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Market-Based Pay Reform for Public School Teachers

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Market-Based Pay Reform for Public School Teachers

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Abstract

Modern personnel economics emphasizes the importance of strategic, integrated compensation policy in an organization. In this paper I review key features of the compensation system for public school teachers. The rigidities and inefficiencies that arise from single salary schedules and other features of the compensation regime, and their interaction, argue for broad definition of performance-based pay reform. National data on elements of compensation reform in K-12 are reviewed.

Introduction

In school year 2003-04, the most current year for which national data are available, American public schools spent $173 billion for salaries and $50 billion for benefits for instructional personnel. This does not include unfunded liabilities of pension funds or payments for retiree health insurance for teachers and administrators. These compensation payments, of course, form a large share (55 percent) of current K-12 expenditures. At the same time a growing literature estimating "teacher effects" consistently finds very wide variation in the effectiveness of teachers, even within the same building (Rivkin, Hanushek, and Kain, 2005). In describing their findings, these researchers routinely cite the large potential gains to student achievement that would accrue if students with teachers in the lowest deciles of teacher effectiveness were switched to teachers in the upper deciles. The combination of these two facts – huge spending on instructional personnel and wide variation in their effectiveness – on their face suggest that there may be large potential efficiency gains from more efficient human resource (HR) policy.

This view is reinforced by the burgeoning research in the HR and compensation field, which yields a growing consensus about the importance of HR policy within organizations. To quote a leading textbook in the field (written by two economists): "… human resources are key to organizational success or failure. It is perhaps going too far to say that excellent HR policies are sufficient for success. But success with poor HR policies is probably impossible, and the effects of improved HR success are potentially enormous" (Baron and Kreps, 1999). In organizations pursuing efficient HR policies, compensation policy is strategic, and focused on advancing the goals of the organization.

This paper provides an overview of key institutional features of the teacher compensation environment. In public K-12, the compensation "system" is fragmented and non-strategic, with

the different pieces perhaps responding to pressures from different constituencies or inherited from earlier vintages of collective bargaining agreements, but with little attention to its overall efficiency effects. However, that may be changing. Concern over school performance and teacher quality is creating pressure to reform aspects of the teacher compensation system. Indeed, this conference, and the support of IES for research in this area, provides one of many examples.

In order to understand what needs fixing, one must first understand what's broken, and why it's broke. This paper attempts a modest contribution to that endeavor. First, we examine the salary schedules used to set teacher pay and consider some problems they create for teacher recruitment, retention, and motivation. An understanding of the stresses produced by these schedules frames our examination of the market-based pay reforms that have been introduced by districts over the last decade. Next we discuss two other features of the institutional environment that exacerbate the effects of single salary schedules – tenure and the size of wage-setting units. Finally, we examine the peculiar incentives produced by the teacher retirement system. The simultaneous existence of so many seemingly dysfunctional policies – and their complex interactions -- highlights the importance of compensation experimentation and the need for "regulatory space" that will permit schools and districts to experiment with alternative, and more strategic, compensation plans.

Single Salary Schedules

Salary schedules for teachers are a nearly universal feature of public school districts. Pay for teachers in public school districts is largely determined by these schedules. In large school districts the pay of thousands of teachers in hundreds of schools -- from kindergarten up to secondary teachers in math and science -- is set by a single district schedule. The nearly universal

use of salary schedules in public school districts is seen in data from the 1999-00 Schools and Staffing Surveys. Ninety-six percent of public school districts accounting for nearly one hundred percent of teachers report use of a salary schedule.

Table 1 provides an example of a salary schedule for public school teachers in Columbus, Ohio. The rows refer to years of experience and the columns refer to levels of teacher education. The pay increases associated with higher levels of education are usually not tied to a teacher's field. Indeed, it is commonplace for teachers to earn graduate credits and degrees in education administration while still employed full time as teachers.

(Table 1)

These teacher salary schedules are sometimes referred to as "single salary schedules, " a term reflecting their historical development. Kershaw and McKean (1962) note that there were three phases in the historical development of teacher pay regimes. The first phase, which lasted roughly until the beginning of the 20th century, saw teacher pay negotiated between an individual teacher and a local school board. As school districts consolidated and grew in size this type of salary determination became increasingly unpopular with teachers. With consolidation and growth, the monopoly power of school districts in the labor market increased and charges of favoritism were common. In response to these problems, there was gradual movement toward the use of salary schedules that differed by grade level and position. "Typically the salaries differed from grade to grade, and high school salaries would inevitably be higher than those at the elementary level." (Kershaw and McKean, 1962, p. 22).

The third phase began in the 1920's and accelerated in WWII and the immediate post-war period. This is characterized by what was termed the "single salary schedule" -- the current norm. An education commentator writing in the 1950's noted "the distinguishing characteristic

of the single salary schedule is that the salary class to which the classroom teacher is assigned depends on the professional qualifications of the teacher rather than the school level or assignment." Kershaw and McKean write " The single salary schedule was regarded as bringing a feeling of contentment and professionalism. A teacher would no longer be an elementary teacher, but a teacher, a member on equal footing of the profession that included all teachers." By 1951, 98 percent of urban school districts employed the single salary schedule. (Kershaw and McKean, 1962, pp. 23, 25. See also, Lieberman, 1956, pp. 391-393)

Since elementary school teachers were nearly all women whereas high school teachers were largely male, early struggles for a single salary schedule were seen by some commentators as an important part of feminist struggles for pay equity (Murphy, 1990). Eventually, the unification of schedules for elementary and secondary school teachers was embraced by the National Education Association as well as the American Federation of Teachers, both of which remain strong proponents.

These salary schedules for teachers contrast with the situation in most other professions. In medicine, pay of doctors and nurses varies by specialty. Even within the same hospital or HMO, pay will differ by specialty field. In higher education there are large differences in pay between faculty by teaching fields. Faculty pay structures in most higher education institutions are flexible. Starting pay is usually market-driven and institutions will often match counter-offers for more senior faculty whom they wish to retain. Merit or performance-based pay is commonplace. Ballou and Podgursky (1997) and Ballou (2001) report generally similar findings for private K-12 education. Even when private schools report that they use a salary schedule for teacher pay, payments "off schedule" seem commonplace.

There is a saying in economics (whose origin I do now know): "You can't repeal the law of supply and demand." By this economists mean that if governments or regulators do not let prices clear a market then some other mechanism will. For example, if governments use rent controls to set rates below the market clearing level, then shortages will develop. In such a case the market will "clear" in the sense that individuals will have to invest more of their time searching for an apartment. Some will give up and quit. Others will pay bribes. And the overall quality of the apartment stock may decline. All of these non-price mechanisms will act to clear the market instead of price. It useful to keep this notion in mind as we consider the effects of teacher salary schedules.

a. Shortages by Teaching Field.

The single salary schedule suppresses pay differentials by field. All teachers in a district with the same experience or education-level earn the same base pay. Thus, a second grade teacher will earn the same pay as a high school chemistry teacher. However, many districts have little difficulty in hiring elementary school teachers but face chronic shortages of applicants in special education, math, and science. Given the wide variation in human capital investments by teaching field (e.g., elementary education versus secondary math) it is almost certainly the case that non-teaching opportunity earnings differ greatly as well. Limited data on the ratios of qualified applicants to vacancies show sharp differences by field. Figures 1 – 8 illustrate this point with national data on teacher recruiting from the 1999-00 and 2003-04 Schools and Staffing Surveys (SASS), a national survey of schools and teachers undertaken at regular intervals by the U.S. Department of Education. Here we report an assessment of market conditions by administrators who have recruited teacher in these fields. The vast majority of districts reported that it is "easy" to fill vacancies in elementary education and social studies (Figures 1 and 2), with

no more than five percent reporting it "very difficult" and virtually none reporting that they could not fill the position. The situation changes dramatically when we turn to math, science, and special education, where a large share of districts reported it was "very difficult" or they were unable to fill a vacancy. Figure 8 shows that even in high poverty districts, the majority still report it "very easy" to fill a vacancy in elementary education.

(Figures 1-8)

Since districts salary schedules do not permit these markets to clear in terms of wages, not surprisingly, adjustment occurs in terms of quality. Numerous reports have documented the extent of "teaching out of field" or teachers practicing with substandard licenses in the fields of science, math, and special education (U.S. Department of Education, 2004). Indeed, it is interesting to contrast the K-12 regime with higher education. Average pay of faculty varies greatly by field. Largely because of the very high salaries they can commend outside of teaching, finance professors earn much higher salaries than history or English professors. Higher education costs would increase massively if it were necessary to pay all higher education faculty at the same rate as finance professors. Moreover, attempts by higher education institutions to suppress pay gaps between finance and other disciplines would simply cause the market to "clear" in terms of quality rather than price -- the quality of finance faculty would fall relative to that in other disciplines. "Teaching out of field" in finance and economics would become the norm rather than the exception.

b. Poor Children are More Likely to Be Taught by Novice Teachers.

