

An Analysis of the Accounting Doctoral Industry: Observations and Unanswered Questions

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The shortage of doctoral graduates in accounting is evidence of a problem in the industry as a whole. While demand is up for all accounting graduates, supply is insufficient. This article examines the academic accounting industry as a whole, using a macro perspective to analyze data about doctoral graduates and programs, in order to identify positive and negative attributes of the market and identify further areas for inquiry. Uniquely detailed data on U.S. accounting doctoral graduates 1987-2006 are used in the analysis. Specific trends are identified and future avenues for research are also addressed.

The academic accounting industry is in crisis. Some of the problems are good ones, e.g. high demand for accounting graduates at all levels. Others are difficult and puzzling. Despite the demand for accounting graduates and the need for accounting professors to train them, the academic accounting industry is not educating the needed number of accounting doctoral graduates on an annual basis.

Rather than measuring the number of graduates or the lack of graduates to meet demand, what happens if the academic accounting industry is examined more deeply? This article investigates accounting academia as an industry that produces accounting graduates, with a focus on the doctoral graduates. The purpose is to identify the characteristics of the important players, doctoral programs and doctoral graduates, as well as, secondarily, other stakeholders, such as universities and colleges, firms, companies, government, and other interested parties. This information may help identify the factors that are driving, aggravating, or potentially alleviating the shortage problem.

What is driving the lack of PhD graduates in accounting? What are the defining characteristics of this industry that provides accounting PhDs to the country's institutions of higher learning? What clues in the past and the present can be found to help solve the accounting PhD shortage problem? These questions are addressed in the following sections, including a literature review, a general discussion of the academic accounting market, research methods, and an extended discussion of the nature of U.S. accounting doctoral market, and its descriptive trends.

LITERATURE REVIEW

The literature describing accounting doctoral programs is mostly comprised of various studies attempting to rank programs on publishing output of faculty and/or graduates (Brown & Garner 1985; Brown 1996; Everett, Klammm & Stoltzfus 2004; Chan et al. 2007; Brown & Laksmana 2007), initial placement of graduates (Stammerjohan & Hall 2002; Fogarty & Saftner 1993a & 1993b), and faculty representation on editorial boards (Mittermaier 1991). No studies have specifically set out to describe the industry as a whole, although recent articles have generally lamented the state of accounting academia (Fellingham 2007; Fogarty & Markarian 2007; Demski 2007; Grasso 2008; McNair 2008). Fellingham (2007) posits that accounting is moving towards being a vocational discipline rather than an academic discipline. Fellingham notes that accounting journals are internally focused, self referential and rarely referenced by other disciplines and that accounting academics focus on the current generation of students rather than future generations through contributions to the academy. Demski (2007) provides ten indicators that accounting is more a vocational discipline than an academic discipline. Grasso (2008) cites causes of the increase in demand for accounting education, concludes that the demand cannot be met through traditional means due to a shortage of accounting PhDs and posits that the shortage should be viewed as an opportunity for transformational change.

McNair (2008) asserts that the root cause of the shortage of accounting Ph.D.s is the death of the teacher-scholar. A teacher-scholar is defined (McNair 2008, 22) as someone who "is as dedicated to teaching as to pursuing new ideas and engaging in scholarly discourse." McNair cites three causes that set up what he calls the loop of doom for the teacher-scholar. The three are: AACSB definitions of AQ and PQ faculty, publication in narrowly defined A journals being a key metric for tenure in more schools, and schools adopting student-teacher ratios and number of scholarly publications as key measures of program quality. The loop of doom cycles from: fewer accounting academics reaching higher thresholds; to teacher scholars being pushed lower in the academic hierarchy; to higher quantity teaching being associated with lower salaries; to passion for inquiry declining due to inadequate time, resources and rewards; to waning inspirational teaching and scholarship, a reduction in innovation and a loss of relevance; to reduced pool of potential academics; then back to the start. In other words it is just not as much fun as it used to be.

In contrast, the recent literature describing the shortage of accounting graduates is quite diffuse. Relevant reports have been prepared by committees of the American Accounting Association, the American Association of Collegiate Schools of Business (AACSB - the primary accreditor of business and accounting programs), and others. These reports have identified the shortage, described the likely future demands for accounting PhDs and described the supply problem in a number of ways.

