accrued liabilities (AAL) and any assets that the employer has set aside in an irrevocable trust.

mix between pre-funding and pay-as-you-go. It also misleads the public regarding the level of contributions that will be required on the part of future generations.

Kotlikoff and Clark raised other issues about pension accounting and reporting. Kotlikoff argued that governments need to be doing “fiscal gap analysis” that would more accurately measure the long-term financial condition of individual public programs and of government as a whole. Without such analyses it is impossible to assess the true vulnerability of a pension plan. Even if a pension plan’s own funding is solid, it can be vulnerable if the state government of which it is a part has financial problems that cause the state to underpay its pension obligations or try to get the pension fund to provide below-market loans to shore up other public programs. Both Kotlikoff and Clark identified the diversity of and the lack of transparency in many actuarial assumptions in addition to the discount rate as factors that often make the true financial condition of pension plans hard to determine.

In a commentary offered at the conference, James Lamenzo presented the actuaries’ case for the methods currently in use. In the private sector, a discount rate tied to market rates is an appropriate way of valuing assets and liabilities at a point in time, because companies can and do go out of business and their pen-

sion obligations may have to be settled up. Governments are unlikely to go out of business, so there will be no point-in-time settling up of their accounts. Instead, the actuary’s key task is to determine the contribution levels needed to fund the pension plan at the desired level over the long term. In this instance, a discount rate linked to the expected returns on invested assets gives a more accurate basis for determining how high employer and employee contribution rates need to be to ensure that promised benefits can be paid when plan participants retire. Lamenzo did not dispute the usefulness (for those who understand what is being measured) of an “accounting” measure that relies on market values to set the discount rate. For policy-making purposes, however, the “funding” measure based on expected investment returns was more useful; and routinely using both rates would sow confusion.

The challenge posed by financial economists to the methods traditionally used by actuaries has become a hotly debated issue in the pension finance community. In 2008, GASB began a project on Postemployment Benefit Accounting and Financial Reporting that will be considering the issues over several years and could possibly result in new standards being established for retirement plans. ▼

LABOR MARKET EFFECTS

Traditional teacher pension plans have long been understood to concentrate benefits on career teachers and to impose costs on mobile teachers. The magnitude of these costs and the extent to which they affect teacher behavior has been generally unexamined. Costrell and Podgursky, recognizing the increased salience of questions about teacher quality and the functioning of teacher labor markets, set out to estimate how different work histories affect the value of the pensions teachers receive and to determine which features of pension plans explain differences in pension benefits. Their findings showed that the penalties that pension plans impose on mobile and short-term teachers are large. Leora Friedberg and Sarah Turner took up the question of how these pension penalties might affect the actual behavior of teachers. Given the relative paucity of prior research on this issue, they explored lessons from the general labor market literature and sketched out research they plan to undertake on the behavioral implications of teacher pensions specifically. Other authors presented the results of studies using data from individual states (Arkansas, California, Missouri, and Pennsylvania) that begin to fill gaps in our knowledge about how teachers respond to pension policies.

The distribution of retirement benefits and implications for teacher mobility

In earlier work, Costrell and Podgursky showed that many teacher pension systems include peculiar incentives for retirement in systems that feature large spikes in pension wealth⁶ accrual for teachers in their fifties. These spikes encourage teachers

to remain in the classroom until pension wealth peaks and then encourage them to retire shortly after, as pension wealth accrual turns negative (leading to the description of teacher plans as characterized by “peaks, cliffs, and valleys”). Their NCPI paper showed that some of the same plan features (e.g., age and service eligibility rules for normal and early retirement) that lead to pension wealth spikes also compound the pension penalties imposed on mobile teachers by final-average-salary benefit formulas.

The current design of teacher pensions creates strong incentives for work and retirement decisions that are not necessarily aligned with efforts to maximize the quality of the teaching force.

One way to demonstrate this is to compare actual defined benefit teacher pension systems with fiscally equivalent systems that have distributionally neutral accrual paths.⁷ Compared to such a system, teacher pension plans often redistribute about half

6 Pension wealth is the present value of the stream of payments that a retiring teacher is entitled to at retirement or the cost of an equivalent annuity.

7 A cash-balance plan represents a distributionally neutral system.

8 Net pension wealth is gross pension wealth minus the cumulative value of employee contributions.

the net pension wealth of an entering cohort to individuals who leave teaching in their mid-fifties, from those who leave the system earlier (typically in their thirties).