The single salary schedule suppresses differentials by schools within districts. In larger urban districts dozens or even hundreds of schools will be covered by the same salary schedule. The working environments for teachers vary greatly between these schools. Some may even be

dangerous places to work, whereas other schools will be more pleasant places to work. Often teachers in the less desirable schools will be able to use their seniority to transfer to a more pleasant school. Or they may simply quit at a higher rate. In either case, less desirable high-poverty schools on average will have teachers who have less seniority and education, and hence lower pay. Equalizing teacher pay within a district causes the market to clear on a teacher quality or experience dimension.

Thus, because the salary schedule assigns lower pay to teachers with less experience within a school district, an unintended consequence of a district-wide salary schedule is lower spending per student in high-poverty schools (Rosa, et.al, 2007; Iatarola and Stiefel, 2003). High poverty schools will also have relatively more novice or inexperienced teachers. One fairly consistent finding in the "teacher effects" literature is that students taught by novice or inexperienced teachers have lower achievement gains than students with more experienced teachers (e.g., Hanushek, Rivkin, and Kain, 2004; Aaronson, Barrow, and Sander, 2007; Boyd, et.al., 2006).

Since the national Schools and Staffing Surveys is based on a sample rather than the universe of teachers it is not as useful as state administrative data in examining this intra-district allocation of novice teachers. Instead we turn to school-level administrative data on students and teachers for Missouri public elementary schools. The empirical literature cited above finds that students of novice teachers are less effective than more experienced teachers, but provides no precise guidance as to where this damage threshold abates. All would agree, however, that extremely novice teachers (e.g., first year teachers) are less effective. Thus we use a narrow and broader definition of "novice teacher" in our analysis: teachers with no prior experience (i.e., in their first year of teaching), and teachers with less than three years experience. We then

compare the exposure rate of students to novice teachers in high and low poverty schools. We do this by regressing the percent novice teachers in a school on the student poverty rate in the school. These results are shown in the columns labeled "OLS" in Table 2. For both measures, there is a significant positive association indicating that on average, poor children are more likely to be exposed to a novice teacher.

(Table 2)

This association can arise from two sources. It may be that high poverty school districts have relatively more novice teachers in the workforce. Or it may be the case that within a district, schools with above-average levels of student poverty have relatively more novice teachers. The estimates labeled "FE" (fixed effect) neutralize the former effect, and merely estimate the strength of the relationship due to intra-district variation in student poverty and novice teaching. Note that in both cases, the size of the coefficient increases significantly. This indicates that the intra-district association, which arises because teacher pay incentives are not used as an active offset, is an important contributor to the higher exposure rate of poor students. Since pay is rigid the intradistrict markets clear on experience and quality.

c. More Effective Teachers are Not Rewarded.

One consistent finding in the teacher value-added literature is that there is a very large variation in teacher effectiveness (e.g., Rivkin, Hanushek, and Kain, 2005; Aaronson, Barnow, and Sander, 2007). Even within the same school building some fourth grade teachers are much more effective at raising student achievement than others. More generally, some teachers are harder working and are more inspirational to students (and parents) than others. Some teachers are burnt out and simply putting in time until retirement (more on pension systems below). The single salary schedule suppresses differences between more effective and less effective

teachers (however defined). The best way to understand what the effect of the single salary schedule is would be to imagine what the effect of a performance pay regime might be. If more effective teachers were rewarded on the basis of performance, this would have two important consequences. The first is a motivation effect. Incumbent teachers would have an incentive to work harder to raise whatever performance measure is rewarded. In addition, performance pay would have a positive selection effect. It would draw teachers into the workforce who are effective at meeting the performance targets, and would help retain teachers who are effective as well. Both effects would tend to raise the quality of the teaching workforce.

Trends in Market Based Pay

Given the efficiency costs of rigid salary schedules and growing pressure on schools to raise performance, it is not surprising that there is evidence that market and performance-based pay is growing. Several states and districts have implemented incentives to encourage experienced educators to teach in low performing schools (Prince, 2002, Darling-Hammond and Prince 2007). Florida, Minnesota, and Texas have implemented state programs to encourage schools and districts to implement performance based pay systems for teachers. Congress has also provided an impetus through its Teacher Incentive Fund, a five year, $500 million program to encourage states to set up pilot programs of teacher performance incentives (Podgursky and Springer, 2007). The web site of the National Center for Performance Incentives at Vanderbilt now does a good job of tracking programs by state. Unfortunately, we do not have much "microeconomic" data on the actual implementation of these programs in schools. State data systems generally do not capture these program details. Even states that have good data on teacher salaries and their components, generally cannot break out teacher performance or incentive bonuses.

The best data currently available on national levels and trends is to be found in various waves of the Schools and Staffing Surveys (SASS), conducted by the National Center for Education Statistics (NCES). SASS is a large nationally representative sample of roughly 8000 public schools and 43,000 public school teachers.[1] There have been five waves of SASS, associated with five school years: 1987-88, 1990-91, 1994-95, 1999-00, 2003-04. A sixth administration (2007-08) is currently "in the field" but results of that survey will not be available for some time. While SASS covers a two decades of public school experience and has included various questions about performance and market-based pay, unfortunately, many of these have not been compatible over time. Thus we focus attention on data in the most recent waves of the survey, which contain consistent items.

District administrators were asked whether they provided pay bonuses or other rewards for certain teacher characteristics or behaviors.[2] These are listed in the top rows of Table 3. The most common bonus is for professional development. In 2003-04, 24 percent of districts accounting for 36 percent of teachers offered such a bonus. The next most common bonus among districts is NBPTS certification. In 2003-04, 18 percent of districts, accounting for 40 percent of teachers offered some sort of bonus for NBPTS certification. This is also the most rapidly growing bonus, with the number of districts offering it growing by ten percentage points between the 1999-00 and 2003-04 surveys.

(Table 3, Figures 9-11)

Eight percent of districts, accounting for 14 percent of teachers reported rewards for excellence in teaching. In 2003-04, five percent of districts (13 percent of teachers) have bonuses

[1] SASS includes private schools and teachers as well, however, the focus of this study is on trends in public schools.
[2] "Does the district currently use any pay incentives such as a cash bonuses, salary increase, or different steps on a salary schedule to reward …"

for teaching in a less desirable locations, and 12 percent of districts (25 percent of teachers) report bonuses of some sort for teaching in shortage fields.[3] We then tabulated the number of incentives provided. Fifty five percent of districts (31 percent of teachers) provided no incentive rewards. This share has dropped between the 1999-00 and 2003-04 surveys. Two-thirds of teachers are employed in districts that provide one or more such incentives, and 15 percent of teachers are in districts providing three or more such incentives.

The first block of questions in Table 3 focused on individual teacher bonuses. The next block of questions at the bottom of the table concern school-wide bonuses. Some states and districts have begun to provide school-wide incentives for staff. Unfortunately, these questions were only asked in the 2003-04 survey. Of most interest for our purposes is the question concerning cash payments to teachers. Five percent of districts (15 percent of teachers) report cash bonuses or additional resources based on student achievement.

While all of the SASS surveys had questions on market and performance-based pay, few of the questions were consistently asked from one administration of the survey to the next. One block of questions was nearly identical over the years concerned recruitment bonuses by field. This question asked district administrators whether they offered additional rewards in shortage fields, and in which teaching fields they are used. The results are presented in Table 4 and Figure 12.

(Table 4, Figure 12)

[3] Interestingly, the rank order of district implementation of these incentives is nearly the opposite of teacher preferences, as reported in a recent study of Washington teachers by Goldhaber, DeArmond, DeBurgomaster (2007). Teaching in a less desirable location was the most favored incentive (63%), followed by NBPTS (20%), shortage fields (12%), and performance pay (6 %).

First, it is worth noting the sharp increase over the 16 year interval in the incidence of field-based incentives. In the first administration of SASS during the 1987-88 school year, only 7.5 percent of districts (11.3 percent of teachers) provided such incentives.[4] That share climbed to 12 percent of districts employing 25 percent of teachers by the 2003-04 school year. Consistent with the recruitment difficulty responses we saw in Figures 1-8, these recruitment incentives are most commonly used in the areas of special education, math, science, and English as a second language.

Confounding Factors: Tenure and the Size of Wage-Setting Units

The costs associated with teacher salary schedules are exacerbated by two other features of teacher wage-setting: tenure and the size of wage-setting units (i.e., districts). Rigid salary schedules would not be as costly if the factors rewarded, teacher experience and graduate education, were strong predictors of teacher productivity. Surveys of the education production find little support for a positive effect of teacher MA degrees, and teacher experience has little effect beyond the first few years (Hanushek and Rivkin, 2003).

In statistics and medicine it is commonplace to refer to "interaction effects." Pharmacists now rely on computer-based data systems to flag potentially harmful interaction effects of drugs. The basic idea is the overall effect of two drugs is not equal to the sum of their separate effects. In fact, the combination may enhance or dampen their separate effects, or may produce very harmful side effects. The same is true for the pieces of a compensation system. The effect of policy A may be larger or smaller, depending on the presence of policy B.

[4] Note that these recruitment incentives can take the form of cash bonuses or higher pay, or higher initial placement on the salary schedule. The latter is more subtle, and thus less controversial, than explicit bonuses or differentiated pay structures.

For example, consider the effect of teacher tenure. Even if experience per se does not raise a teacher's effectiveness, in principle a seniority-based wage structure might be efficient if less effective teachers are weeded out over time. However, personnel policies in traditional public schools are not likely to produce such an effect. Teachers in traditional public school districts receive automatic contract renewal or tenure after three to five years on the job. After receiving tenure it is very difficult to dismiss a teacher for poor job performance, a finding which has been widely documented.