AAA (2008a) cites both the shortage of accounting PhD candidates and a decrease in full-time accounting faculty positions as evidence of the challenges facing the association. AAA (2008b) notes a significant decline in number of accounting faculty (13.3%) and a significant increase in students (12.3%) in the period of study 1993-2004. The decline in faculty is not shared by other business disciplines which increased during the same period. In addition to the significant decrease in the absolute number of accounting faculty members the faculty mix is changing. The decline in numbers of faculty members has primarily been men so the proportion of women has increased even though their absolute numbers has not. The faculty is aging and more faculty members are nearing retirement age. The number of faculty members under 40 is declining while the number of faculty over 55 is growing. The report notes an increase in the percentage of Asian faculty (about 15%), a slight increase in the percentage of black faculty members (1%) with a decrease in the percentage of Hispanic faculty members (3%) and a decrease of about 1% in the other category. While it can be said that the faculty is more diverse due to the shift from white to Asian faculty, the overall percentage of underrepresented minorities has not improved. Pay has improved dramatically for younger faculty (45 and under) but has only improved a little for older faculty (46 and over), resulting in serious salary inversion. The average number of hours worked has increased from a little over 48 hours per week in 1993 to over 52 hours per week in 2004. Both the number of recent publications (14% increase) and total publications (2% increase) occurred between 1993 and 2004.

The AACSB (2003) report describes a similar decrease in new business Ph.D.s and an increase in demand for business education. The report indicated that while applications for doctoral programs had increased admissions had not. Lack of funding for doctoral students and availability of faculty were cited as the most important limiting factor in admissions. The lack of outside funding for business research was also noted as a reason for universities lack of willingness to grow business Ph.D. programs. An increasing number of those receiving Ph.D.s are either not available to meet the increasing demand by US educational institutions or are choosing employment outside education. The percentage of those receiving business doctorates that choose industry over academic employment increased from 7.3% in 1990 to 14.8% in 2000. Further, 27.3% of the 1999-2000 graduates had temporary visas and 52.2% of the enrolled Ph.D. students did not have permanent visas.

Plumlee et al. (2006) reports the results of three 2004 surveys. The three groups surveyed were accounting doctoral program directors to determine the expected supply in total and by specialization, accounting department heads to determine expected demand in total and by specialization, and accounting doctoral students. They found that the estimated supply of new accounting Ph.D.s was only 49.9% of the expected demand. The shortages over the 2005-2008 period was even more extreme in tax (27.1% of demand met), audit (22.8% of demand met) and multiple specialties (0% of demand met). Differences between students of North American (US and Canada) origin and other students were found. Teaching was more important to North American students while research was more important to non-North American students. North American students felt less well prepared than the non-North American students. North American students incur more debt than non-North American students. About one third of the North American students believed that the support was inadequate while only one fifth of the non-North American students did. About half of all students thought the program was too stressful and 29% thought the program was harmful to their health.

Fogarty & Markarian (2007) suggest that accounting as an academic discipline is now in decline based on analysis of data over a 20 year period from 1982 to 1992. The total number of both tenure track and full-time non-tenure track faculty has declined. The decline is concentrated at the assistant professor rank (32.7%). From 1982 to 1992 the total tenure track faculty at all ranks increased (assistant 5.5%, associate 12.1%, full 26.3%) while the number of full-time non-tenure track faculty declined by 19.6% giving an overall increase of 7%. From 1992 to 2002 all ranks but full professors declined (assistants -36.2%, associates -3.9%, non-tenure track -26.7%) while full professors increased by a modest 9.6%. These changes suggest an aging professorate without enough new entrants into the field to replace those who will soon retire. The changes are not consistent across different types of schools with the doctoral granting institutions actually increasing their non-tenure track faculty (1982 to 1992 up 11.4%, 1992 to 2002 up 16.1% for a total increase of 29.4%). The number of new doctorates in accounting first increased from 744 in 1978-1982 to 894 in the period 1988-1992 then decreased to 581 in 1998-2002. The distribution of these graduates among schools has also changed. From the period 1988-1992 to the period 1998-2002 graduates from the top quartile of schools declined by 40.8% while graduates from the bottom quartile increased 98.4%. In addition to the overall decline in numbers, accounting is losing ground when compared to the other business

disciplines. From 1990 to 2004, while the total business faculty increased by 3.3%, the accounting faculty declined by 2.8%. While the fact of the shortage of accounting PhDs seems well documented, what really drives the shortage and what might be done to alleviate it are unclear. In the following section the accounting doctoral market is examined as a whole.