Some of these early “leavers” leave the profession altogether; others may continue teaching in another jurisdiction with its own pension plan. The concept of pension wealth is useful in quantifying the pension penalty a mobile teacher pays, compared to a teacher who works the same number of years in a single system. For example, a teacher who works for 30 years but splits her career evenly between two districts in different pension plans will often lose well over one-half of the net pension wealth⁸ she would have accumulated had she stayed in the same system for 30 years.⁹

The pension losses suffered by mobile teachers stem from several sources. Teachers who separate before they are vested in their pension plan experience “non-vested loss;” they have no claim on a pension. Upon termination, non-vested teachers are entitled to receive their contributions and interest (which may be well below market rates); but generally they do not receive the employer contributions. Many teacher pension plans have vesting periods of five years or longer, some as long as 10 years.

Vested teachers suffer from a less transparent loss stemming from the fact that pensions are based on final average salaries (FAS). Almost always (South Dakota is one exception), a teacher who separates before the normal retirement age suffers from “frozen FAS loss.” That is, there is no adjustment to her FAS to account for inflation between the date of separation and the time when annuity payments begin. If she works for 15 years each under two different pension plans and even if each plan has exactly the same rules, she will accumulate less pension wealth during the first 15 years than if she had worked the entire time in a single pension system.

An even more important reason why mobile teachers incur such high pension losses is that teachers who separate from a plan early (*i.e.*, with fewer than 20 years of service) often cannot collect full pensions until later than teachers who stay longer and can meet service eligibility requirements for receiving a full pension at a comparatively young age. The 30-year teacher who participated in two different pension plans will be treated as a relative short-termer in each one. She will have to wait until a later age than the long-serving teacher to qualify for full retirement benefits and thus will have fewer years in retirement to collect payments.

In theory, mobility costs could be ameliorated if there were reciprocity agreements regarding service years among pension systems. These have been discussed but never developed between

9 The calculations underlying this statement reflect pure mobility losses. That is, they are based on an assumption that a teacher with 15 years of experience moving to another district will begin in the new district with the same salary she would have had in year 16 and thereafter in the old district. In fact, another financial loss that mobile teachers face is that they may not receive full credit for prior experience on the longevity-based salary schedule used by most districts.

10 In some states, reciprocity agreements do exist among systems managed by the state, *e.g.*, between a system for state employees and a system for teachers that operates in the same state.

teacher pension funds across state lines.¹⁰ Rules permitting the purchase of service credits by mobile teachers represent the approach that has been adopted instead. These rules are complicated. There may be limits on the number of years that can be purchased, no matter how much prior experience in another state a teacher has. The pension system into which the mobile teacher is transferring is likely to charge prices that reflect the actuarial cost of service years. The price of these years will typically be higher than the amount the teacher is able to obtain by cashing out the pension from her prior job, since the amount she will receive is based on her contribution (plus interest) only, and does not include the employer contribution. Teachers in states with low teacher contribution rates are generally not going to be able to re-purchase most of their service years when they change systems, even if there is no formal limit on the number of years that can be purchased.

Costrell and Podgursky focused on teachers but noted that the problems they identified affect other educators as well, including administrators (who increasingly operate in a national, not just a local, labor market) and charter school staff who may work for schools that are part of national firms operating in more than one state. State laws often require charter schools to participate in the retirement systems serving traditional public schools in the same service area.

Clark’s paper on retiree health care benefits points to another penalty that may face the mobile teacher. To reduce retiree health care costs, many states have increased the number of years of service a teacher must have to qualify for retiree health benefits and adopted a graded scale so that retirees with fewer years of service must pay a higher proportion of the health care premium.

Behavioral effects of pensions

Teacher pension plans have features that clearly favor longer-term employees over shorter-term and mobile workers, but whether and to what extent teachers respond to these features has been largely unknown. Friedberg and Turner looked to broader labor market studies for possible clues to the behavioral effects of pensions on teachers and also for guidance in developing a research agenda for the future that will focus on teachers. That pension plan provisions do affect teacher behavior seems likely from empirical data that show states allowing retirement with full benefits after 30 years of service see an unmistakable exit of teachers from the labor force between ages 53 and 54.

Much of the relevant prior research that has focused on labor market effects of defined benefit pension plans comes from the private sector. In final-average-salary DB plans, workers have an incentive to stay until they reach years of service characterized by spikes in pension wealth. Findings from the labor market literature suggest that the timing of retirement does appear to respond strongly to the timing of DB pension wealth peaks. The growth of DB pensions in the post-World War II period has been found to explain more than one-quarter of the total decline in the average retirement age during that period. The more recent adoption of DC plans, with their comparatively flat accrual rates, appears, as would be expected, to generate delays in retirement.

