

The Impact of Merit Pay on Teaching Outcomes

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ABSTRACT

Merit pay for professors to encourage better teaching is controversial. Whether it works as expected can be examined empirically. In this study, ACT scores of incoming freshmen were a strong predictor of CPA exam pass rates. The presence of a merit pay system for professors was also significantly associated with the CPA Exam pass rates suggesting that, in this sample, merit systems were associated with better teaching outcomes.

Keywords: Merit pay, teaching, CPA exam.



Introduction and Motivation

An article in the Santa Rosa, California, *Press Democrat*, dated October 24, 2001 reads:

“Faculty at Sonoma State University staged a protest of their own on Tuesday. Frustrated by the administration's ‘corporate’ management style, professors held a daylong teach-in at the Student Union and central quad to draw attention to a laundry list of grievances. Speakers at the event railed against the merit system. The merit pay system, established in 1995, is a major sticking point in stalled contract negotiations with professors. The faculty association wants to scrap the system, which bases pay raises partially on reviews by both faculty and administrators. ‘The system pits professors against one another and rewards those who pander to administrators,’ said Rick Luttmann, the Sonoma State faculty chair (sic) and math professor.”

Clearly, merit pay for professors is controversial.

Introduction

Compensation practices vary widely across colleges and universities. Periodically, the College and University Personnel Association (CUPA) surveys over 3,000 higher education institutions regarding their policies and methods for adjusting individual salaries. Methods considered in the survey included: annual general wage adjustment, automatic length of service adjustment, a merit pay plan, lump sum incentive payment, bonus, gain-sharing, skill- and competency based pay, team incentives, and combination across-the-board and merit pay plans. The CUPA data indicates that merit systems are used by 23.7 percent of responding institutions and plans that combine across-the-board pay raises with merit pay are used by another 26.4 percent of institutions. Since the data is aggregated, there is no way of knowing which individual schools use a merit-based or partially merit-based pay system.

The rationale behind merit systems is to reward and thus encourage better performance in the key areas of teaching, research and service. Some kind of performance measure is required to operationalize such a pay plan. Typically, a professor's teaching performance is measured with student evaluations or outcomes assessment tests, such as the ETS Major Field tests. Research performance is most frequently measured with some count of a professor's publications. It has proven most problematic to find an acceptable quantitative measure of service.

In previous work, authors of this study have used CPA Exam pass rates as a proxy for teaching outcomes in accounting programs (Lindsay & Campbell, 1995). That work considered the research productivity of a school's faculty as a possible determinant of the success rate of the school's accounting graduates. Given the ongoing controversy over the usefulness of merit pay plans, we are now asking whether the presence of a merit system might be an institutional determinant of good teaching outcomes as measured for accounting programs with CPA exam pass rates.

Literature Review

Increasing restrictions on public funding and a desire on the part of university administrators for greater discretion to set faculty salaries have encouraged a move away from more traditional seniority-based compensation systems (Grant, 1998). For merit plans to be feasible, however, there must be a clear link between individual effort and performance, and that performance must be accurately measured (Heneman and Young, 1991). It has been vociferously argued that merit pay schemes are just not practical in a university setting, because the performance of individual faculty members is too difficult or specialized to measure objectively (Johnston, 1978).

In general, the purpose of merit pay is to provide an incentive or motivating force to push a worker, whether a laborer, a government employee, or a college professor, to greater productivity (Miller, 1979). Merit pay for teachers is hardly a new idea; it was first used in England in the 19th Century (Holmes, 1920).

A field study of public school deans' perspectives showed that deans do believe merit systems promote better teachers and higher quality research output, (Taylor, Leshner, Hunnicutt, Garland, & Keefe, 1991). However, this study, as well as the faculty protests at Sonoma State University, is evidence only of opinions. We suggest that, at least in the context of an accounting program, the question of the value or effectiveness of merit pay can be addressed as an empirical issue.

Of the three areas of faculty productivity -- research, teaching and service -- this study is intended to develop empirical evidence of the impact of merit pay systems on teaching. If merit pay systems have the desired impact of improving faculty performance in measured areas, then schools with merit systems would be expected to boast stronger than average faculty performance.

Hypotheses

Teaching effectiveness can be measured using student evaluations, but evaluations may be a skewed measure (DeBerg & Wilson, 1990). Undergraduate education in accounting can be evaluated, in part, based on graduates' performance on the CPA exam (Schick, 1998). While not all accounting students take the CPA exam, and the goal of an accounting education is broader than simply exam preparation, we believe that performance on professional exams can be used as a good indicator of a program's overall teaching outcomes. If a program's graduates are successful with the CPA exam, they will also be successful with other professional challenges.

The central question of this study is then stated as:

H1: *Ceteris paribus*, there is a statistically significant negative relationship between the CPA exam failure rates of a school and the presence or absence of a faculty merit pay plan.

The CPA exam pass rate is expressed in the hypothesis in inverse form in order to compare the proportion of students passing any part of the exam to those not passing at all rather than attempting to distinguish between students passing fewer or more sections.

Prior research indicates that there exists a significant and positive association between ACT scores and CPA exam performance, (Dunn & Hall, 1984).

This leads to the second hypothesis, which must be addressed in order to consider potentially a powerful confounding issue:

H2: Ceteris paribus, there is a statistically significant negative association between the average ACT score of a school's incoming freshmen and the school's CPA exam failure rates.

It is reasonable to expect that some schools, perhaps due to reputation, would attract academically gifted students. Such attractive schools would boast not only a strong student body but also a strong faculty.