Interestingly, a proposed teacher performance plan in Idaho takes explicit recognition of this interaction with tenure. Under the plan (ISTARS) teachers could earn individual bonuses (based on duties and additional certification and endorsement areas) if they are willing to give up tenure. A flat dollar bonus is paid to all teachers who enter the plan (Idaho Department of Education, 2008).

Another important factor in assessing the cost of rigid district salary schedules has to do with the size of the wage-setting units. The wage-setting unit in private and charter schools is typically the school, whereas in traditional public schools wage-setting is at the district level. In fact, most personnel policy concerning teachers – the level and structure of teacher pay, benefits, recruiting – is centralized at the district level in traditional public schools. This has two effects. First, it makes the market for teachers less competitive and more monopolistic. Second it makes the wage-setting process more bureaucratic.

Figure 13 illustrates the dramatic differences in the size of the wage and personnel units in traditional public and private schools. There are approximately 15,000 public school districts in the U.S., however, the size distribution of these districts in terms of teacher employment is very highly skewed. As a consequence, most teachers are employed in large school districts.

One quarter of teachers in traditional public schools are employed in districts with at least 2100 FTE teachers, and half of traditional public school teachers are in districts with at least 561 FTE teachers. Thus, the typical teacher finds herself in a large organization with standardized, bureaucratic wage-setting. By contrast, the average charter school – an independent employer – employs just 16 FTE teachers, barely larger than the average private school (15 FTE's).

(Figure 13)

The size of the employing unit is an important factor in understanding a firm's choice of personnel policies. In small teams, it is much easier for supervisors or fellow workers to monitor job performance. This makes merit or performance-based pay less controversial. On the other hand, large school districts have a great deal of trouble implementing merit pay systems for teachers (Hatry, et. al. 1994). In part, this is because they must come up with evaluation systems that guarantee horizontal "equity" across the many schools in the district bargaining unit – essentially a hopeless endeavor. Private and charter schools are under no requirement that their performance assessments be identical to those of other schools. They need only assure their teachers that they are treated fairly within the school. Teachers unhappy with the pay system at the school can always "vote with their feet" and go to another school with a more compatible pay regime.

In principle, public school districts need not be so bureaucratic. They could adopt more decentralized systems of personnel policy, give school principals more control over teacher recruitment and pay, and adopt more of a team model. In fact, school districts are taxing districts. I am aware of no economic arguments for why wage-setting should be centralized. The fact that one observes wage-setting in private schools – including Catholic diocese – following a

more decentralized model suggests that there are no efficiency gains to be had from centralization.

However, this highlights an important difference between traditional public and charter or private schools. The percent of teachers covered by collective bargaining agreements in charter schools is far lower than in traditional public schools, and for private schools is virtually nil. Tabulations from the 1999-00 Schools and Staffing Surveys find that seventy percent of public school districts, employing 73 percent of teachers, have collective bargaining agreements covering their teachers This contrasts with just 14 percent of charter schools (employing 18 percent of charter school teachers).[5] The absence of a binding collective bargaining agreement is an important source of personnel flexibility in charter schools. Teacher unions in general have been opposed to more flexible market or performance-based pay systems, although there are exceptions such as the widely-publicized Denver performance play plan. However, even in Denver, the plan is district-wide and not school-based. Collective bargaining laws, by defining the district as the "appropriate bargaining unit" have tended to push personnel policy and wage-setting to the district level, and lock them there.

4. Pension System Incentives: Rewarding, then Punishing, Longevity

Retirement benefits are an important part of a strategic compensation package. In recent decades, however, private sector employers have moved dramatically away from traditional pension systems (defined benefit, DB) toward individual retirement accounts or similar defined

[5] The Schools and Staffing Surveys does not ask a collective bargaining question of private schools. However, we are aware of no private schools organized by the major teaching unions. Some Catholic dioceses negotiate agreements with Catholic teacher associations. However, these agreements are far less restrictive than anything negotiated in public schools and Catholic school teachers do not have tenure.

contribution (DC) plans.[6] DB pensions have long been an important part of compensation for teachers in public schools. Traditionally, salaries for public employees have been relatively low, but benefits, particularly retiree benefits, have been relatively high. This mix of current versus deferred income was rationalized by the contention that the public good was best served by the longevity of service that would be induced by these pension plans.[7] In recent decades, however, evidence is growing that many of these plans, by encouraging early retirements, may actually *shorten* rather than lengthen professional careers. For example, a study by Friedburg and Webb (2005) found that a switch by employers to a defined contribution retirement benefit system has been associated with later retirement. Costrell and Podgursky (2008) show that teacher defined benefit systems create strong incentives encouraging teachers to retire at relatively early ages, and that this has been accentuated by legislative changes over the years, in a number of states.

Figures 14 – 16 show the life-cycle accrual of pension wealth for a teacher who enters teaching at the age of 25 and works continuously for thirty years in Ohio, Missouri, and California. We use a common salary schedule for each state (for details see Costrell and Podgursky, 2008). In each year she works total compensation has two parts. The first is current compensation, which includes current pay and benefits. The second part is deferred compensation. We measure this as the accrual of pension wealth from working an additional year and report it as a percent of total earnings. In each of the states reported (and every other state we have examined) accrual of pension wealth is highly back loaded and characterized by

[6] Under a DB plan, the employer guarantees an annuity payment to the worker on retirement. With an IRA or similar defined contribution plan, the employer merely agrees to contribute a certain amount to a retirement account for the worker, but does not guarantee any particular payment upon retirement. There are hybrid accounts that combine aspects of both. DC plans now account for the majority of private sector plans. Johnson (2008).

[7] NEA, 1995, p. 3. As the NEA report points out, however, this purpose has "been lost for many in the mists of time," and "many pension administrators would be hard-pressed to give an account of why their systems are structured as is except to say that 'the Legislature did it' or 'It is a result of bargaining.'"

one or more sharp spikes. In the case of Missouri, for example, pension wealth accrual is less than 25 percent of earnings up to age 39. At age 45, however, the accrual rate rises rapidly, reaching a peak of roughly 190 percent of earnings at age 52. It then falls sharply and actually turns negative by the time she reaches age 57. In other words, the incentive structure of pensions pulls teachers to the spike by generously rewarding longevity, and then pushes teachers out afterwards by punishing longevity.

(Figures 14-16)

What are the incentive effects of such defined benefit systems? First of all, they punish mobility. Teachers who leave before conventional retirement age, suffer severe losses in pension wealth. Second, they encourage early teacher retirement. Many teachers retire in their mid-fifties. The median age for retirement and withdrawal from the teaching workforce is 58 years (Podgursky and Ehlert, 2007)

It is very difficult come up with an efficiency rationale for these spikes in pension wealth accrual. The fairly massive backloading of benefits might be justified if there were strong evidence of large returns to experience and important job specific human capital investments. However, the majority of value-added econometric studies of teacher effectiveness find that novice teachers (e.g., teachers with less than three years of experience) on average are less effective than more senior teachers, but the returns to experience level off quickly. There is little evidence that a teacher with twenty years experience is any more effective in the classroom than a teacher with ten years experience. Ironically, in a steady state, the current pension system, by pushing many teachers into retirement at a relatively young ages, actually raises the share of novice teachers in the workforce and thus lowers overall teacher effectiveness.

In light of these concerns, government employers have begun to experiment with alternatives to traditional defined benefit systems. Most notably, the federal government phased out its traditional defined benefit system two decades ago in favor of a three-part Federal Employees Retirement System including Social Security, a defined benefit plan, and a defined contribution plan with matching employer contributions (Hustead and Hustead, 2001). While no states have eliminated the defined benefit plan for teachers, a few states have opened up new options for new teachers. In Florida and Ohio, for example, new teachers can choose to have their contributions and their employer contributions put into a defined contribution plan. A few states allow a "hybrid" option that allows teachers to put their contributions into a DC fund while employer contributions finance a smaller defined benefit plan. Unfortunately, states have not always offered a level playing field in these choices. Costrell and Podgursky (2007) critically review the hybrid, money purchase, and defined contribution options for Ohio teachers. While these do provide choices for Ohio teachers, they also seem to have been a source of cross-subsidies for the traditional DB plan, in order to shore up the funding for that plan, which has a $19 billion deficit.

The problem of retiree health insurance is only beginning to appear on the radar screens of state legislatures. New public sector accounting rules (GASB 43 and 45) require state and local governments to estimate and report the magnitude of unfunded retiree health insurance benefits. A few states pay for retiree health insurance through a state fund. However, for the most part this is a benefit provided by school districts. Available evidence suggests that many, perhaps most, districts that provide these benefits, finance them on a pay-as-you-go basis. Not surprisingly, then, the first glimpses of the unfunded liabilities are very large. For example, the LA Unified School district provides complete coverage for the teacher and her spouse for

employed and retired teachers with more than five years seniority. The estimated unfunded accrued liabilities to date are $10 billion (State of California, 2008).