DB plans encourage early retirement, but whether this is a good or a bad thing for the quality of teaching is not clear-cut. If

incentives to retire relatively early encourage teachers who are “burned out” on the job or who are just hanging around to get pension benefits to retire, they may well improve the quality of the teacher labor force by opening up spaces for new, more engaged professionals. On the other hand, if they create strong financial incentives for highly effective teachers to leave whether or not they would like to continue teaching, the quality of the teacher labor force is likely to suffer.

While the labor economics literature has substantiated relationships between pension plan design and the timing of retirement, it has been less clear about the impact of pension structure on younger workers in DB plans. This impact is important to understand in order to know whether the long delay in substantive pension wealth accrual for new teachers impedes optimal mid-career entry into the teaching labor force by people who have built up private-sector experience. It could also help determine whether the lack of pension portability across retirement plans actually discourages young teachers from taking new jobs or hastens their exit from the teaching profession. Labor economists, however, have been less successful in studying pension effects on mobility than on retirement, for a variety of reasons, including limited information in data sets on job changes and pension coverage and the difficulty of empirically explaining job changes when they are observed in existing surveys. Research findings to date are suggestive that DB pensions deter worker mobility at younger ages, but are not as definitive as the evidence about the influence of DB pensions on retirement.

State studies of teacher pension systems

Researchers at the NCPI conference presented four papers that begin to fill the gap in empirical knowledge about the effects of pensions on teacher behavior. These studies mined information from administrative data based in four states. Research on Arkansas (Robert Costrell and Josh McGee), Missouri (Shawn Ni, Michael Podgursky, and Mark Ehlert), and California (Kristine Brown) examined separation and retirement decisions. Robert Strauss and Jinxiang Liu looked at factors affecting retirees who returned to employment in Pennsylvania.

Costrell and McGee identified the incentives embedded in the Arkansas Teacher Retirement System. Various plan features result in a strong incentive to retire after 28 years of service, a benchmark frequently reached by teachers in their early to mid-fifties. A Deferred Retirement Option Plan (DROP) counters the early retirement incentive by allowing retirees to continue working for up to 10 years, with 60 percent to 70 percent of their pension payments during that time going into a retirement account that accumulates interest.

Initial research on the Arkansas data revealed that teachers do respond to the Arkansas incentives, with their retirement decisions reflecting the points at which their pension wealth accrual peaks and when accrual turns negative. DROP is associated with longer years of service, although it is difficult to attribute teachers’ decisions to delay retirement to DROP since those who take advantage of it might have been the teachers who would have been inclined to work longer in any event.

Costrell and McGee developed an empirical model that allowed them to predict teacher behavior under a different pen-

sion regime. They considered a constant rate-of-accrual plan such as a cash balance plan. They estimated that such a plan would spread out separation decisions, though there would still be a concentration of separations (albeit lower than under the current pension plan) at about 30 years of service. Whether or not this would improve teacher quality depends on the quality of the teachers who would decide to stay longer or leave earlier and the quality of the teachers who would take their place.

Ni et al. used Missouri teacher data to predict when teachers will separate from service, assuming that they time their retirements to maximize their pension wealth. They also examined the effects of many pension enhancements that were enacted after 1992 to see how these affected teacher retirement.

As in Arkansas, calculations based on the Missouri data indicate that many teachers retire at or near the year in which their pension wealth is maximized. Enhancements to the pension plan after 1992 did not appear to make much of a difference in the distribution of retirements by age, though they substantially increased teacher pension wealth. A small bonus for 31 or more years of service raised the modal age of retirement from 30 to 31 years. New rules and options allowing teachers to retire earlier reduced the number of years of experience of retiring teachers and the ages at which they retired.

Brown took advantage of a 1999 reform of the California State Teachers’ Retirement System to measure the impact of pension price incentives on retirement timing. The reform doubled the financial incentive to work beyond age 60 and provided a bonus for staying for 30 years or more. She found that teachers clearly responded to the reform but that their response was price inelastic; that is, there was not a large delay in retirement (about 1.5 months) for a 10 percent annual increase in returns to working. These results might change, however, if responses to the reforms are more delayed than could be measured with the available data. Nevertheless, the California study suggested that there might be less of a response by teachers to changes in pension benefits than the Arkansas and Missouri results implied, emphasizing the need for continuing research on this important question.