The Academic Accounting Market

In this section the general academic accounting market is analyzed from a macro perspective. The various players are described, including the doctoral programs, the graduates, the colleges and universities that employ them, and the stakeholders that influence the industry. The purpose of the accounting doctoral market (the left side of Figure 1) is to train accounting doctorates for research and teaching positions, largely in academic institutions. The purpose of the academic accounting market, more generally, is to educate future professional accountants, as shown on the right side of the figure.

Figure 1: Academic Accounting Market



While the accounting doctoral market seems simple - doctoral programs train PhDs who are hired by various accounting schools - the accounting doctoral market is heavily influenced by the rest of the downstream academic accounting market, the entry-level professional accountant market. Therefore, this section discusses this downstream academic accounting market, its stakeholders and how they may impact the accounting doctoral market.

Accounting Programs

Accounting doctoral graduates are hired by accounting programs in at least 900 universities and colleges (AICPA 2008c). In addition, many colleges and universities have business majors or MBA programs without also having the accounting major. Some of these programs also need to hire accounting doctoral graduates. Of course, many foreign schools also hire U.S. accounting doctoral graduates (15% or more). An additional 3% of accounting doctoral graduates leave academia for industry, government or other jobs (Baldwin, Brown & Trinkle, 2010).

This group of universities and colleges is not homogenous. Some confer only bachelor's degrees in accounting, others confer master of accountancy or taxation or MBA degrees. Some, of course, are also the 90+ doctoral granting institutions. Even among the non-doctoral granting institutions, the size range is wide; the types of degree programs, teaching loads, research requirements, and salaries all vary widely. No single simple description applies to all of these accounting programs, yet the relatively small number of U.S. doctoral programs is supplying the doctorally qualified accounting faculty to the vast majority of these American institutions.

Bachelors and Masters Graduates

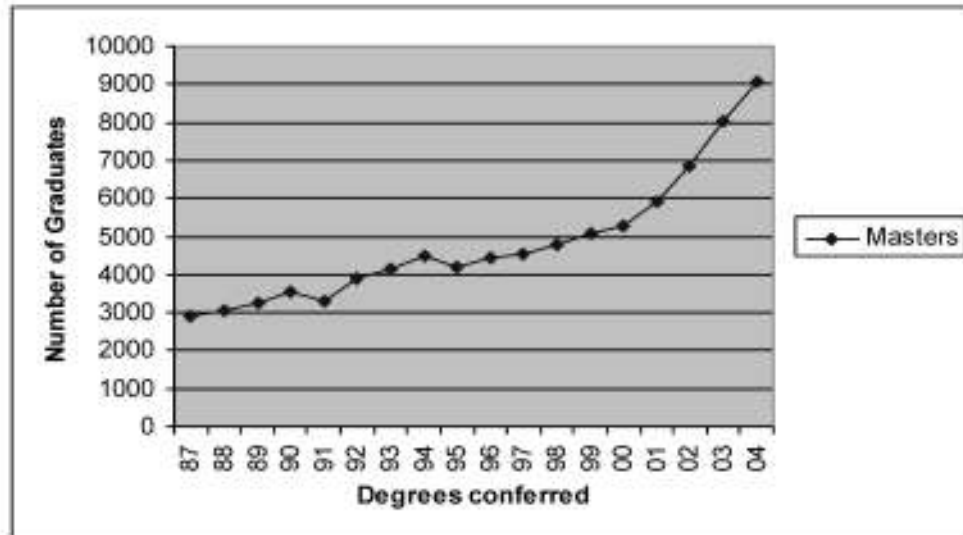
The demand for accounting graduates at all levels has been steadily rising in recent years. The demand for masters and bachelors graduates should, of course, impact the need for doctoral graduates (i.e. professors).

Masters

Like the accounting profession, the U.S. academic accounting industry has been undergoing drastic changes in recent years. The institution of the 150 hour requirement for the CPA exam in the majority of U.S. states started a growing trend in masters degrees conferred. Since 1983, 47 of 54 jurisdictions have adopted the 150 hour requirement. New York adopts the requirement in 2009. The only significant exception is currently California (Carpenter & Hock 2008). As seen in Figure 2,

this trend looks likely to continue: 9,085 masters degrees in accounting were conferred in the 2004-2005 academic year, the most recent year for which data are available from the National Center for Education Statistics (2000-1). If this trend continues, the current academic year could see over 13,000 accounting masters degrees conferred. On the hiring end, in 2007 CPA firms reported hiring over 8,000 masters graduates. The largest CPA firms hire a large proportion of masters graduates, 35% of total hires (AICPA 2008a). Masters graduates are also hired in industry, government and non-profit sectors, so these numbers represent only a subset of graduates.

