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For-Profit Higher Education and CPA Exam Success Rates: Comparing For-Profit Institutions with Public (State) Institutions and Private Not-For-Profit Institutions of Higher Education

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Public perceptions about the quality of business education received at commercial (for-profit) universities, relative to the quality of business education received at publicly supported state universities and private not-for-profit universities are mixed and somewhat controversial (Verschoor, 2011). Relatively little information exists concerning the quality of education received with a bachelor's degree from a commercial university (U. S. Government Accountability Office, 2011). This research compares average CPA exam pass rates of graduates from three types of higher education institutions: for-profit universities, state sponsored public universities, and private not-for profit universities. Comparing average CPA exam pass rates of graduates of each type of university is one means to assess the quality of accounting education provided by each type of university. Our findings indicate the average CPA exam pass rates of candidates completing their accounting educations at commercial for-profit universities are strikingly lower than those of candidates completing their accounting educations at either publicly supported state schools or at private not-for-profit universities. In addition we find that a much lower fraction of graduates from commercial universities sit for the CPA exam compared to publicly supported state universities and private not-for-profit universities. Together these empirical data suggest if passing the CPA exam is a goal, then the educational path of commercial for-profit accounting education may not be optimal.

An increasingly visible and fast growing segment of the U.S. higher education market is private for-profit higher education. In recent years a growing fraction of the total higher education market is being served by large publicly owned commercial organizations (corporations) that actively advertise various business and other professional degree programs on television, the internet, and elsewhere. Because these entities are commercial concerns, a key motivating factor in their administration is to earn profits for corporate investors. And to promote the larger enrollments that lead to larger profits, commercial educational institutions are known to be aggressive in assisting entering students to obtain federal student grants and federal student loans in order to finance their commercial educations (Bennett, Lucchesi, and Vedder, 2010).

The U.S. Department of Education has for three decades collected and reported data on higher education characteristics in America. The Department of Education tracks the relative proportions of students receiving higher education degrees from publicly supported state institutions, private not-for-profit institutions, and privately owned for-profit commercial organizations. Furthermore Department of Education data distinguishes between commercial "for-profit chain education" and commercial "for-profit independent education". Commercial chain education is defined by the Department of Education as for-profit education offered by an institution at multiple geographic locations. For-profit independent education is defined as for-profit education offered by an institution at a single geographic location or in a narrow geographic region.

Deming, Golden, and Katz (2012) analyzed aspects of U. S. Department of Education data and have identified several major trends in for-profit higher education. These include: 1) enrollments at for-profit educational institutions are 100 times larger than they were in the 1970's; 2) enrollments at for-profit educational institutions now account for approximately 11.5 percent of all higher education enrollments in the U.S.; 3) for-profit educational institutions grant approximately 5 percent of all bachelor's degrees in the U.S, but they grant almost 12 percent of all business degrees in the U.S.; and 4) nearly 90 percent of

the increases in enrollment at for-profit institutions over the past decade come from expansion at for-profit chain institutions.

The release of a 2010 U.S. Government Accountability Office (GAO) report entitled "For-Profit Colleges: Undercover Testing Finds Colleges Encouraged Fraud and Engaged in Deceptive and Questionable Marketing Practices" brought for-profit higher education industry under the scrutiny of the public and Congress. The GAO in a 2010 report (U.S. Government Accountability Office, 2010) alleged widespread abuse by chain commercial education universities. It criticized the larger chain institutions for practices such as paying commissions to its admission officers based on number of students recruited, using unethical marketing practices that either failed or deceptively represented total tuition costs to prospective students before asking them to sign long-term contracts, providing misleading information about the institution's accreditation status, encouraging students to engage in what constituted fraud when applying for federal financial aid, and for failing to disclose graduation rates before asking students to sign long-term contracts (Verschoor, 2011).