Strauss and Liu examined a different issue, the choices of retired professional school personnel in Pennsylvania to return to work under that state’s DROP program. They found that over the 1984–2005 period it was fairly rare for retirees to return to work. The ones who did tended to be more highly educated, were more often administrators than teachers, had retired earlier than retirees who did not return to work, and earned less than non-returnees at the time of retirement. More than one-third went to work in a different district than the one from which they retired, and more than half moved to a new school. Mostly, however, they stayed in the same Metropolitan Statistical Area. They showed a preference for working in districts and schools whose students scored better on standardized tests than the districts and schools from which they retired, and they preferred districts with higher income and fewer minority students. ▼

Initial research revealed that teachers do respond to [pension] incentives.

LEGAL FRAMEWORK AND GOVERNANCE

The costs of public pension promises and questions about the labor market effects of current policies have combined to raise interest in the possibility of pension reform. Assessing the feasibility of reform involves considering the legal and political frameworks in which public pension policies are made. Amy Monahan undertook an analysis of the legal limitations on public pension plan reform. Frederick Hess and Juliet Squire examined the political environment in which public pension policy is made.

Legal limitations on public pension plan reform

State and local pensions are primarily subject to legal requirements set by individual states. Constitutional, statutory, and common law decisions in the states can make it very difficult to alter public-sector pension plans, especially for current employees and retirees. The exact limitations, as Monahan spelled out, vary from state to state.

Most states (with Texas and Indiana as exceptions) have moved away from the historical view that public pensions were “gratuities” that do not vest and that can be amended or modified at any time by the state. Specifically, most states now view pensions as contracts, either through provisions of the state constitution, statutes, or common law. This creates significant limitations on the changes that can be made to a public pension system.

Teacher pension policy is made in a highly political environment and is subject to a variety of legal limitations.

Nevertheless, states have some flexibility to modify pensions when the contractual approach governs because state courts differ greatly on the issues of when a contract is deemed to be created and what the contract is deemed to protect. A few states (e.g., New York, Illinois) have constitutional provisions that prohibit retirement plans from being amended in any way that results in a participant receiving a lower retirement benefit than the benefit payable when the employee first became eligible to participate in the plan. In these states the legal constraints on pension plan changes are very strong.

In Michigan and Hawaii, by contrast, the state constitution only protects accrued benefits. This legal standard is also used by the federal government for its employee pension plans. In these states, benefits related to service already performed cannot be diminished, but benefit changes can be made prospectively.

States that use a contract approach to pensions based on statute or common law interpret the restrictions on plan changes in various ways. In Arizona the courts have made decisions that are functionally the same as those in New York and Illinois. Other states use a “modified contract rule” pioneered in California that allows some changes to a contract; they differ as to when they hold that contractual protections begin (for example, this could be as late as retirement or eligibility for retirement, or as

early as when employment commences). In these states, it is legally permissible to make pension changes when the changes are reasonable and necessary to serve an important public purpose. In reality, however, “reasonable and necessary” has proven a difficult standard to meet. Thus, states that view contracts as taking effect when employees are hired and states that do not have clear guidelines about when a contract is deemed to exist find pension system changes difficult to make under the modified contract approach.

Five states¹¹ reject a contract-based approach to public pensions in favor of a property-based approach. In such states there appears to be more flexibility for states to make modifications. Minnesota views public pensions through the lens of a legal approach called “promissory estoppel.” Monahan notes that in practice it is difficult to distinguish this approach from the more conventional contract approach.

Monahan argued that all the frameworks (gratuities, contracts, property rights, and promissory estoppel) that currently define the legal protections for public pensions are flawed. In her view, the federal government takes a more logical and theoretically sound approach: protecting retirement benefits that have already been earned by services rendered but allowing changes on a prospective basis. This standard protects a participant’s reasonable expectations about pension benefits without sacrificing the employer’s ability to respond to changing conditions. She believes that states need to “clean up their public pension plan jurisprudence” and adopt the “reasonable middle ground” represented by the federal standard.

Interestingly, Clark reported that retiree health plans provided by state and local governments do not have the same legal status as pensions. Most public-sector employers have reserved the right to change these plans, and many have done so.

The politics of teacher retirement plans

Hess and Squire argued that the key decision-makers on public pension policy, unlike their private-sector counterparts, are political actors motivated by political rather than economic incentives. Consequently, pension reform is in their view as much or more an issue of altering the political incentives as it is a technical, fiscal, or actuarial exercise.