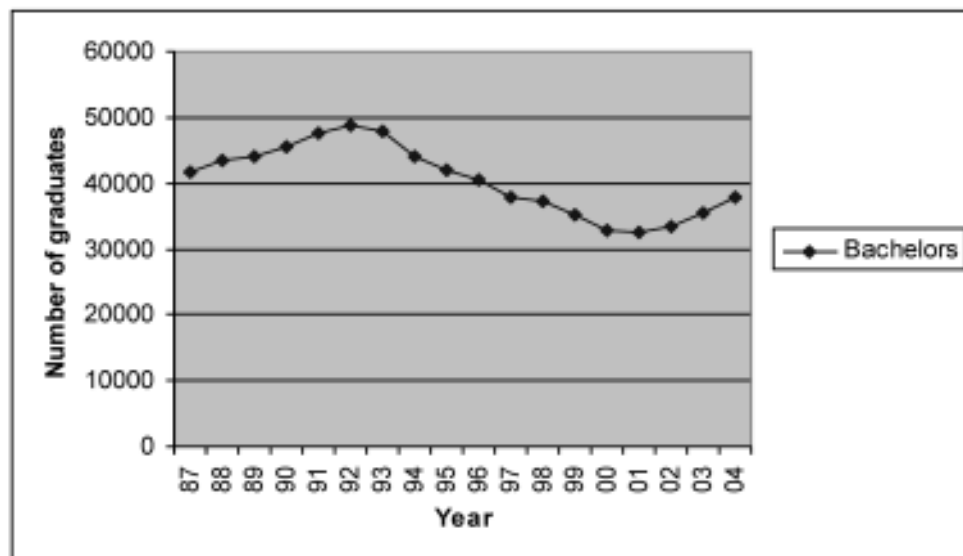
Figure 2: U.S. Accounting Masters Degrees Conferred, 1987-2004



Bachelors

More recently, the passage of the Sarbanes-Oxley Act of 2002 has helped drive an increasing demand for bachelors graduates in accounting. While the numbers of accounting bachelors degrees conferred dropped consistently in the 1990s, the trend reversed in 2002, as shown in Figure 3. If the upswing continues, around 50,000 accounting bachelors degrees could be conferred in the current academic year.

Figure 3: U.S. Accounting Bachelors Degrees Conferred, 1987-2004



The current demand is so great that CPA firms hired 83% more accounting graduates in 2006-7 than they did in 2003-4 (AICPA 2008a). In addition, almost 60% of companies and firms plan to hire more accounting graduates

in 2008 (NACE 2008). Within a decade, the number of jobs specifically for accountants and auditors will grow by 18% according to US Department of Labor projections. From 2006 to 2016, an additional 226,000 accountants and auditors will be needed in the USA (US Department of Labor 2008).

Employers and Other Stakeholders

The demand for accounting graduates by CPA firms and other employers is very high. Many companies are still struggling with implementation of Sarbanes-Oxley. Still others are anticipating the move to XBRL reporting for SEC purposes, and the likely future implementation of IFRS in the U.S. These and other issues drive the need for more accountants. CPA firms, in particular, are going to great lengths to attract majors and graduates. The AICPA has numerous programs for accounting scholarships, as do many other associations, such as the IMA and the ASWA. In addition, some firms endow scholarships at regional universities and colleges to help entice more accounting majors. New accounting graduates in 2008 are being offered an average salary very close to \$50,000.