Another controversy in commercial higher education has been the markedly higher usage of federal student aid by students at these institutions, and also the much higher student loan default rates by students attending these institutions. Deming, Goldin, and Katz (2012) note that federal student financial aid under Title IV (Pell grants and Stafford loans) makes up approximately 75 percent of all revenues received by for-profit institutions of higher education. In 2008-2009 fourteen of the largest for-profit chain institutions received 87 percent of their total revenue directly from the federal government (Verschoor, 2011). And although enrollees at for-profit institutions utilize approximately 24 percent of all Pell grant distributions and 26 percent of all federal student loan disbursements, they comprise only 11.5 percent of total higher education population (Deming, Goldin, and Katz, 2012).

In 2012, the U.S. Department of Education reported student loan default rates by students who had attended for-profit institutions were nearly 23 percent. This is more than double the default rate of students attending public institutions and nearly three times the default rate of students attending private not-for-profit institutions (U.S. Department of Education, Ed.Gov., 2012).

Higher student loan default rates by those who attended for-profit institutions are thought to occur for several reasons. Historically there is a lower graduation rate at for-profit institutions averaging only 22 percent compared to graduation rates averaging 55 percent at public universities (Hechinger, 2011). Evidence suggests that students who do not graduate are generally more likely to default on student loans after leaving school (Hechinger, 2011). In addition, student borrowers default more often when they have been promised high paying jobs after graduation upon entering school that never materialize at graduation (Clark, 2011). The GAO (U.S. Government Accountability Office, 2010) criticized for-profit chain institutions for many of these very practices.

Yet another reason for higher student loan default rates by students at for-profit higher education is believed to be that the total dollars borrowed per capita by enrollees at for-profit institutions tends to be higher than at either public or private not-for-profit universities. This in turn makes it harder to repay those loans (Clark, 2011). Graduates (and also those who do not graduate) leave commercial institutions with higher overall debt burdens and find them hard to pay especially when jobs have not materialized as expected. The average borrowing of students attending for-profit institutions (and earning a bachelor's degree) is $33,050 at graduation, nearly 50 percent more than the average borrowing by students graduating from either publicly supported or private not-for-profit institutions (Clark, 2011).

Finally, enrollees at for-profit chain schools are disproportionately made up of students considered under various metrics as economically disadvantaged. Government data show students attending for-profit educational institutions on average have lower family incomes, include proportionally more single parents, and include a larger proportion of students holding only general education diplomas (GEDs) rather than high school diplomas, than do public and private not-for- profit institutions (Cellini, 2012). All together these factors lead to less ability to draw upon stored or pre-existing family resources to repay large educational loans (Cellini, 2012).

In a December 2011, a GAO report to Congress entitled "Postsecondary Education—Student Outcomes Vary at For-Profit, Nonprofit, and Public Schools" (U. S. Government Accountability Office, 2011) data were gathered on educational outcomes of those attending publicly supported, private not-for-profit, and commercial for-profit educational institutions. The data included comparisons of graduation rates, employment outcomes, student debts at graduation, loan default rates**,** and success of graduates on ten professional licensure exams completed shortly after graduation. The 2011 GAO report (U. S. Government Accountability Office, 2011) confirmed many of the findings in U.S. Department of Education data. Conclusions in the 2011 GAO report include: 1) on average only 3 percent of entering low-income students ultimately complete a bachelor's degree if they attend a for-profit institution whereas a full 49 percent of entering low-income students complete a bachelor's degree if they attend a public institution; 2) graduates of for-profit schools, when able to find work in their field of study after graduation, generally have similar annual earnings to those from public and private not-for-profit schools, but they are less likely to find a job in their field; 3) a higher proportion of students at for-profit institutions take out student loans, and the total amount of those loans at graduation is higher relative to students attending public and private not-for-profit institutions; 4) student loan default rates are higher for those who attended for-profit institutions; and 5) on nine of ten licensing exams, recent graduates of for-profit schools had significantly lower pass rates. The single exception was the licensure exam for funeral directors. Lower pass rates on professional exams were found on registered nursing exams, licensed practical nursing exams, radiographers' exams, emergency medical technician exams, paramedics' exams, surgical technologist exams, massage therapist exams, legal associate exams, and cosmetologist exams. Of note to this research is that the uniform CPA exam was not one of the exams included in the GAO study.