Therefore it is likely that student CPA exam performance in such schools might be stronger. The freshman ACT score was used to represent the quality of each institution's incoming student body and its relationship with a measure of teaching, CPA exam results, was tested.

Methodology

The e-mail addresses of department chairs of 500 of the 800+ accounting programs in the United States were identified using Hasselback's Accounting Faculty Directory 2003-2004. Each of the 500 chairs was e-mailed a survey using the CUPA taxonomy of methods currently used to adjust individual salary rates. The chair's response to this survey revealed whether or not a merit plan was in place at that school. A copy of the cover letter is presented as Exhibit 1. A copy of the survey is presented as Exhibit 2.

Average ACT scores were obtained from Profiles of American Colleges, 2002 published by Barron's. If the ACT score was not reported, the California State University System's Eligibility Index Table for California High School Graduates or Residents of California was used to convert the SAT score into an ACT score.

The CPA exam performance of first-time candidates without advanced degrees by schools with five or more candidates for November of 2002 was obtained from the National Association of State Boards of Accountancy's (NASBA) publication Candidate Performance on the Uniform CPA Examination, 2003.

A regression was then run. The dependent variable is the percent of the school's first-time CPA exam candidates without advanced degrees who passed NONE of the four parts of the exam administered in fall of 2002. In the regression, the two independent variables are: an indicator variable assigned the value of 0 if the school does not have a merit program, and a value of 1 if it does; and the school's mean ACT score of incoming freshmen.

Therefore, the model to be tested is:
 Percent Passing None of the Parts = $b_0 + b_1\text{ACT} + b_2\text{Merit} + e$

Results and Conclusion

Sixty-one of the 500 surveys (12%) were returned. Eleven of these were not usable, leaving 50 usable surveys (10%). Only 4 types of faculty salary adjustments were reported:

- COLA-used by 31 (62%) schools
- STEPS-used by 8 (16%) schools
- Merit-used by 34 (68%) schools
- Bonus-used by 2 (4%) schools

Some schools used multiple methods. As seen in Table 1, correlation coefficients show that schools with merit programs tend not to offer 'time in grade' pay adjustments.

In the regression, the F is 4.76 and significant at the .016 level. The adjusted R square is .195. The estimated coefficient on the Merit variable is <15.108>. Since it is significant at the .047 level it just barely makes the .05 hurdle. The estimated coefficient on the ACT variable is <4.972> and significant at the .014 level. These results are consistent with both hypotheses.

Clearly, the quality of incoming freshmen is a powerful predictor of students' ultimate success on the CPA exam. These results do suggest, however, that schools using a merit pay system enjoy some enhancement of the success rate of their students. This simple test does, therefore, suggest that merit systems may indeed reward and encourage teaching performance as claimed by their many advocates.

Given the controversy over the use of merit pay and the relatively weak association between the presence of merit pay systems and positive teaching outcomes revealed in this study, additional empirical evidence should be collected and analyzed. Additional confounding factors could easily have influenced the results returned with the relatively simple models used in this study. Both faculty and administrators need to continue to examine the design and implementation of merit systems. Perhaps additional empirical work will make the continued discussion less adversarial than it was at Sonoma State University in 2001.



TABLE 1

Pearson Correlation Coefficients
Salary Adjustment Methods Used by Accounting Programs

N = 50

	COLA	STEPS	MERIT	BONUS
COLA	1.0			
STEPS	.229 (.109)	1.0		
MERIT	<.272> (.056)	<.402>** (.004)	1.0	
BONUS	.160 (.268)	<.089> (.538)	<.079> (.587)	1.0

Legend

COLA = Annual General Wage Adjustment
STEPS = Automatic Length of Service Adjustment
MERIT = Merit Pay Plan

** Coefficient is significant at the .01 level



EXHIBIT 1



COLLEGE OF BUSINESS ADMINISTRATION

California State University, Stanislaus

Department of Accounting and Finance

801 West Monte Vista Avenue • Turlock, California 95382

Phone (209) 667-3671 • Fax (209) 667-3042

December 26, 2002

Dear Department Chair:

My colleagues, Dr. Annhenrie Campbell and Dr. Kim B. Tan, and I are asking you to take a few minutes to complete the attached survey for our research study on methods used to adjust individual faculty salaries.

The survey will take you just a few minutes to complete. Please return, via e-mail, your completed questionnaire—no matter how few questions you answer.

Your responses will be pooled with others for statistical analysis. No specific individual response will be discussed or disclosed.

Your participation is completely voluntary. While you may choose to disregard this request, we hope you decide to participate in our study.

Please contact me with any questions or concerns you may have regarding this project.

Best regards,

David H. Lindsay, Ph.D., CPA
Professor of Accounting

Phone: (209) 667-3296
E-mail: Acc_Dept_Chair@csustan.edu

EXHIBIT 2

This is a survey of the methods used to arrive at individual faculty salary amounts in accounting programs. Please check all items applicable to your department's procedures in the years 1997, 2000, and 2002.

	<u>1997</u>	<u>2000</u>	<u>2002</u>
Annual General Wage Adjustment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Automatic Length of Service Adjustment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Merit Pay Plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lump Sum Incentive Payment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Combination Across-the-Board And Merit Pay Plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bonus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gainsharing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Skill- and Competency Based Pay	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Team Incentives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Please forward, via e-mail, the completed survey to Acc_Dept_Chair@csustan.edu

THANK YOU FOR YOUR PARTICIPATION

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