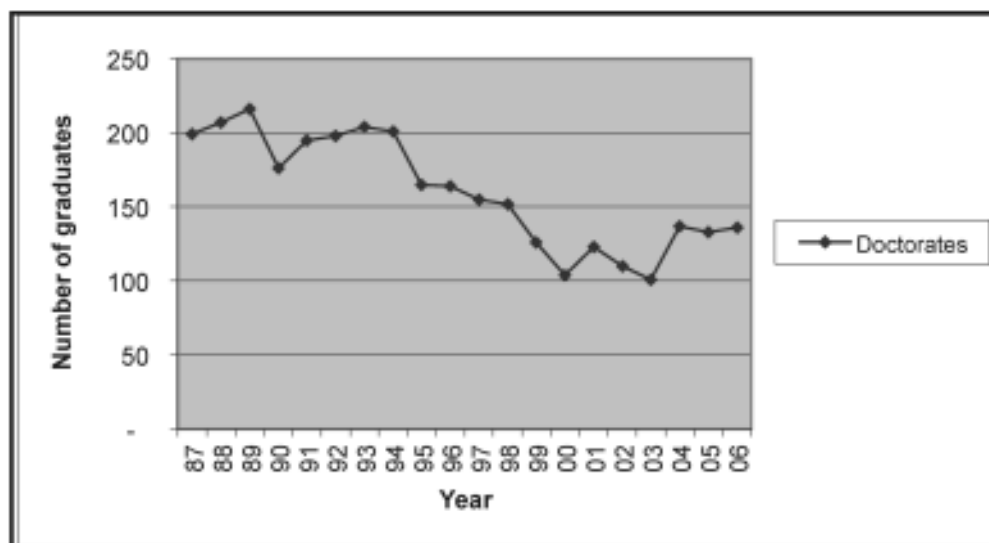
Some of the Big Four firms and the national associations (such as the IMA) have noted the shortage in accounting PhDs and have created initiatives, programs and scholarships to encourage doctoral applicants. The PhDProject (2008) is one such initiative, aimed at attractive minorities to careers in business academia. Recently the CPA profession pledged \$15 million to help fill the shortage of accounting professors, preferably CPAs with auditing and taxation experience (Accounting Doctoral Scholars 2008). While the shortage of doctorally qualified accounting faculty may severely impact the future stream of professional accounting graduates, the direct relationship between the professional accounting market players (firms, companies, etc.) and the accounting doctoral market does not seem to be a close direct one, but rather an indirect relationship.

Doctoral Graduates

Clearly, the increasing supply of bachelors and masters degree graduates in accounting has not glutted the market. Firms, companies, government and other organizations are still demanding more accounting graduates. Therefore, the number of professors needed to train these future accountants should be growing as well. In addition, the impending retirement of much of the baby boomer generation (those born from 1945-1964) is also a factor that can impact the number of professors in academia. However, the number of accounting doctorates conferred has not been growing in recent years.

Despite the high demand for professional accountants, US accounting doctoral programs have been unable or unwilling to deliver the number of doctoral graduates needed to train these growing numbers of professional accountants. These doctoral programs, as an industry, have generated fewer doctoral graduates over the past decade than in previous decades. The current shortage of accounting doctoral graduates is well documented (AACSB 2003; Plumlee et al. 2006; AAA 2008a, 2008b). The decreasing trend in the number of accounting doctorates produced each year has been sustained for some time and reported in numerous places. The visual picture of the volume of doctorates granted in the past two decades is telling, as shown in Figure 4.

Figure 4: U.S. Doctoral Accounting Degrees Conferred, 1987-2006



Contrast this trend with the trends in accounting degrees at the bachelors and masters levels. Since the year 2000, the number of bachelors degrees conferred in the USA has increased each year. The latest trend is an annual increase of more than six percent. The number of masters degrees conferred in accounting has been growing for decades and has doubled in the last ten years (NCES 2000-1). The demand for bachelors and masters level accounting graduates is expected to continue growing for the foreseeable future (U.S. Department of Labor 2008). The rest of this article describes the accounting doctoral market in more detail, with particular focus on the programs and their doctoral graduates. The research methods are briefly described first.

Research Methods

The data are described next, followed by a description of the methods used to identify and locate the relevant data and useful sources, and the analysis, which for present purposes largely consists of the generation of descriptive statistics for each item of interest.

The basic data consist of recent U.S. accounting doctoral graduates (1987-2006). These graduates were initially identified through Hasselback's (2007) online listing of doctoral graduates by school. Then, this data was researched and updated with corrections and additions of supplemental variables based on information obtained from doctoral program websites, university websites, general Internet searches, phone calls and emails. Further Internet searches, phone calls and emails enabled the identification of gender for the majority of graduates (>95%). Information on minority status was provided by the PhDProject (2007). For the purposes of this research, minorities are identified as African-American, Native American, and Hispanic American. These are recognized as under-represented minorities and are those specifically encouraged by the PhDProject (2007) to pursue doctorates in business disciplines.