Pension politics pose two challenges. They create incentives that can lead to irresponsible fiscal stewardship, with public officials making commitments to employees that outstrip funding. Pension politics also make it hard to modernize pension policies that were built to serve an industrial-era workforce and that are now ill-suited to attracting talent in the contemporary labor market. In both cases a key political consideration is the fact that today’s current educators (especially the veterans) have the most to lose from pension changes and so are more energized, organized, and vocal than are the more dispersed potential beneficiaries of pension reform (i.e., prospective teachers, teachers early in their careers, and general taxpayers). Public officials who must be

11 Connecticut, Maine, Ohio, Wisconsin, and Wyoming.

re-elected every few years have strong incentives to make promises that please beneficiaries of the current pension system while leaving tough issues such as funding benefit increases or addressing unfunded plan liabilities to their successors.

Public-sector pensions are governed by rules embedded in state constitutions and laws and thus are “hard-wired” to state political processes. State legislatures typically determine pension benefit formulas and establish the rules that govern the structure, scope of responsibility, and operations of pension funds and their boards of directors or trustees. Legislators and pension boards have incentives to favor investment strategies that promise high returns, to keep required public contributions down, and to underfund their pension obligations, especially when competition from other government projects is strong. Actuarial assumptions that drive funding requirements are highly complex and opaque to most citizens and policy makers and so can potentially be manipulated to minimize required government contributions. Hess and Squire argued that safeguards like independent actuaries have too often provided only “a flimsy bulwark” against such pressures.

Teacher unions and associations exert a strong influence on teacher pension policy given their large membership, resources, and organization. They tend to reflect the interests of veteran

teachers with the most at stake in current pension systems. They have been steadfastly opposed to reforms that would scale back benefits for any of their members, increase employee contributions, or make the pension system more attractive to younger or more mobile employees. Teaching is the most highly unionized sector in the United States. Even in states that do not allow collective bargaining for teachers, their unions and associations are powerful political forces in state capitals.

Hess and Squire argued that addressing underfunding and structural incentive issues in teacher pensions requires, along with thorough technical analysis, “proponents to change the political climate, foster awareness, build support for change, alter political incentives, or design politically workable solutions.” Workable solutions will have to meet the political need to address the concerns of current teachers and retirees about their benefits, to provide political cover for politicians willing to tackle pension reform, and to craft rules that provide a counter-weight to short-term political incentives. Attention to pension reform tends to rise mostly during fiscal crises when funding shortfalls dominate discussion; but these crises could also provide the opportunity to promote measures that would modernize the structure of benefits as well as encourage responsible fiscal stewardship. ▽

TEACHER PREFERENCES

Alongside statistical studies examining the behavioral effects of pension policies and the distribution of pension benefits among teachers on different career paths, another promising research direction is to ask directly what kinds of pension designs teachers prefer. The preferences of younger and mobile teachers and of individuals who do not now enter the teaching profession are of particular interest, since these preferences (as Hess and Squire argued) are not likely to be reflected in the policy positions of established teacher organizations.

Two issues of special importance in considering possible pension alternatives concern investment risk and longevity risk. DB plans (assuming that promised benefits are legal obligations that must be paid) protect employees from investment risk stemming from financial returns that are not as high as expected; employers bear all of this risk because of the fixed income promises they have made. In the current economic climate this risk (which is fully borne by workers if they are covered only by DC plans) has become starkly obvious. It seems likely that employees’ preferences for DB versus DC plans are growing as individuals are becoming more aware of how DC account balances (and therefore prospects for retirement income) have declined during the current financial crisis. In related fashion, longevity risk (the risk that a retiree will outlive his income) is nonexistent in a DB plan with benefits based on an annual annuity, but can be substantial for DC plan participants who often do not have attractive options for annuitizing their DC account balances upon retirement. To what extent teachers are aware of these risks and

make employment choices that reflect them is critical to understanding how teacher pension plan design affects the quality of the labor pool of individuals willing to enter the teaching profession.

Michael DeArmond and Dan Goldhaber reported on a 2006 survey of 3,121 full-time classroom teachers in Washington State designed to determine how well they understand their current pension plans and what they think about alternative plan structures. They were able to link their survey results to detailed data on school and district characteristics.

Washington State has multiple pension plans, reflecting when teachers were hired and incorporating mandatory participation in both DB and DC plans for some teachers. It was therefore encouraging to find that teachers were fairly knowledgeable about which plan they were in. New entrants and mid-career teachers, however, were less knowledgeable about how their pensions work than were veteran teachers.