In response to growing public concerns about both the costs and outcomes of commercial higher education especially to economically disadvantaged students, the U.S. Department of Education recently decided to implement new regulations over higher education. These new regulations were published in the 2011 Federal Register under the title, "Program Integrity: Gainful Employment-Debt Measures" (The Federal Register, 2011). The regulations were intended to impose sanctions on postsecondary educational institutions whose graduates, on average, failed either of two metrics. The first metric is that at least 35 percent of former students must be current in repaying their student loans (not be in default). The second metric is either that the average annual loan payments of former students do not exceed 30 percent of the average graduate's discretionary income, or the total annual loan payments of the average graduate do not exceed 12 percent of their total income on average. These new regulations were intended to limit future access to federal student aid (Title IV payments and loans) to institutions whose graduates could not meet both metrics.

However, less than a month after the regulations were released, a U.S. District Judge in Washington, D.C. struck them down on the basis of inadequate support for the 35 percent loan repayment metric (Equal Justice Works, 2012). As a result the new regulations are not being enforced until such time as the U.S. Department of Education reworks its loan default metric to the satisfaction of federal courts.

Motivation

The motivation for this research is to determine whether CPA exam pass rates of graduates from three different types of higher education institutions---publicly supported state universities, private not-for-profit universities, and private for-profit commercial universities differ systematically. We pose several questions. First, are there systematic differences in the average CPA exam pass rates of students completing a bachelor's degree in from each of the three types of institutions? And if so, how large are these differences and in what direction? We believe answers to these questions will be important to students (and also to their parents) who are looking for universities that will provide the type of education needed for passing the CPA examination and for entering the profession of public accounting. We have found no other published (or unpublished) research reporting these comparisons.

CPA Exam Pass Rates: An Available Operational Measure of Accounting Education

The CPA exam is a long-standing and highly respected licensure examination whose passage is required prior to the granting of professional licensure as a certified public accountant (CPA) in all 51 U.S. jurisdictions. Surprisingly, the CPA exam was not included on the list of the 10 professional licensure exam outcomes evaluated by the GAO in the December 2011 GAO report to Congress entitled "Postsecondary Education - Student Outcomes Vary at For-Profit, Nonprofit, and Public Schools" (U. S. Government Accountability Office, 2011). The research results reported here are intended to rectify this omission.

CPA exam pass rates are published each year by the National Association of State Boards of Accountancy (NASBA). NASBA data includes the pass rates of nearly all accounting programs in America. NASBA data however does not separately identify the pass rates of "very small programs" which are defined as those accounting programs whose graduates take fewer than 5 total sections of the CPA exam during a reporting (calendar) year. Since NASBA data do not include the data of "very small programs", our research sample could not either. Nevertheless, our data include the well over 95% of all CPA exam sections taken during 2011.

Topics tested on the CPA exam are determined by the American Institute of Certified Public Accountants (AICPA). The AICPA carefully designs and updates the CPA exam, an exam whose purpose is to evaluate the accounting as well as general business knowledge (and application skills) of accountants wishing the CPA designation. The CPA exam itself is a total fourteen hours in length. It covers topics in accounting, auditing, income tax, wealth transfer tax, business law, accounting systems, economics, management, and finance. The exam has been carefully and professionally developed based on state-of-the-art testing and psychometric principles to ensure construct and test validities much in the way SAT and ACT tests are developed. According to the AICPA: "the content of the Uniform CPA Examination is developed through an extensive and integrated process. At each step in the process expertise in various disciplines is applied to ensure that the test materials are accurate and appropriate for use on the CPA Exam. The process incorporates expertise in a number of key areas. The first key area of expertise is in accounting. Individuals who draft, review, and finalize test materials are experienced CPAs. A second area of expertise is in the science of testing, called psychometrics. At each stage in the test development process, psychometricians are involved in the design, development, and implementation of test materials. These include test specifications, test questions, and data analysis. A third area of expertise is in test development. Experts in the design and development of test questions are involved in the process." (AICPA, 2011i).