Conclusion

Human resource (HR) policy – the recruitment, retention, and motivation of employees -- is increasingly recognized as a critical variable in the success of an organization. An integrated and coherent compensation policy is a central core of an efficient HR policy. In private and many public organizations, compensation policy is considered as a strategic whole. In public K-12 by contrast, the compensation "system" is much more fragmented, each piece perhaps responding to pressures from a particular constituency or inherited from an earlier collective bargaining agreement, but with without systematic consideration of the logic or incentive effects of the whole.

Accountability pressures are forcing school districts to address the inefficiencies built into this compensation system and rethink how they are spending roughly $250 billion annually for compensation of instructional personnel. Federal programs such as the Teacher Incentive Fund are encouraging states to experiment with performance and market-based pay. States such as Minnesota, Florida, and Texas have developed programs to encourage their districts to develop such programs. A number of large urban districts, most notably Denver, have taken important steps in this direction. Performance and market based incentives are much more common in charter schools and expanding with the charter school base (Podgursky, 2007). Our examination of various waves of SASS find growing evidence of performance and market-based pay even among traditional public schools. Much less movement has occurred in the area of teacher pensions, however, large unfunded liabilities for pensions and retiree benefits are likely to force reforms in this area as well.

Experience from the private sector and other government employment suggest that much trial and error, hopefully combined with evaluation, will be necessary to arrive at effective and workable systems. In fact, evidence from the private sector suggests that the adjustment and tinkering with professional compensation systems is an continual process.

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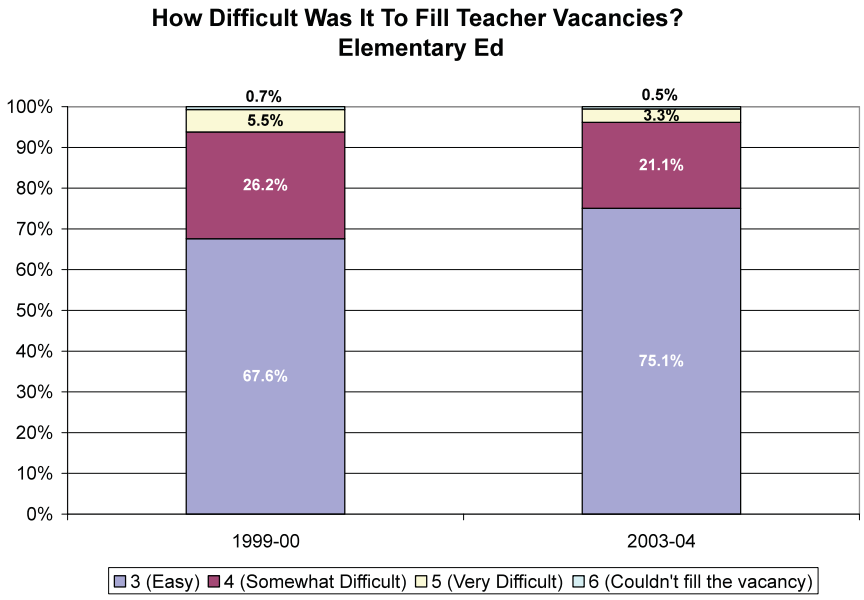
Table 1

2007-08 Salary Schedule for Columbus, Ohio Public School Teachers

Years Experience	Pre-License Bachelor's Degree	Bachelor's Degree	150 Hours and Bachelor's Degree	Master's Degree	Master's Degree Plus 30 Semester Hours
0	29,313	36,779	37,844	40,788	44,220
1	30,490	38,251	39,353	42,406	43,252
2	31,703	39,795	40,935	44,098	44,981
3	32,991	41,376	42,553	45,863	46,746
4	34,278	43,031	44,282	47,702	48,622
5	35,676	44,760	46,047	49,615	50,571
6		46,525	47,886	51,601	52,594
7		48,401	49,799	53,661	54,727
8		50,350	51,785	55,794	56,897
9		52,337	53,844	58,037	59,177
10		54,433	56,014	60,354	61,531
11		56,640	58,258	62,782	63,995
12		58,883	60,575	65,283	66,570
13		61,237	63,002	67,894	69,218
14		63,701	65,540	70,616	72,013

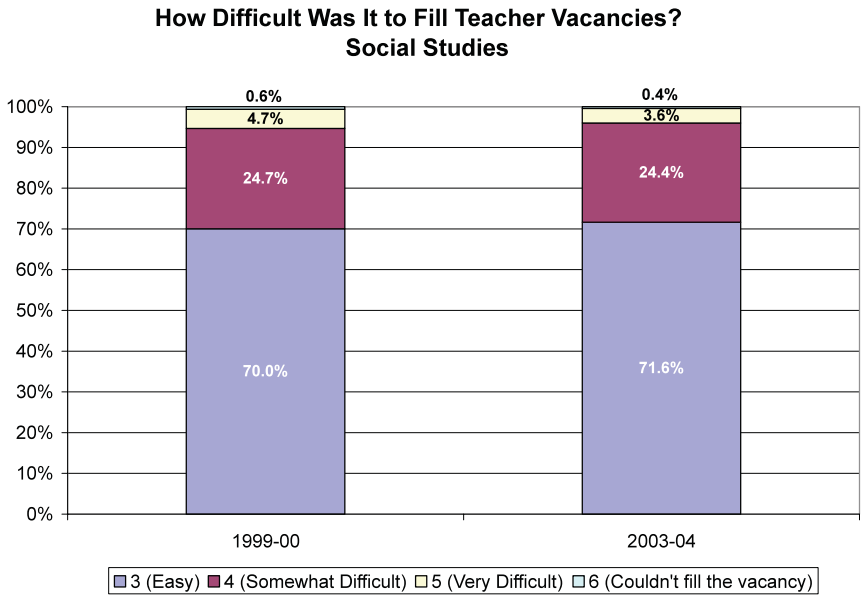
Source: http://www.ceaohio.org/staticDocs/CEA_Master_Agreement_071121.pdf

Figure 1



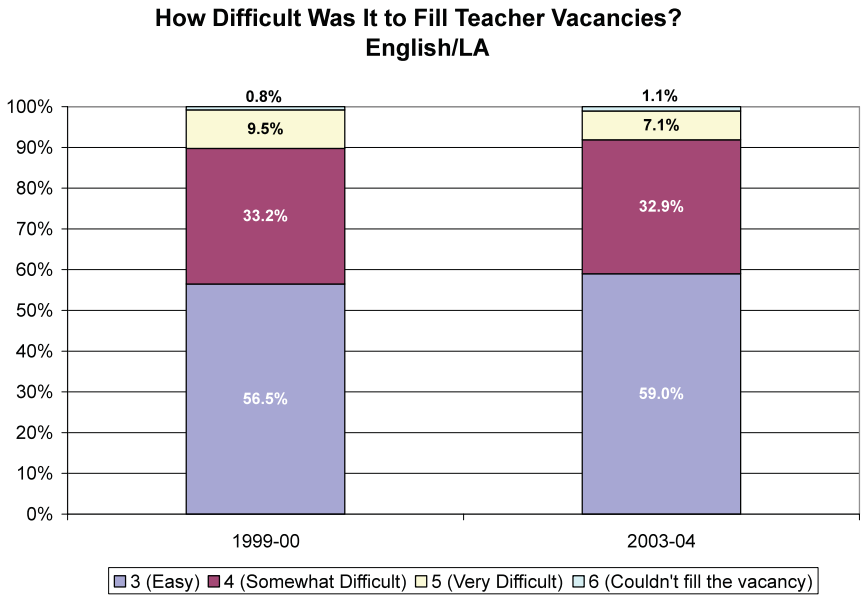
Source: Schools and Staffing Surveys, 1999-00, 2003-04

Figure 2



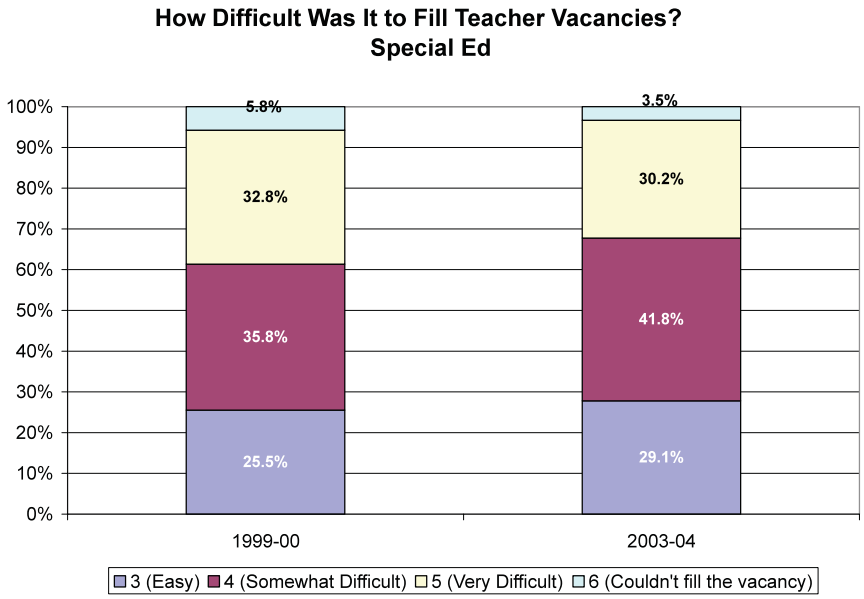
Source: Schools and Staffing Surveys, 1999-00, 2003-04

