The Impact Of Merit Pay On Teaching And Research Outcomes Of Accounting Programs

David H. Lindsay, Ph.D., California State University-Stanislaus, USA
Annhenrie Campbell, Ph.D., California State University-Stanislaus, USA
Kim B. Tan, Ph.D., California State University-Stanislaus, USA

ABSTRACT

Basing the compensation of accounting professors on merit pay in order to encourage better teaching, research and service is controversial. This study uses data from a survey of the 852 accounting programs in the United States to empirically examine the influence of merit-based salary plans. Findings indicate a strong positive association between the presence of a merit plan at a school and the quality of the school's research outcomes. However, no association was found between the presence of a merit program at a school and the school's teaching outcomes.

Keywords: Teacher's Merit Pay; Merit Pay & Teaching Effectiveness; Merit Pay & Research Productivity

INTRODUCTION

The rationale behind merit pay systems for faculty 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 (once called the Educational Testing Service) Major Field tests (ETS, 2006). 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 that is consistent across campuses.

In attempting to understand the influences that lead to student success, Lindsay and Campbell (1995) used CPA Exam pass rates as a proxy for teaching outcomes in accounting programs. In that study, they examined whether the research productivity of a school's faculty was a possible determinant of the success rate of the school's accounting graduates. Given the ongoing controversy over the usefulness of merit pay in education, we seek to determine whether the existence of a merit pay system influences an institution's teaching outcomes as measured for accounting programs with CPA exam pass rates. We also examine whether the existence of a merit system might also be an institutional determinant of faculty research output.

Our research questions are:

1. Is the existence of a merit pay system an institutional determinant of faculty research output?
2. Is the existence of a merit pay system an institutional determinant of 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 to the use of some form of merit pay (Grant, 1998). For merit pay to be feasible, however, there must be a clear link between individual effort and performance, and that performance must be readily measurable (Heneman &

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 pay promotes better teachers and higher quality research output, (Taylor, Lesher, Hunnicutt, Garland & Keefe, 1991). However, this study 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 -- teaching, research, and service -- this study develops empirical evidence of the impact of merit pay on teaching and research outputs. If merit pay has the desired impact of improving faculty performance in the two measured areas, then schools with merit pay would be expected to boast better faculty performance in these areas.

HYPOTHESES

How can the quality of research output of a school's accounting program be measured? One answer to this question is provided by Coyne et al. in their 2010 article, "Accounting Program Research Rankings by Topical Area and Methodology." Our study uses the Coyne et al. research rankings as a measure of an institution's research output. Therefore, the first important question of this study is stated as:

H1:   Ceteris paribus, there is a statistically significant positive relationship between the existence of merit pay and the research ranking of an accounting program.

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 the scholarly output of faculties of such schools might be stronger. To consider this potentially powerful confounding issue, a second hypothesis is included. The freshman ACT score was used to represent the quality of each institution's incoming student body and its relationship with a measure of faculty research output was tested in the second hypothesis:

H2:   Ceteris paribus, there is a statistically significant positive relationship between the average ACT score of a school's incoming freshmen and the research ranking of the school's accounting program.

Teaching effectiveness can be measured used 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 (Bragg, 1994; 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, it can be expected that, on average, they will also be successful with other professional challenges.

The second important question of this study is then stated as:

H3:   Ceteris paribus, there is a statistically significant positive relationship between the schools' pass rate on each of the four sections of the CPA exam and the existence of merit pay.

Prior research has shown a significant, positive association between ACT (once called the American College Testing Program) scores and CPA exam performance, (ACT, 2006; Dunn & Hall, 1984). Therefore, a further hypothesis must be addressed in order to consider a potentially powerful confounding issue:

H4:   Ceteris paribus, there is a statistically significant positive relationship between the average ACT score of a school's incoming freshmen and the schools' pass rate on each of the four sections of the CPA exam.

METHODOLOGY

The e-mail addresses of department chairs of the 852 accounting programs in the United States were identified using Hasselback's Accounting Faculty Directory 2008-2009. Using the Survey Monkey service, each of the chairs was e-mailed a survey asking what methods were used by the school for faculty salary adjustment in 2008. The detailed results of this survey are presented our earlier article, (Lindsay, Campbell, Tan & Wagner, 2010).

Average ACT scores were obtained from www.collegeboard.com. This site lists a range of scores for incoming freshmen to each institution. This study used the midpoint of the institution's reported range. A sample of these values was compared to those presented in Barron's *Profiles of American Colleges*, 2008, and found to be identical. College Board presents ACT data for more schools than Barron's does, so use of this data source expands the possible sample size.