When asked if they would prefer a DB or a DC plan if they had an extra 10 percent of their pay to devote to one or the other,

The preferences of younger and mobile teachers and of individuals who do not now enter the teaching profession are of particular interest.

almost half said they would prefer a DC plan, while one-quarter preferred a DB plan. (The remainder was unsure.) In interpreting this finding, the authors cautioned, it is important to remember that the question was framed in terms of what to do with an extra retirement contribution, not with all retirement savings. Veteran teachers had different pension preferences from new entrants, with the former more inclined toward DB plans than the latter.

Elizabeth Smith and James Guthrie reported on a pilot study they conducted to probe the pension preferences of current and prospective teachers. Because the pilot sample was small, the preliminary results presented at the NCPI conference cannot be considered reliable. The real significance of the research was to describe the development of instruments that could later be used to poll a more representative sample of teachers, prospective teachers (from both traditional training programs and nontraditional certification programs such as Teach for America), and non-teachers. The pilot survey consisted of two parts—an informational video and a computer-based questionnaire. The pilot project made significant progress in developing appropriate instruments. It provided useful lessons about desirable changes in the instruments such as additional and refined demographic data that would help with interpreting sur-

vey results. The pilot also demonstrated that motivating individuals to respond to a pension survey will be a significant challenge.

Finally, Doannie Tran and Elsie Huang, two early-career teachers, undertook a pilot study aimed at revealing the pension preferences of their fellow participants in the Teaching Policy Fellows program in Massachusetts. Their sample included 52 public school teachers, one-third of whom teach in public charter schools. They noted that findings from their sample of year 2–10 teachers could not be generalized beyond the respondents, especially to teachers with similar experience who did not participate in the Teaching Policy Fellows program.

Respondents to the pilot survey had limited understanding of and interest in their pensions. As they gained experience, though, they were more apt to view retirement benefits as an incentive to stay in the profession. They were frustrated by the lack of portability of pension benefits and expressed interest in DC plans (with charter school teachers more open to this option than teachers in traditional public schools). Teachers planning to stay in the profession indefinitely were more likely to prefer a DB plan but were more open to the possibility of pension reform than might have been expected. ▼

KNOWLEDGE GAPS AND DIRECTIONS FOR FUTURE RESEARCH

The presentations at the NCPI conference added significantly to the research base on teacher retirement benefits. In part, this was due to the high quality of the papers. However, it is also the case that the preexisting research base was surprisingly small. Conference paper authors, as scholars from a variety of disciplines, highlighted the paucity of research and data on the very important topic of retirement benefits. We know that the costs of

these benefits represent a large and growing share of school district budgets and teacher compensation expenditures. Research in other sectors, and the limited research on public school teachers, suggests that pension systems have powerful effects on turnover and the timing of retirements. However, we have very little evidence on how pension policies affect teacher quality. In this closing

section, we identify some of the critical research that is needed to help close this knowledge gap.

We have very little evidence on how pension policies affect teacher quality.

Longitudinal teacher records linked to retirement data

For policies with such significance for public expenditures, the data on teacher retirements and retirement benefits are remarkably limited. For example, very few states report even basic descriptive data on the retirement ages of active teachers.¹² In fact, in most states, we do not know the retirement ages of educators or of important sub-groups such as math and science teachers.

While many state K–12 education departments have developed sophisticated longitudinal databases for teachers that permit study of inter-district mobility and exits, very few states have linked these records to retirement system data. Thus, a state such as Florida can report exit rates from public schools by experience or age of teachers, but we do not know whether these are retirements. All we know is that a teacher who was on a public school payroll in year t is not in year $t+1$. This is a serious limitation because exits and retirements are two different things. First, a teacher can separate without retiring. Many teachers make temporary or permanent exits from public school classrooms. The vast majority of these are not retirements. Similarly, a teacher who retires does not necessarily separate from the teaching workforce. Most pension systems have provisions that allow retired educators to continue teaching either part- or full-time after retirement. Moreover, teachers also retire from one pension system and begin teaching in another.

Papers presented at the NCPI conference that used retirement-linked longitudinal data showed the value of such data for education policy research. By estimating models of teacher retirement behavior, researchers are in a position to simulate the work-

¹² Data are reported on “retirement” ages, but that is simply defined as age of first pension draw. We do not typically know from these data whether such retirement immediately followed separation from service, or whether separation occurred earlier, followed by inactive status until reaching an age of pension eligibility.

force effects of policy changes. As more refined measures of teacher quality are developed (including classroom value-added), it may be possible to estimate the effect of pension rule changes on the quality of the teaching workforce, and ultimately on student achievement.