Therefore, this study analyzes a unique and extraordinarily detailed dataset. However, this research is not concerned with individual characteristics, but rather with each program's characteristics as described by its graduates. Using this data on individuals, programs are analyzed on the basis of size, of growth, and of prestige. The programs have been divided by size: 1 to 9 graduates (in the 20 year period), 10-19 graduates, and so forth up to programs conferring more than 80 degrees in the 20 year period. Prestige is defined by the institutional prestige measure for doctoral-granting institutions developed by Fogarty & Markarian (2007).

In addition to the general demographic statistics, further analysis is provided comparing and contrasting the growing programs, the shrinking programs and those in a relatively steady state. These categories are defined by comparing the number of graduates in the first decade (1987-1996) to the number of graduates in the second decade (1997-2006). Growing programs are those with an increase of at least 60% in the second decade. Conversely, shrinking programs are those with a decrease of at least 60%. Programs falling in between these two categories are defined for the purposes of this study as being in a steady state.

The Accounting Doctoral Market

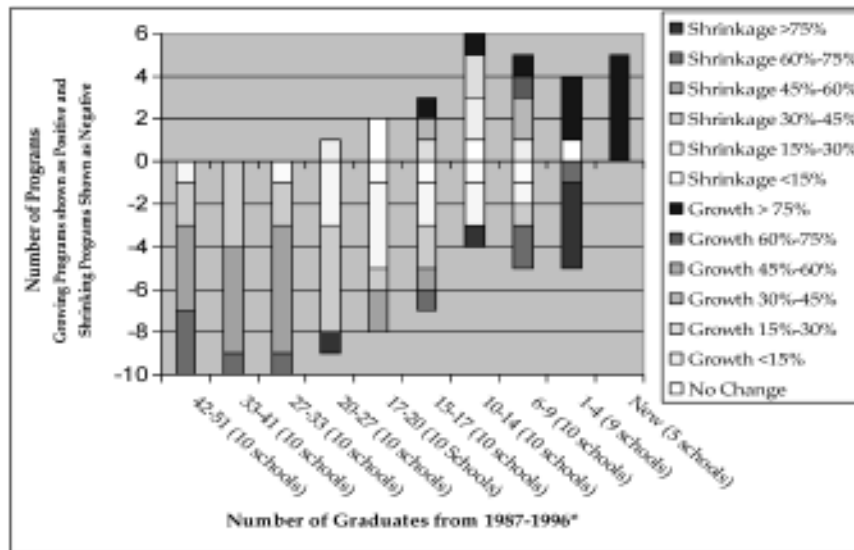
The purpose of the accounting doctoral market (the left side of Figure 1) is to train accounting doctorates for research and teaching positions, largely in academic institutions. Therefore, this section discusses this upstream accounting doctoral market by describing and analyzing its two major players, the programs and their graduates.

Doctoral Programs

As previously shown in the left side of Figure 1, the accounting doctoral market consists of doctoral programs that produce accounting PhDs. As of 2006, 94 programs had conferred doctoral degrees in accounting in the previous 20 years. These programs range in size from 87 graduates during this period to 1 graduate.