Passing the CPA exam after graduation is a goal of many accounting students. Pass rates on each of the four parts of the CPA exam for students whose highest degree earned is a bachelor's degree have averaged just below 50% over the past decade. These low pass rates occur in spite of the fact that only educationally qualified individuals are permitted to sit for the CPA exam. In all 51 U.S. jurisdictions minimum requirements include substantial university level accounting and general business coursework be completed prior to sitting for the CPA exam. For example, in the state of Minnesota regulation requires candidates possess (or be within 90 days of possessing) a bachelor's degree that includes at a minimum 24 semester hours of accounting coursework (beyond the principles level), and a minimum of 24 semester hours of general business coursework before sitting for the exam. Other jurisdictions have comparable educational requirements to sit for the exam.

The CPA examination itself is uniformly graded under the auspices of the National Association of State Boards of Accountancy (NASBA) and thus provides a uniform and unbiased operational measure of the knowledge and skills of graduates from accounting programs from across the nation who take the exam. According to the official website of the American Institute of Certified Public Accountants, the central purpose of the CPA examination is "to admit individuals into the accounting profession only after they have demonstrated the entry-level knowledge and skills necessary to protect the public interest in a rapidly changing business and financial environment." (AICPA, 2011ii). Additionally, NASBA says this about the CPA exam: "since 1917, the Uniform CPA Examination has proven to be a highly valid and

reliable measure of candidate abilities. This focus on quality has made it possible for all United States jurisdictions to rely on the results in determining who is competent to practice public accounting in order to protect the public." (NASBA, AICPA, and Thomson Prometric, 2007: p. i).

We have chosen average CPA exam pass rates of each institution's graduates as the operational measure in this research as our dependent variable. Tens of thousands of college graduates from accounting programs at many hundreds of institutions of higher education take the uniform CPA exam annually. Using CPA pass rates as our dependent variable (and as a proxy for the quality of accounting education received before taking the exam), we are able to compare the CPA exam pass rates of recent accounting graduates from three types of institutions, namely publicly supported state schools, private not-for-profit universities, and privately owned commercial institutions (our three independent variables). Comparisons are made to determine if there are statistically significant differences among the three groups in terms of their CPA exam pass rates, and if so, how large the differences are, and in what direction.

Data

Schools selected for analyses include all schools intersecting two separate databases. The first database is the Institute of Education Sciences, National Center for Education Statistics (NCES, 2011) an online database maintained by the U.S. Department of Education listing information about all four year colleges and universities located in the United States and the District of Columbia. This database was also our source of data on each institution's undergraduate enrollment (size) and school type (see Table 1).

The second database, whose intersection with the first, determined our final research sample, is NASBA 2011 Uniform CPA Examination Candidate Performance (NASBA, 2012). As explained above, CPA exam pass-rate data are collected and reported annually by NASBA. These data include all but the very smallest accounting programs in the U.S.; accounting programs whose graduates take fewer than 5 total CPA exam sections during a calendar year are not separately identified in NASBA data. Our resulting research sample contained all 905 four year U.S. colleges and universities identified in U.S. Department of Education data and also listed by NASBA as having graduates who took at least 5 or more sections of the CPA exam during calendar 2011.

To get a better sense of the 905 schools included in our sample, we sorted the institutions by enrollment size, by institution-type, and by the number of CPA exam sections completed by graduates of each type of school during calendar 2011. Keep in mind that institution-type refers to categorizing institutions into one of three categories: publicly supported state schools, private not-for-profit universities, and for-profit commercial universities. School size refers to the number of undergraduate students enrolled at each institution during the 2011-2012 school year per Department of Education statistics. See Tables 1, 2, and 3 below.