In addition, linking such databases across states will allow us to broaden our understanding of teacher labor markets. For example, there is considerable anecdotal evidence about teachers that draw pensions at relatively young ages (to avoid negative accrual) and then move across state lines to resume teaching in another system. Longitudinal databases that link teacher records and retirement information will allow more precise estimates of these flows.

Pension wealth calculations

The conference papers highlighted the importance of estimating the accrual of pension wealth in pension plans. The complex rules and formulae in these systems can be distilled down to a simple present value measure of wealth. Yet there has been surprisingly little research on teacher retirement benefit systems that employs this approach, which is commonplace in retirement studies in other sectors. As with longitudinal data discussed in the previous section, pension wealth estimates have the value of bringing greater transparency concerning the incentives created by complex pension systems, and how these incentives change over a teacher's work life. Such estimates also provide a more complete measure of compensation for teachers. Once pension systems have been modeled, it becomes possible to simulate the effect of rule changes on retention and retirement incentives.¹³

In surveying reports and studies issued by teacher pension systems, we almost never encounter pension wealth estimates for teachers at various points in their careers or calculations of the distribution of pension wealth among system members. Actuaries who prepare such reports are perfectly capable of presenting such statistics, but are not typically asked to prepare them. This makes it all the more important for independent policy researchers to undertake such analyses.

The penalties for educator mobility and potential remedies are important topics for further research. However, equally important, and to-date largely unexplored, are incentives for school administrators, who tend to operate in larger regional or even national markets. The effect of these systems on recruitment and retention of school administrators is sufficiently important to justify separate studies focusing on this group.

Educator preferences

The papers presented at NCPI's conference, so far as we can determine, represent nearly the entire survey research literature on educator preferences concerning retirement benefit systems. Yet

13 One dimension that has been neglected in the studies to date is the interaction between pension wealth accrual of the teacher retirement system and of Social Security, in those states where teachers are in both. Another complication is the interaction between pension wealth accrual and the accrual of wealth from retiree health benefits.

these papers barely scratch the surface of this important topic. Future studies should probe the knowledge and preferences of teachers in additional states. In addition, it is important to examine various sub-populations. This would include teachers who enter the profession through alternative routes that are delivering high quality recruits, such as Teach for America, Troops to Teachers, New York Teaching Fellows, etc., as well as future teachers in the traditional supply pipeline, especially in fields such as science and math. One important group, noted repeatedly at the conference, is school administrators. It is likely the case that school administrators, particularly superintendents, are more apt to switch pension systems during a career (an empirical conjecture for which data would be useful). Another group deserving of special study would be charter school teachers and administrators.

Another underexploited method of ascertaining teacher preferences is to examine actual choices in systems where teachers have different options. This can be harder than appears at first sight, since the playing field between various options is not always level in present value terms. Still, the choices that are available could be studied, while researchers press for better experimental options to be offered and evaluated.

Sustainability

An important question, continually surfacing in the conference, concerns sustainability of existing teacher retirement benefit systems. In principle, annual reports of teacher pension funds ("valuation studies"), which are used to set required contribution rates, address this issue. However, the sharp disagreement between financial economists and actuaries on the proper discount rate highlights the importance of getting independent, and more transparent, assessments of the viability of retirement systems. In fact, it is rare for annual pension reports to provide sensitivity analyses to give readers some understanding of the robustness of their estimates to alternative assumptions about returns, earnings growth, etc.

Another open question is the proper measure of fiscal health. It is commonly asserted that an 80 percent funding ratio is "good enough." But what are the assumptions underlying this conclusion, and do they hold in teacher retirement systems? Since a less-than-fully funded system relies partially on pay-as-you-go, the critical variables would seem to include the growth rate of the teacher workforce, which determines the dependency ratio on which pay-as-you-go relies.

Moreover, pension evaluations are done in isolation from the entire state budget. The Kotlikoff paper highlighted the importance of putting the future claims of the pension systems in a larger context of future outlays of state governments and an inter-temporal revenue constraint.

Finally, it is important to have transparent policy models of teacher pension systems to permit simulations of alternative reforms. One nagging question is the cost of transition from a pension system with back-loaded benefits to one in which shorter-term teachers also receive benefits commensurate to the financial contributions made on their behalf. These costs need to be modeled. ▼

APPENDIX: LIST OF CONFERENCE PAPERS

The NCPI conference papers are listed in the order in which they were mentioned in the conference summary.