Shrinking, Steady or Growing Programs

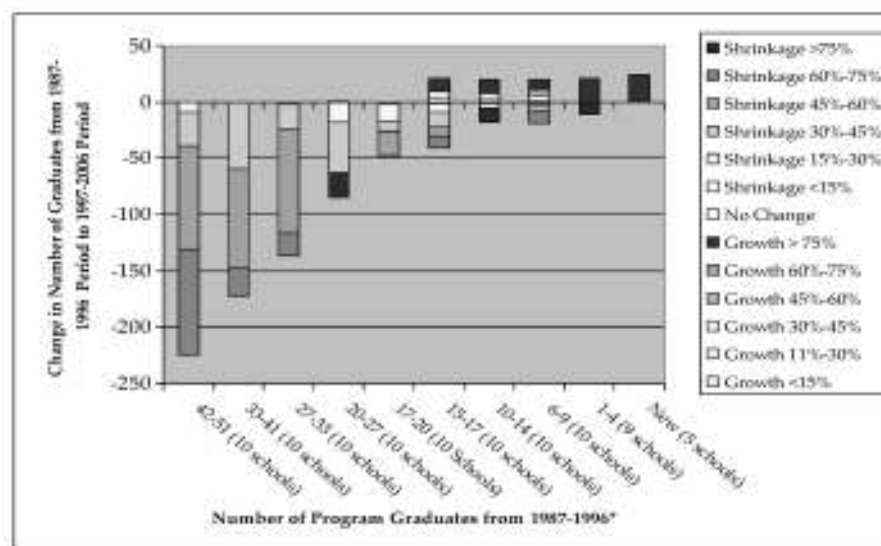
By dividing these programs into ten size groups based on the number of doctoral degrees conferred during the 10 year period 1987-1996, they can be analyzed as an industry. Like companies in any industry, some programs are growing in size, others are shrinking and some are relatively steady in terms of their output from the first decade to the second. While one might expect to have some schools in each size category growing and some shrinking, that is not the pattern that emerges from figure 5, which shows the direction and percentage of change for programs in each size group. All of the schools in the three largest size categories (42-51, 33-41, 27-33) decreased the number of graduates from the first to the second 10 year periods. Only one of these larger schools showed a modest decrease (<15%) with the majority showing a decline of 45% or more. In general, the larger programs are more likely to decline in the number of graduates than smaller programs and the percentage decrease is likely to be larger as well.

Figure 5: Supplier Stages: Shrinking, Steady and Growing Programs

Note: Where there was a tie for size at the border of the group the program with the larger number of graduates in the second period was assigned to the larger group. If the decline in graduates was solely caused by fewer individuals wanting to get Ph.D.s in accounting one would expect the changes in graduates to either be relatively evenly distributed across the size categories, or perhaps the smaller less well established schools would be more likely to decline in size compared to their larger, more well established counterparts. That is not the pattern that emerges. Thus, it appears that the decline in the number of accounting Ph.D. degrees is not solely based on lack of interest by potential degree candidates. This conclusion is supported by the AACSB (2003) report that indicated that while applications for doctoral programs in business had increased, admissions had not.

Change in Graduate Numbers

The industry can be further analyzed by looking more closely at the changes in the number of graduates from the first decade to the second decade in the period of study. Figure 6 graphically illustrates the change in the number of graduates for programs by size and stage.

Figure 6: Change in Number of Graduates by Program Size

Note the large negative change in the number of graduates for the shrinking programs in all the larger size groups. Also note the correspondingly small positive numbers on the top, representing the growing programs (all toward the small end and few showing significant increases). While some might say the solution to the shortage problem is to create more doctoral programs, clearly the larger and longer lived programs are producing fewer graduates than before. The smaller and/or new programs have not been creating enough graduates to overcome the shrinkage of the other programs.

PhD Graduates

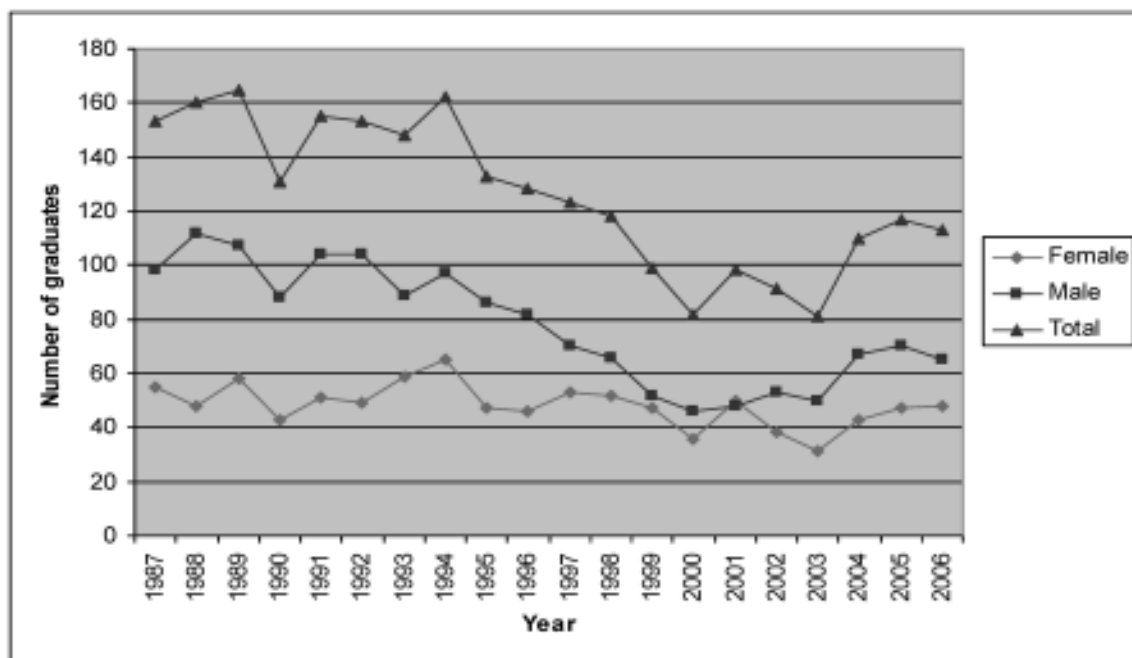
The industry creates two products, effectively: human accounting graduates and knowledge (research). Since the former is more easily measurable, that is the focus here. The human outputs of the academic accounting industry are doctoral graduates, masters graduates and bachelors graduates. Doctoral graduates are then hired to teach/train bachelors and masters degree candidates. Of course, the reality is not this simple, as some schools use masters degree graduates to train bachelors graduates. However, the simple model will do for this discussion.