Figure 3



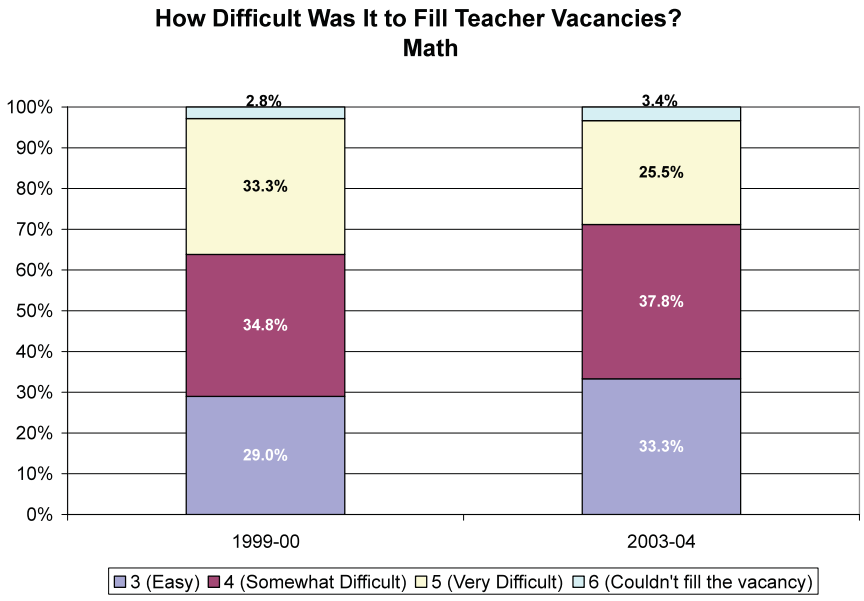
Source: Schools and Staffing Surveys, 1999-00, 2003-04

Figure 4



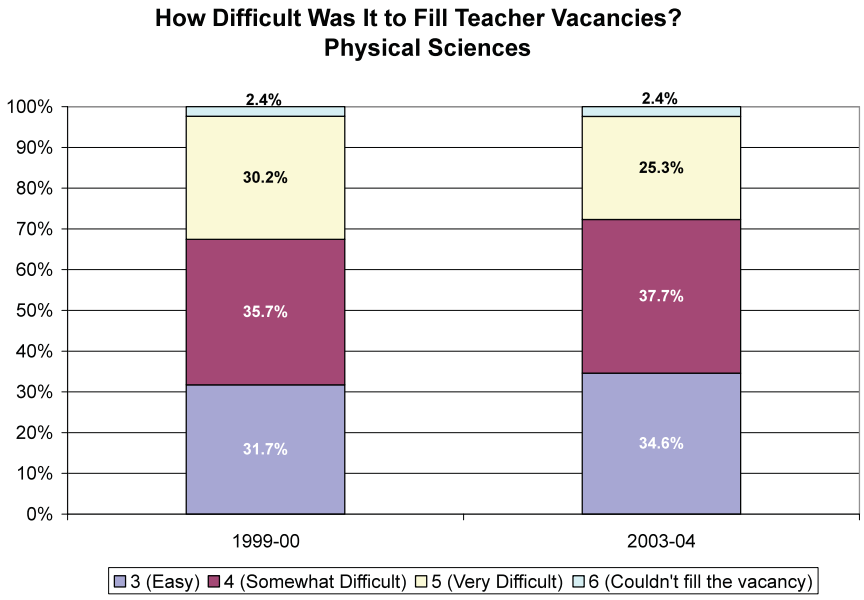
Source: Schools and Staffing Surveys, 1999-00, 2003-04

Figure 5



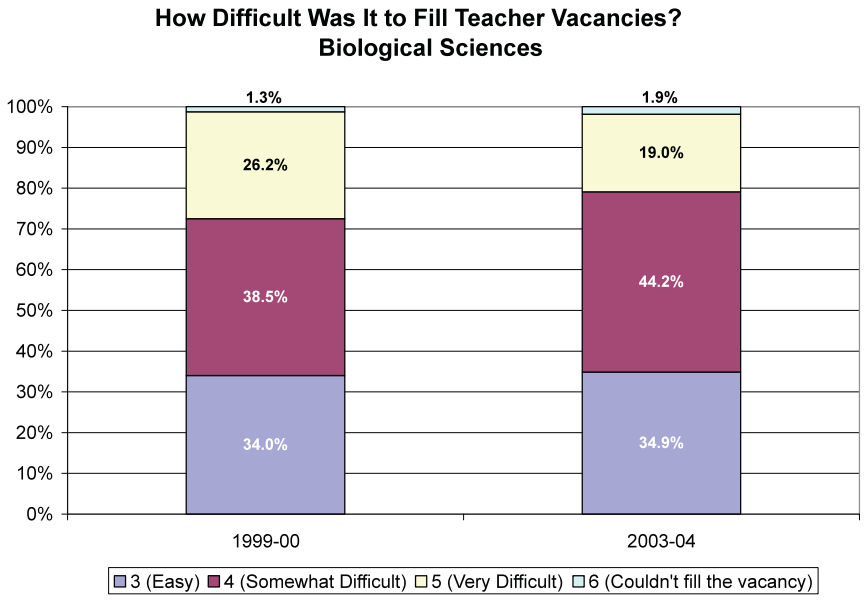
Source: Schools and Staffing Surveys, 1999-00, 2003-04

Figure 6



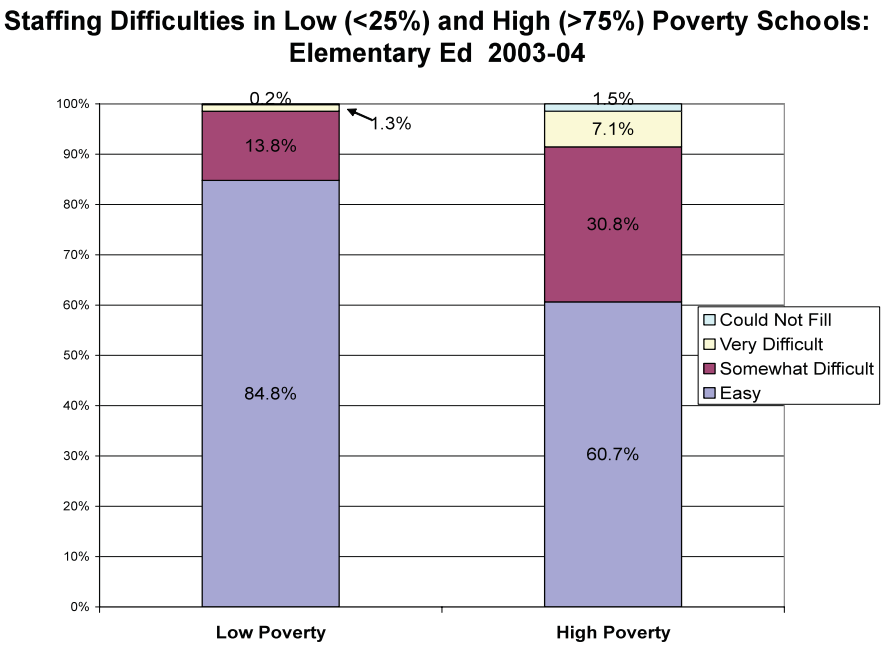
Source: Schools and Staffing Surveys, 1999-00, 2003-04

Figure 7



Source: Schools and Staffing Surveys, 1999-00, 2003-04

Figure 8: Recruitment Difficulties in Elementary Education for High and Low Poverty School Districts: 2003-04



Source: Schools and Staffing Surveys 2003-04

Table 2

Relationship Between Percent of Teachers Inexperienced and Student Poverty: Missouri Public Elementary Schools, 2005-06 (t-statistic in parentheses)

Dep Var =	Percent First Year Teachers		Percent with Exp < 3 Years	
	OLS	FE	OLS	FE
Percent FRL Eligible in School	.051 (5.81)	.066 (4.15)	.077 (5.62)	.115 (4.42)
N Schools	1250	1250	1250	1250
N Districts	---	522	---	522