Links to these papers can be found at
<http://www.performanceincentives.org/conference/papers2009.asp>

An Introduction to Teacher Retirement Benefits
Janet Hansen, Committee for Economic Development

Funding of Teacher Retirement Systems: Are They Viable?
Laurence J. Kotlikoff, Boston University

Retiree Health Plans for Public School Teachers after GASB 43 and 45
Robert Clark, North Carolina State University

Distribution of Benefits in Teacher Retirement Systems and Their Implications for Mobility
Robert Costrell, University of Arkansas
Michael Podgursky, University of Missouri – Columbia

Determinants of the Generosity of Pension Plans for Public School Teachers, 1982 to 2006
Robert Clark and Lee Craig, North Carolina State University

Labor Market Effects of Pensions and Implications for Teachers
Leora Friedberg and Sarah Turner, University of Virginia

Teacher Pensions and Retirement in Pennsylvania
Robert Strauss, Carnegie-Mellon University

Teacher Pensions Incentives, Retirement Behavior, and Potential for Reform in Arkansas
Robert Costrell and Joshua McGee, University of Arkansas

Teacher Pension Incentives and Labor Market Behavior: Evidence from Missouri Administrative Teacher Data
Michael Podgursky, Shawn Ni, and Mark Ehlert, University of Missouri – Columbia

The Link Between Pensions and Retirement Timing: Lessons from California Teachers
Kristine Brown, University of Illinois – Champaign-Urbana

Legal Limitations on Public Pension Plan Reform
Amy Monahan, University of Missouri – Columbia

The Politics of Teacher Retirement Plans
Frederick Hess and Juliet Squire, American Enterprise Institute

How well do teachers understand their pensions and what do they think about alternative pension structures?
Michael DeArmond and Dan Goldhaber, University of Washington

Teacher (and Potential Teacher) Attitudes Toward Retirement Benefits
James Guthrie and Elizabeth Smith, Peabody College of Vanderbilt University

Early Career Teachers' Perceptions of Traditional Versus Innovative Benefits Packages
Doannie Tran and Elsie Huang, Teach Plus

NATIONAL CENTER ON Performance Incentives



JAMES W. GUTHRIE
Executive Director
National Center on Performance Incentives
Professor of Public Policy and Education
Vanderbilt University's Peabody College

MATTHEW G. SPRINGER
Director
National Center on Performance Incentives
Research Assistant Professor of Public
Policy and Education
Vanderbilt University's Peabody College

DALE BALLOU
Associate Director
National Center on Performance Incentives
Associate Professor of Public Policy
and Education
Vanderbilt University's Peabody College

LEONARD BRADLEY
Lecturer in Public Policy
Vanderbilt University's Peabody College

TIMOTHY C. CABONI
Assistant Dean for External Relations
Vanderbilt University's Peabody College

MARK EHLERT
Research Analyst
University of Missouri-Columbia

TIMOTHY J. GRONBERG
Professor of Economics
Texas A&M University

LAURA HAMILTON
Senior Behavioral Scientist
RAND Corporation

JANET S. HANSEN
Vice President and Director of Education
Studies
Committee for Economic Development

BRIAN A. JACOB
Walter H. Annenberg Professor of
Education Policy
University of Michigan

DENNIS W. JANSEN
Professor of Economics
Texas A&M University

CORY KOEDEL
Assistant Professor of Economics
University of Missouri-Columbia

VI-NHUAN LE
Behavioral Scientist
RAND Corporation

JESSICA L. LEWIS
Research Associate
National Center on Performance Incentives

J.R. LOCKWOOD
Statistician
RAND Corporation

DANIEL F. MCCAFFREY
Head of Statistics, Senior Statistician
RAND Corporation

PATRICK MCEWAN
Assistant Professor of Economics
Wellesley College

SHAWN NI
Professor of Economics
University of Missouri-Columbia

MICHAEL J. PODGURSKY
Professor of Economics
University of Missouri-Columbia

BRIAN M. STECHER
Senior Social Scientist
RAND Corporation

LORI L. TAYLOR
Assistant Professor
Texas A&M University

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VANDERBILT UNIVERSITY PEABODY COLLEGE

Peabody #43 • 230 Appleton Place
Nashville, Tennessee 37203

(615) 322-5538 • www.performanceincentives.org