Table 1: Number of Institutions by Institution Type

Undergraduate Enrollment	Number of Institutions			
	All Institutions	Public	Private Not-For-Profit	Private For-Profit
> 15,000	155	138	13	4
10,001 – 15,000	97	83	12	2
5,001 – 10,000	199	129	67	3
0 – 5,000	454	69	373	12
Totals	**905** 100.0%	**419** 46.3%	**465** 51.4%	**21** 2.3%

The source of this data is "NASBA 2011 Uniform CPA Examination Candidate Performance, Appendix D"(NASBA, 2012) and U.S. Department of Education, Institute for Education Sciences, National Center for Education Statistics (NCBS, 2011).

Table 2: Total Undergraduate Enrollment by Institution Type

School Size	Total Undergraduate Enrollment			
	All Institutions	Public	Private Not-For-Profit	Private For-Profit
> 15,000	**3,949,289**	3,302,257	285,536	361,496
10,001 – 15,000	**1,182,219**	1,008,442	148,942	24,835
5,001 – 10,000	**1,412,970**	943,456	450,666	18,848
0 – 5,000	**1,148,374**	236,771	877,958	33,645
Totals	**7,692,852** 100%	**5,490,926** 71.4%	**1,763,102** 22.9%	**438,824** 5.7%

The source of this data is "NASBA 2011 Uniform CPA Examination Candidate Performance, Appendix D"(NASBA, 2012) and U.S. Department of Education, Institute for Education Sciences, National Center for Education Statistics (NCBS, 2011).

Table 3: Total Number of CPA Exam Sections Completed by Graduates of Each Institution Type

School Size	Total Number of CPA Exam Sections Completed			
	All Institutions	Public	Private Not-For-Profit	Private For-Profit
> 15,000	39,260	35,734	2,996	530
10,001 – 15,000	11,041	9,905	1,077	59
5,001 – 10,000	13,017	6,402	6,569	46
0 – 5,000	14,571	1,551	12,665	355
Totals	**77,889** 100%	**53,592** 68.8%	**23,307** 29.9%)	**990** 1.3%

The source of this data is "NASBA 2011 Uniform CPA Examination Candidate Performance, Appendix D"(NASBA, 2012) and U.S. Department of Education, Institute for Education Sciences, National Center for Education Statistics (NCBS, 2011).

Table 1 indicates that only 21 schools in the sample of 905 universities (2.3%) were commercial for-profit universities. These 21 schools included many of the larger commercial chain institutions such as Kaplan University, Strayer College, University of Phoenix, Grand Canyon University, Devry University, Liberty University, and Excelsior College. We had expected a larger number of for-profit institutions to be in our sample. However after reviewing Department of Education statistics and NASBA data separately, we discovered that while approximately 600 commercial for-profit schools are listed in Department of Education statistics, only 21 of the 600 had graduates who completed the requisite 5 or more sections of the CPA exam in 2011 and therefor merited separate identification in NASBA data. Because the majority of commercial for-profit universities (most offering accounting degrees) had too few or zero graduates taking the CPA exam in 2011, these institutions could not separately identified in NASBA data and could not be included in our sample.

Here are several examples of this phenomenon. ITT Institute of Technology is a large commercial for-profit university having campuses in 38 states and having undergraduate enrollment totaling more than 80,000. ITT Institute of Technology offers bachelor's degree in accounting at nearly all of its campuses. ITT Institute of Technology did not have graduates sitting for 5 sections of the CPA exam during 2011 per NASBA data. Ashford University has undergraduate enrollments in excess of 67,000, offers many different business degrees including bachelor's degrees in accounting, but also did not meet the 5 section threshold for separate listing in NASBA data. This pattern of large commercial universities having very few or zero graduates sitting for the CPA exam is the main reason only 21 of approximately 600 commercial for-profit universities ended up in our final sample.