Source: Missouri Department of Elementary and Secondary Education

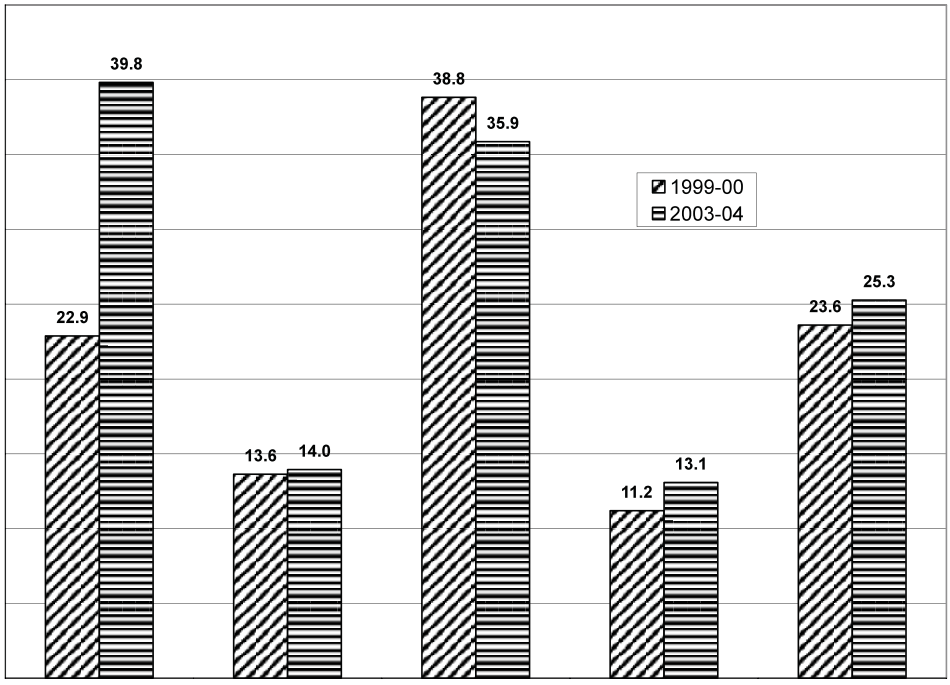
Table 3

Incidence of Performance-Based Teacher Compensation

	District-Weighted (%)			Teacher Weighted (%)		
District Rewards Following:	1999-00	2003-04	change	1999-00	2003-04	change
NBPTS	8.3	18.4	10.1	22.9	39.8	17.0
Excellence in Teaching	5.5	8.0	2.4	13.6	14.0	0.3
In-service professional development	26.4	24.2	-2.2	38.8	35.9	-3.0
Teach in less desirable location	3.6	4.6	1.0	11.2	13.1	1.9
Teach in fields of shortage	10.4	11.9	1.5	23.6	25.3	1.7
Number of incentives						
None	60.6	55.5	-5.1	39.2	31.1	-8.0
1 incentive	28.1	29.8	1.7	33.1	35.5	2.5
2 incentives	8.3	9.7	1.3	16.0	21.0	5.0
3 incentives	2.4	3.9	1.5	5.9	10.2	4.2
4 incentives	0.4	1.0	0.6	2.0	4.5	2.5
5 incentives	0.1	0.2	0.1	3.9	0.7	-3.2
Based on student achievement, were any schools in the district rewarded in any of the following ways?						
Cash bonus/addl resources for school-wide activity	---	6.8	---	---	19.6	---
Cash bonus/addl resources for teachers	---	4.7	---	---	15.4	---
Schools given non-monetary forms of recognition	---	15.8	---	---	30.4	---
District Has Salary Schedule for Teachers						

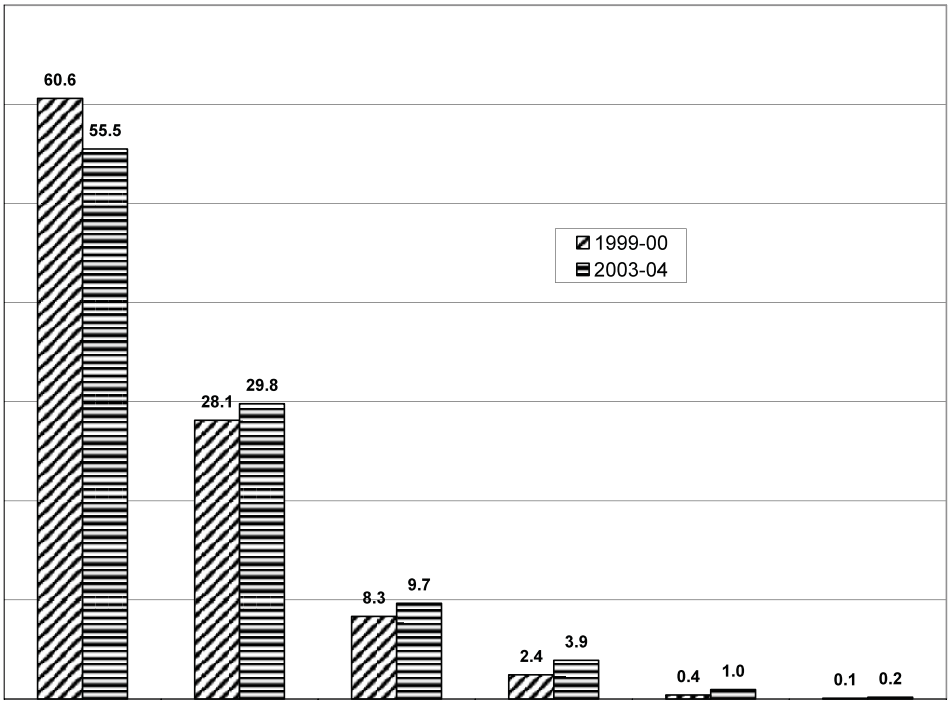
Source: Schools and Staffing Surveys, various years. School District Survey

Figure 9: School District Use of Incentive Pay (Teacher-Weighted)



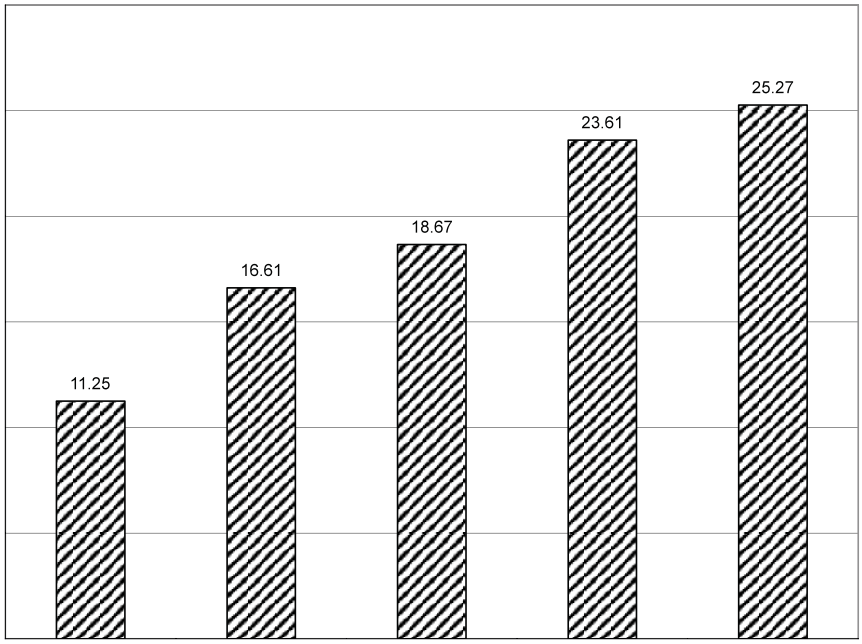
Source: 1999-00 and 2003-04 Schools and Staffing Surveys

Figure 10: Percent of Districts (Teacher-Weighted) Offering Pay Incentives



Source: 1999-00 and 2003-04 Schools and Staffing Surveys

Figure 11: Percent of Districts (Teacher-Weighted) Offering Pay Incentives for Selected Teaching Fields



Source: 1999-00 and 2003-04 Schools and Staffing Surveys

Table 4
Recruitment Incentives by Teaching Field*

District weighted

Reward to recruit/retain teachers in fields of shortage	1987-88	1990-91	1993-94	1999-00	2003-04	change 87-88 to 03-04
District provides incentive	7.5	8.7	10.2	10.4	11.9	4.4
General elem	na	na	na	2.6	2.2	
Special educ	2.2	4.7	6.2	5.7	7.3	5.1
English/language arts	na	na	na	1.0	2.0	
Social studies	na	na	na	0.7	1.5	
Computer sc	1.2	1.1	1.7	2.1	2.1	0.8
Mathematics	2.7	2.3	3.2	3.8	5.9	3.3
Phy. Sciences	1.7	2.1	2.7	3.6	4.6	3.0
Bio. Or life sciences	1.3	1.9	2.8	3.5	4.5	3.2
English as Second Lang	0.8	1.5	3.2	3.3	4.3	3.4
Foreign lang	1.0	0.9	2.0	2.4	3.8	2.8
Music or art	na	na	na	2.5	2.5	
Vocational or technical educ/	na	1.5	2.5	3.5	2.6	
Other fields	1.9	2.9	1.1	na	na	

Teacher Weighted

Reward to recruit/retain teachers in fields of shortage	1987-88	1990-91	1993-94	1999-00	2003-04	change 99-00 to 03-04
District provides incentive	11.3	16.6	18.7	23.6	25.3	14.0
General elem	na	na	na	2.4	2.6	
Special educ	6.7	11.8	13.4	14.3	20.6	13.9
English/language arts	na	na	na	5.3	4.2	
Social studies	na	na	na	1.6	2.4	
Computer sc	1.4	2.9	1.3	3.4	3.4	2.0
Mathematics	5.2	5.8	3.9	8.9	15.7	10.5
Phy. Sciences	3.6	5.0	3.9	8.4	13.4	9.8
Bio. Or life sciences	3.8	4.3	3.7	8.4	12.8	8.9
English as Second Lang	3.3	7.6	8.1	11.1	15.5	12.2
Foreign lang	2.4	3.1	2.4	5.3	9.4	7.0
Music or art	na	na	na	4.9	6.4	
Vocational or technical educ/	na	4.7	3.2	8.0	7.3	
Other fields	4.2	4.2	1.6	na	na	

* "Does this district currently use any pay incentives to recruit or retain teachers to teach in fields of shortage?"