The Coyne et al. rankings are available at the Accounting Research Rankings website. Its URL is: http://www.byuaccounting.net/rankings/univrank/rankings.php . The site ranks the 670 universities that currently employ faculty who published in at least one of the top eleven journals during the past twenty years. The lower the number, the more highly ranked the school. In this study, schools that tie are given the same rank. As 196 of these schools tied for last place, each was assigned the same ranking of 474. The rank of 671 was assigned in this study to those schools with no articles in the top eleven journals over the past twenty years.

The CPA exam performance of candidates without advanced degrees by schools with five or more candidates for 2008 was obtained from the National Association of State Boards of Accountancy's (NASBA) publication *Candidate Performance on the Uniform CPA Examination*, 2009. A school must have scores from at least five candidates to be listed separately. The pass rate on each of the four parts of the exam, by school, was obtained from this source.

Five regressions were then run. The dependent variable of the first regression is the Coyne et al. Research Ranking. In this regression, the two independent variables are MERIT, an indicator variable assigned the value of 0 if the school does not have merit pay system and a value of 1 if it does; and ACT, the school's mean ACT score of incoming freshmen.

Therefore, the first model to be tested is:

$$\text{Research Ranking} = \beta_0 + \beta_1 \text{ACT} + \beta_2 \text{MERIT} + \varepsilon$$

In the next four regressions, the dependent variable is the pass rate by school on one of the four sections of the CPA Exam: Financial Accounting and Reporting (FAR), Auditing (AUD), Regulation (REG) and Business Environment and Concepts (BEC). In these regressions, the two independent variables are also: 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 four remaining models to be tested are:

$$\text{FAR} = \beta_0 + \beta_1 \text{ACT} + \beta_2 \text{MERIT} + \varepsilon$$
$$\text{AUD} = \beta_0 + \beta_1 \text{ACT} + \beta_2 \text{MERIT} + \varepsilon$$
$$\text{REG} = \beta_0 + \beta_1 \text{ACT} + \beta_2 \text{MERIT} + \varepsilon$$
$$\text{BEC} = \beta_0 + \beta_1 \text{ACT} + \beta_2 \text{MERIT} + \varepsilon$$

Because the arguments are that the existence of merit pay leads to better research output as well as better pass rates on each of the four sections of the CPA exam, the existence of merit pay remains an independent variable while research productivity (Research Ranking) and pass rates on each of the four CPA Exam sections are, in turn,

dependent variables. It is therefore necessary to run five multiple regressions – one for each of the different dependent variables.

RESULTS

Of the 852 schools sent surveys, 55 had previously opted out from Survey Monkey. The total number of surveys that were received by recipients was 797. Of these, 180 responded yielding a response rate of 22.58 percent. The College Board reported scores for 142 of these 180 schools. Therefore, the sample size for the regressions is 142 schools.

In the first regression, research ranking is the dependent variable, which is regressed upon ACT score and an indicator variable indicating the presence or absence of a merit program. As shown in Table 1, the regression's F is 20.56, which is significant at the .001 level. The adjusted R square is 0.2172. The estimated coefficient on the MERIT variable is <165.54>. This, too, is significant at the .001 level. The estimated coefficient on the ACT variable is <20.68> and significant at the .001 level. These results are consistent with the first and second hypotheses.

Clearly, a school's research ranking is positively associated with both the presence of a merit program and the academic quality of incoming freshmen. This simple test suggests that merit systems may indeed reward and encourage high quality faculty research, as claimed by their many advocates.

In the next four regressions, a school's student pass rate on one of the four sections of the CPA exam is the dependent variable. This is regressed upon the school's ACT score and an indicator variable indicating the presence or absence of a merit program. The results of these four regressions are presented in Table 2.

In the second regression, the dependent variable is the pass rate on the financial accounting and reporting section of the Exam. The regression's F is 2.070, which is not significant at the .05 level. The adjusted R square is 0.015. The estimated coefficient on the MERIT variable is <0.001>. This, too, is not significant at the .05 level. The estimated coefficient on the ACT variable is 0.009, which is significant at the .05 level.

In the third regression, the dependent variable is the pass rate on the auditing section of the Exam. The regression's F is 7.713, which is significant at the .005 level. The adjusted R square is 0.087. The estimated coefficient on the MERIT variable is <0.002>. This value is not significant at the .05 level. The estimated coefficient on the ACT variable is 0.018, which is significant at the .005 level.