From Tables 2 and 3 it can be seen that while private for-profit institutions account for 5.7% of the total undergraduate enrollment at the 905 schools, these students accounted for only 1.3% of total CPA exam sections taken in 2011. This is another way of measuring the smaller fraction of for-profit school graduates taking the CPA exam when compared to graduates of public and private not-for-profit schools. Graduates of publicly supported state schools took 68.8% of all CPA sections taken in 2011. Graduates of private not-for-profit universities took 29.9% of all CPA sections taken in 2011. Graduates of for-profit

schools took only 1.3% of all CPA exam sections taken in 2011, this in spite of the fact that graduates of commercial universities account for approximately 12% of all business school graduates in the U.S. (Deming, Golden, and Katz, 2012).

Methods

Statistical tests were undertaken for the purpose of determining whether average CPA exam pass rates of graduates of three types of schools - publicly supported state schools, private not-for-profit universities, and for-profit commercial universities were significantly different from each other. All statistical comparisons were conducted using one-way analysis of variance (ANOVA). ANOVA is a commonly used test statistic when comparing the means of two or more groups for the purpose of rejecting the null hypothesis that no significant statistical differences exist among groups. In the present situation, the dependent variable in our ANOVA was defined as the average CPA exam pass rates of candidates from each group. The independent variables were the three types of universities - publicly supported state schools, private not-for-profit universities, and for-profit commercial universities. In short, ANOVA was our method of comparing the average 2011 CPA exam pass rates on 77,889 CPA exam sections taken by graduates from 905 universities classified into one of three school types, publicly supported state schools, private not-for-profit universities, and for-profit commercial universities.

Results

Table 4 shows the results of the overall one-way ANOVA. The null hypothesis is rejected in the sample of 905 schools ($p. < .001$). Average CPA exam pass rates of graduates of schools in the three groups were found **not** to be statistically the same. Table 5 presents the mean pass rates and standard deviations for each of the three groups. Table 6 presents group-to-group post hoc comparisons - comparing each group separately to the other two groups and noting the size and statistical significance of these differences in each comparison made.

Table 4: ANOVA Rejecting the Null Hypothesis That No Significant Differences Exist Among Groups (n = 77,889 total testing events)

Dependent Variable (Percentage Passing)	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	678504.432	2	339252.216	1590.440	.000*
Within Groups	16613645.375	77886	213.307		
Total	17292149.807	77888			

* -statistically significant differences exist among groups; p. < .001

Table 5: Mean Percentage Pass Rates By Group (with standard deviations)

Institution Type	N	Percentage Pass Rates of Candidates	Std. Deviation	Std. Error
Public (state schools)	53592	50.4	13.63929	.05892
Private (not-for-profit)	23307	48.4	16.72198	.10953
Commercial (for-profit)	990	24.8	11.33981	.36040
Total	77889	49.5	14.90010	.05339

Table 6: POST HOC Comparisons: Group-To-Group Least Significant Difference Tests

	Mean Pass Rate Differences	Std. Error	Sig.
Public (state schools) to:			
Private (not-for-profit)	2.00	.11460	.000 *
Commercial (for-profit)	25.66	.46845	.000 *
Private (not-for-profit):			
Public (state schools)	- 2.00	.11460	.000 *
Commercial (for-profit)	23.66	.47393	.000*
Commercial (for-profit):			
Public (state schools)	- 26.58	.46845	.000 *
Private (not-for-profit)	- 24.59	.47393	.000*

*-statistically significant differences exist between groups; p. < .001

Table 5 indicates that candidates from public universities (state schools) have the highest overall average CPA exam pass rates at 50.4% followed closely by private not-for profit universities with average pass rates of 48.4%. Commercial (for-profit) universities have notably lower pass rates than either of the other two groups averaging only 24.8%. This is approximately half the pass rate of the other two groups. Differences of this size are not only statistically significant (in the sense of ANOVA), but are also important in the real-world sense with implications for tens of thousands of future college students/ CPA exam takers.