Source: Schools and Staffing Surveys, various years. School District surveys.

Figure 12: Percent of Districts (Teacher-Weighted) Offering Pay Incentives by Field

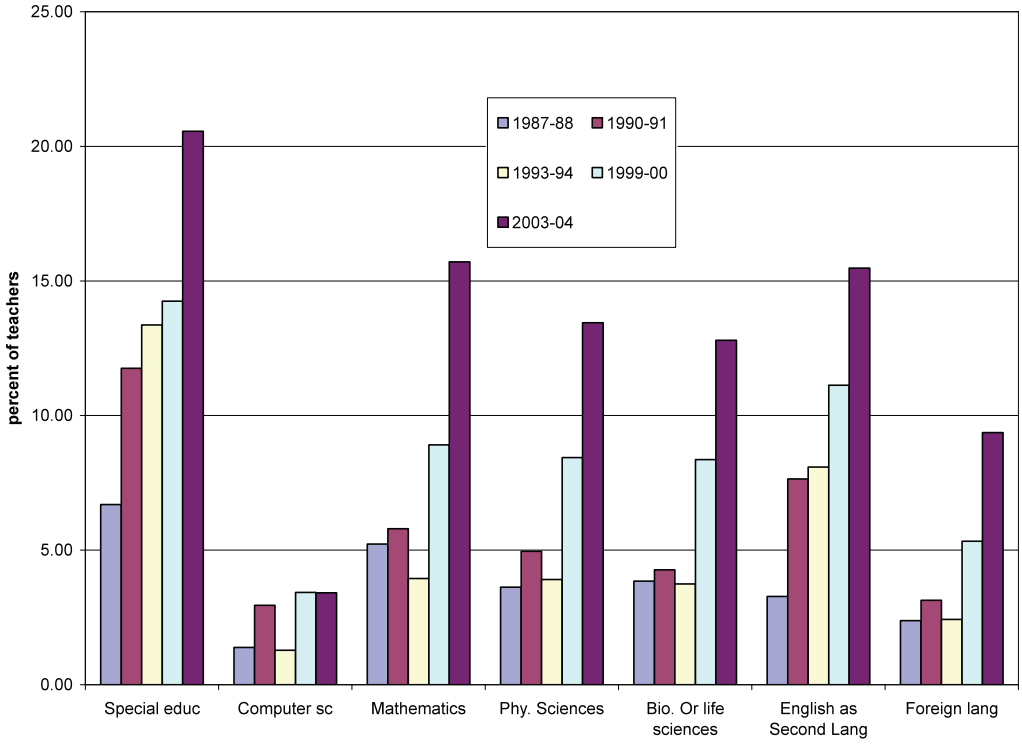


Figure 13

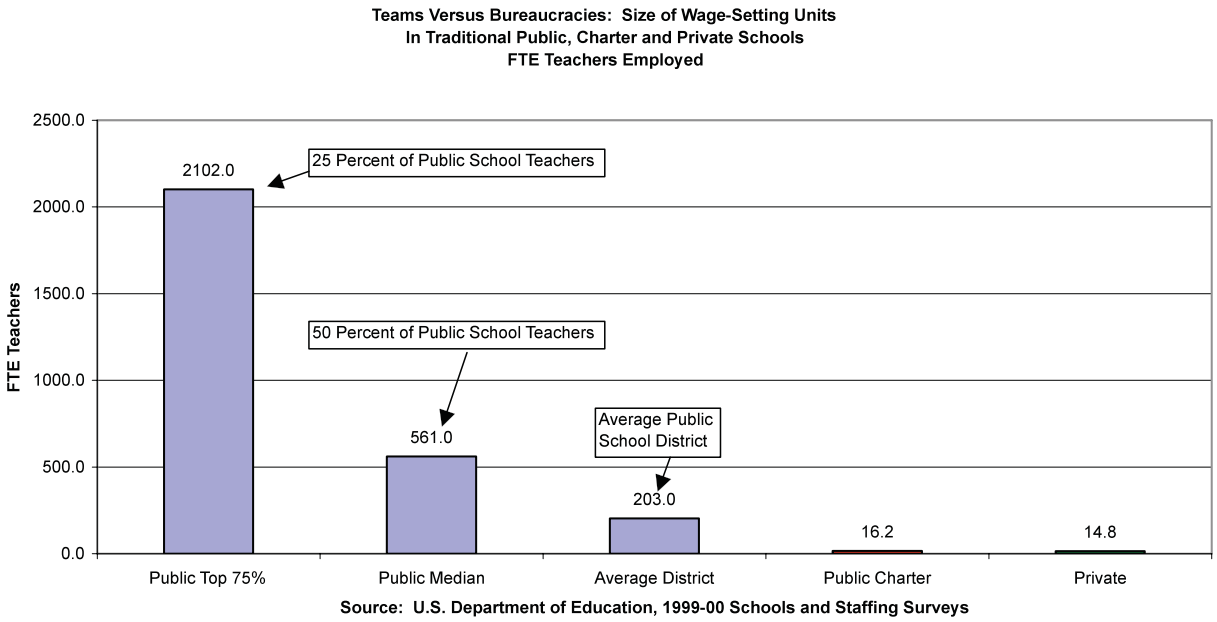
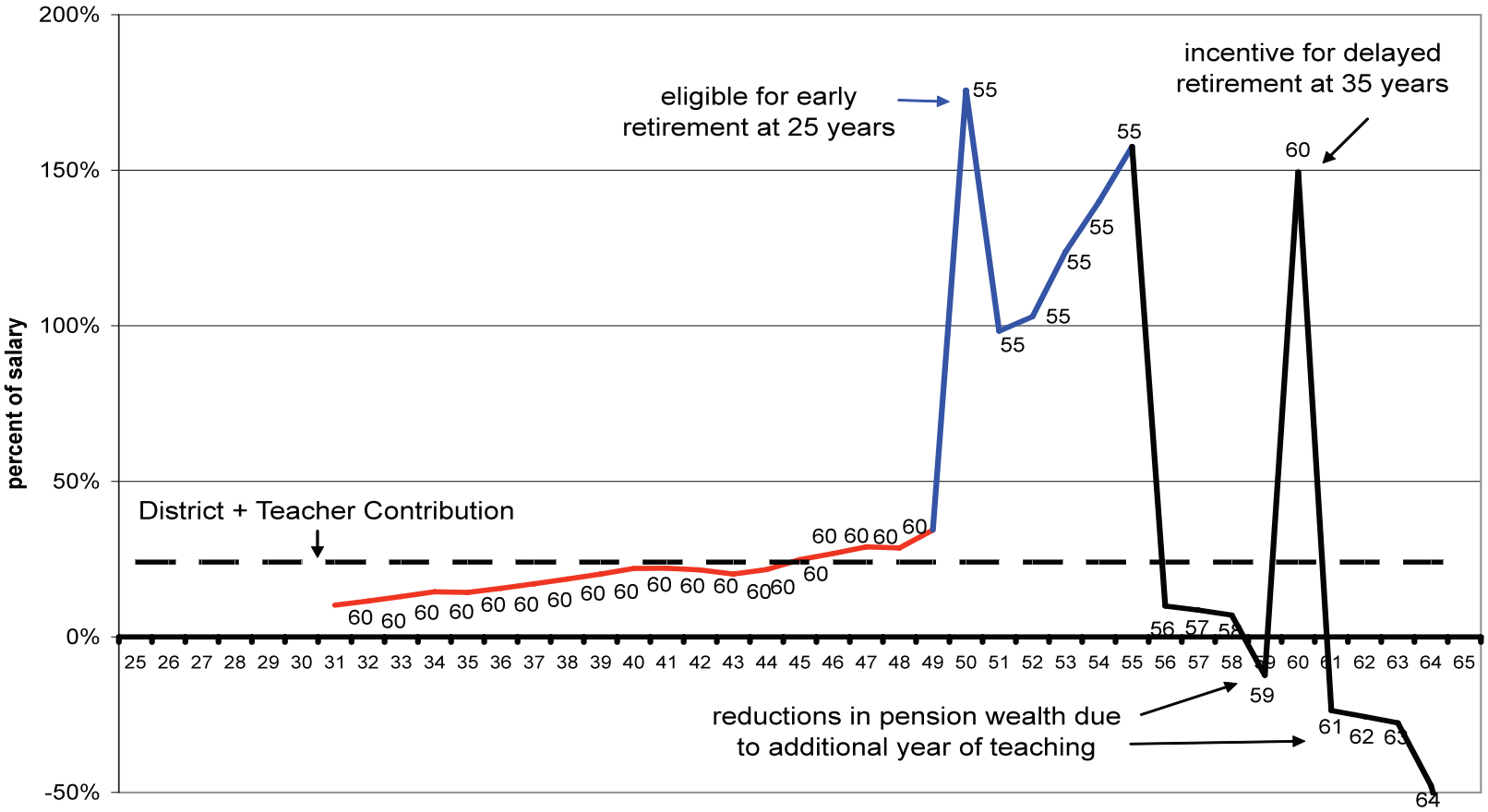