In the fourth regression, the dependent variable is the pass rate on the regulation of the Exam. The regression's F is 7.467, which is significant at the .005 level. The adjusted R square is 0.084. The estimated coefficient on the MERIT variable is 0.004, which is not significant at the .05 level. The estimated coefficient on the ACT variable is 0.019, which is significant at the .005 level.

In the fifth regression, the dependent variable is the pass rate on the business environment and concepts section of the Exam. The regression's F is 12.193, which is significant at the .005 level. The adjusted R square is 0.137. The estimated coefficient on the MERIT variable is <0.012>. This is not significant at the .05 level. The estimated coefficient on the ACT variable is 0.0024, which is significant at the .005 level.

These results are not consistent with the third hypothesis, but they are consistent with the fourth hypothesis. These results suggest that schools using a merit pay system do not experience any enhancement of the success rate of their students. This simple test provides no evidence that merit systems encourage superior teaching performance, as claimed by their many advocates.

CONCLUSIONS

A faculty discussion document entitled "Some Thoughts on our Merit Pay Discussion," posted to the web by Drew University (Madison, NJ) faculty show that some regard merit pay as an incentive to encourage and focus

their work while others believe it is simply a means of "recognition" of work that would otherwise have been accomplished (Jamiesen & Curtis, 2000). However faculty interpret their merit system, merit pay for faculty remains a controversial means to encourage or reward faculty efforts and excellence in the multiple dimensions of faculty performance.

The results of this study indicate that merit programs are positively associated with research outcomes. However, there is no evidence that merit programs are associated with teaching outcomes. It may even be possible that merit programs service to focus faculty time and attention towards research activities and away from teaching efforts. Perhaps merit programs at the college and university level could be designed to better address teaching outcomes. Additional confounding factors could easily have influenced the results returned with the relatively simple models used in this study. Further research is needed.

Table 1
Regression of Research Ranking

Model: Research Rank $= \beta_0 + \beta_1 ACT + \beta_2 MERIT + \varepsilon$

$N = 142$
$F = 20.56^{***}$
Adjusted $R^2 = 0.2172$

ACT	$\beta_1 =$	-20.68***
Merit	$\beta_2 =$	-165.54***

Legend
Research Rank = Coyne et al. research ranking of school
ACT = Average ACT score of a school's incoming freshmen
MERIT = A 0,1 indicator variable indicating a school's use of a merit pay plan
*** = Coefficient is significant at the .001 level

Table 2
Regression of CPA Exam Pass Rates

Model: CPA Exam Pass Rate $= \beta_0 + \beta_1 ACT + \beta_2 MERIT + \varepsilon$

$N = 142$

	β_1	β_2	F	R^2
FAR	.009**	<.001>	2.070	0.015
AUD	.018****	<.002>	7.713****	0.087
REG	.019****	0.004	7.467****	0.084
BEC	.0024****	<.012>	12.193****	0.137

Legend
FAR = A school's pass rate on the Financial Accounting and Reporting section of the Exam
AUD = A school's pass rate on the Auditing section of the Exam
REG = A school's pass rate on the Regulation section of the Exam
BEC = A school's pass rate on the Business Environment and Concepts section of the Exam
ACT = Average ACT score of a school's incoming freshmen
MERIT = A 0,1 indicator variable indicating a school's use of a merit pay plan
** = Coefficient is significant at the .005 level
*** = Coefficient is significant at the .001 level
**** = Coefficient is significant at the .0005 level

AUTHOR INFORMATION

David H. Lindsay, Ph.D., CPA (inactive), CISA, CFE is a Professor of Accounting and the Chair of the Department of Accounting and Finance at California State University, Stanislaus. His Ph.D. is from the Graduate School of Management at Kent State University. His research interests include determinants of CPA Exam pass rates, the impact of merit programs on research and teaching outcomes, fraud detection, and various AACSB related issues. He teaches Intermediate Accounting I and II. E-mail: DLindsay@csustan.edu. Corresponding author.

Annhenrie Campbell, Ph.D., CPA, CMA, CGFM is a Professor of Accounting at California State University, Stanislaus. She holds a Ph.D. from the University of Colorado in Boulder. Her research interests include the impact of faculty research on students' professional preparation and academic success. She teaches advanced financial accounting and governmental accounting courses. E-mail: ACampbell1@csustan.edu

Kim Tan, Ph.D., CA, is a Professor at California State University Stanislaus. Her Ph.D. in Business Administration is from Temple University in Philadelphia. She's a Chartered Accountant with the New Zealand Society of Accountants and a member of the Australian Computer Society. She is interested in pedagogical and behavioral research using experimental, archival and survey data. She mainly teaches Cost and Managerial Accounting. E-mail: KTan@csustan.edu

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NOTES