Conclusions and Limitations

We draw two major conclusions from these data. First, similar to 2011 GAO findings that show lower pass rates by students educated at commercial for-profit universities on 9 of 10 professional examinations (U.S. GAO 2011), we find the same phenomenon regarding the pass rates on the uniform CPA exam. Students who complete their accounting educations at commercial for-profit universities have strikingly lower pass rates on the uniform CPA exam than do others. Pass rates are roughly half those of students who complete their educations at public universities or private not-for-profit universities.

Our second major conclusion is that a much smaller fraction of students who attempt an accounting education at commercial institutions actually complete it, and a much smaller fraction of those who do complete their accounting educations at commercial for-profit universities appear to take the CPA exam. Based on Department of Education statistics commercial universities now grant a full 12% of all business bachelor's degrees in the U.S. (Deming, Golden, and Katz, 2012). These same graduates account for only 1.3% of all CPA sections taken during 2011 (see Table 3 above). Further, inferring from differential pass rates, commercial universities apparently graduate only about six tenths of one percent of all those passing the CPA exam each year.

Together our conclusions suggest that education at commercial universities may be a poor choice for students who someday hope to take the CPA exam and enter the field of public accounting. Factors such as higher average debt at graduation, lower overall graduation rates, and much lower pass rates on the uniform CPA exam are all factors of commercial education that suggest this conclusion.

Nothing in our data are intended to be used for inferring unambiguously why lower CPA exam pass rates occur at commercial universities. Since our research design is not an experimental design (i.e. random selection, random assignment of subjects to groups, and independent variable manipulation), causal inference about the reasons for discovered systematic relationships in not possible (Bryman and Cramer, 2005). Causal inference requires a fully randomized experimental design in which researchers manipulate a single research variable differentially among groups. (All other systematic differences among groups are presumed nonexistent due to random selection and assignment of subjects to groups.) In the present case such a design is not feasible or possible. In our society, one cannot reasonably randomly assign students to public universities, to private not-for-profit universities, and to commercial for-profit universities for a research in order to be certain groups do not differ systematically at the outset. Therefore, due to the limitation of our research design, the particular reason or reasons graduates of commercial universities have lower average pass rates on the uniform CPA exam cannot be reasonably inferred from the data.

Lower CPA exam pass rates by the graduates of commercial universities could result from any number of factors or combination of factors. For example, one might speculate our findings result solely from selection bias - commercial universities attract, on average, a lower quality student than do traditional universities, and thus these lower quality students, regardless of the quality of education they have received, score lower on the uniform CPA exam due to their lower abilities. One might just as reasonably speculate that commercial education itself is of low quality, and therefore is the main determinative factor in lower CPA exam pass rates of graduates of commercial universities. Or one might also speculate that a combination of factors, some that may not have even been imagined, together are the determinative factors of the lower CPA exam pass rates by the commercially educated. The point is there is no logical way to unambiguously draw causal inferences based on a correlational research design.

Nevertheless, we have shown a systematic association between commercial education and much lower CPA exam pass rates even if unable to state precisely why this relationship exists. Knowing the relationship exists has value in and of itself, and becomes the basis for other research that attempts to clarify the causes of this relationship.

Finally to summarize and repeat, the purpose of our research has not been to develop or explicate a general theoretical model describing the causative factors in a discovered negative relationship between commercial education and CPA exam pass rates. Rather, our purpose has been to discover whether a systematic relationship exists between commercial for-profit education and CPA pass rates, and if so, to understand its magnitude and direction. This we have successfully been able to do. Graduates of commercial for-profit universities clearly have CPA exam pass rates markedly lower than those of graduates of public universities and private not-for-profit universities. This result has implications for incoming students and their parents as they seek to identify universities that will most likely maximize the chances of the student someday passing the uniform CPA exam.

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