Teams Versus Bureaucracies: Size of Wage-Setting Units
In Traditional Public, Charter and Private Schools
FTE Teachers Employed
FTE Teachers
2500.0
2000.0
1500.0
1000.0
500.0
0.0
2102.0
25 Percent of Public School Teachers
50 Percent of Public School Teachers
561.0
Average Public School District
203.0
16.2
14.8
Public Top 75%
Public Median
Average District
Public Charter
Private
Source: U.S. Department of Education, 1999-00 Schools and Staffing Surveys

Figure 14

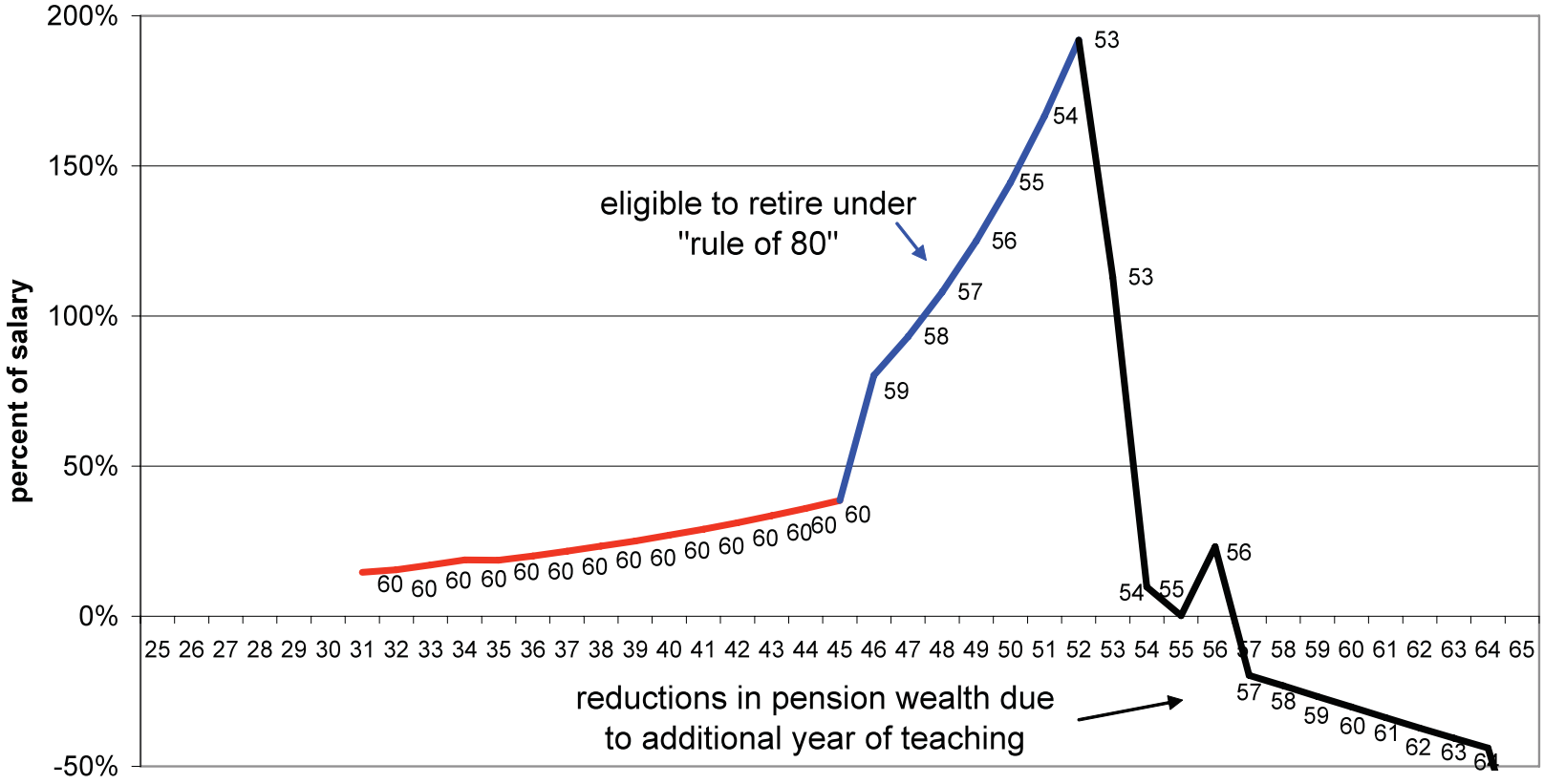
Figure 3. Deferred income per year, as percent of salary: Ohio
Addition to Pension Wealth from an Additional Year of Teaching



age at separation (entry age = 25)
(Age of first pension draw indicated. Addition to pension wealth is net of interest on prior wealth.
Assumptions: see Figure 1)

Figure 15

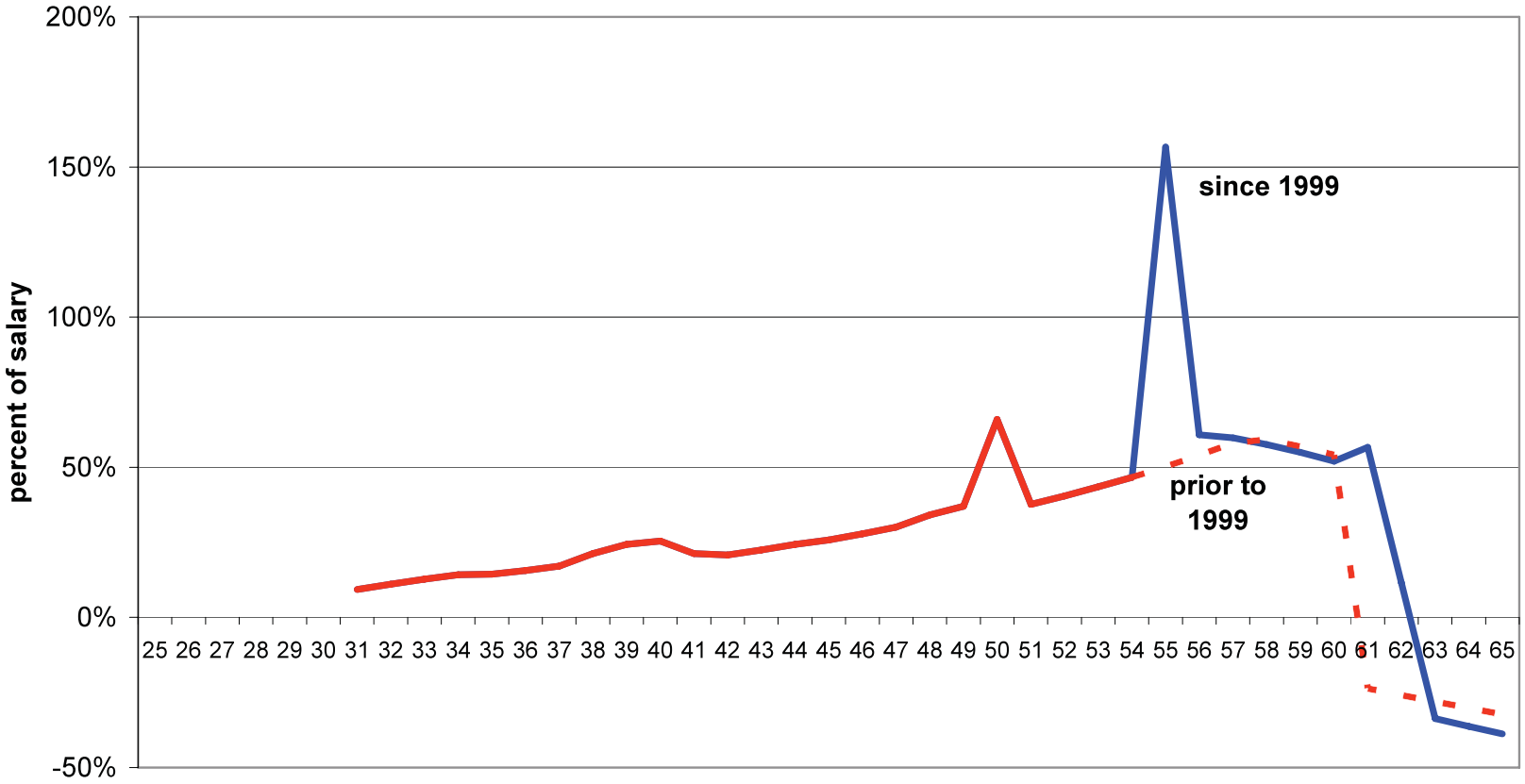
Figure 5. Deferred income per year, as percent of salary: Missouri
Addition to Pension Wealth from an Additional Year of Teaching



(Age of first pension draw indicated. Addition to pension wealth is net of interest on prior wealth.
Assumptions as in Figure 1, except Jefferson City salary grid and MO COLA.)

Figure 16

Figure 6. Deferred income per year, as percent of salary: California
Addition to Pension Wealth from an Additional Year of Teaching



(Addition to pension wealth is net of interest on prior wealth.
Assumptions as in Figure 1, except Sacramento grid and CA COLA)

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