A Gender Gap?

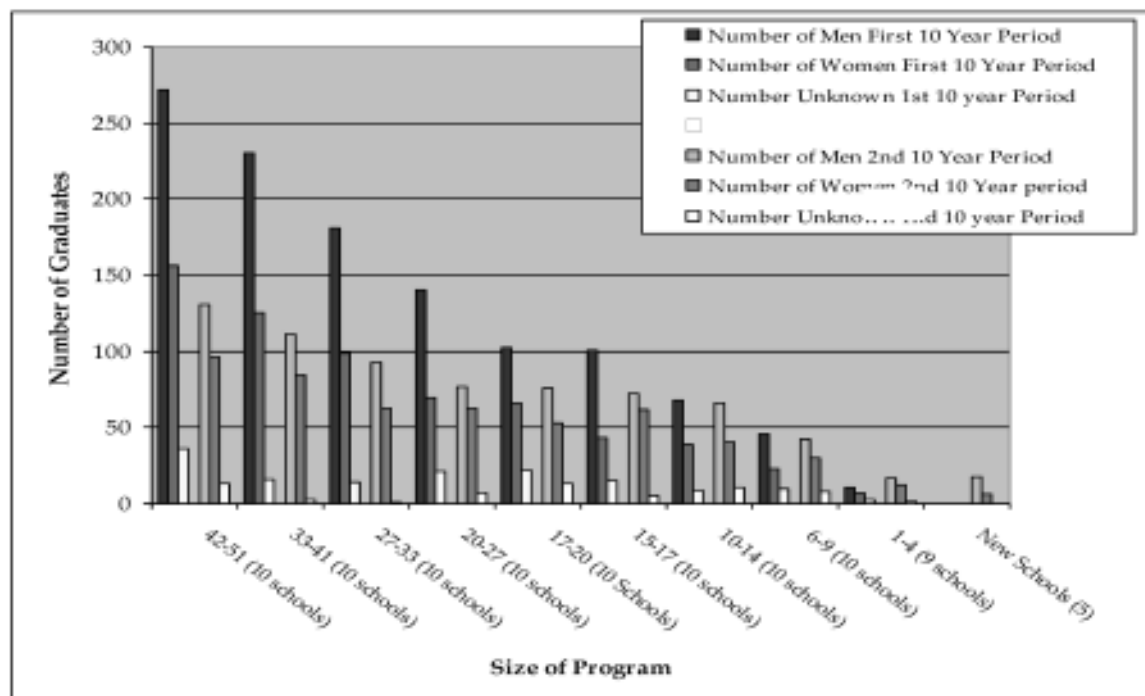
While many studies have measured the status or lack of status of women in academic accounting, who still haven't reached parity with males on graduation rates and rank and such, the trends in graduates according to gender are quite interesting. Returning to Figure 3's depiction of doctoral degrees conferred, Figure 7 adds the gender dimension.

While percentage-wise, the females seem to be making some gains on the males, in fact the number of females graduating is not growing, but is relatively steady or declining slightly. The number of males, however, has been dropping significantly, even though the males still largely outnumber the females, with the possible exception of 2001. What is happening to the males?

Figure 7: Accounting Doctoral Graduates by Year and Gender

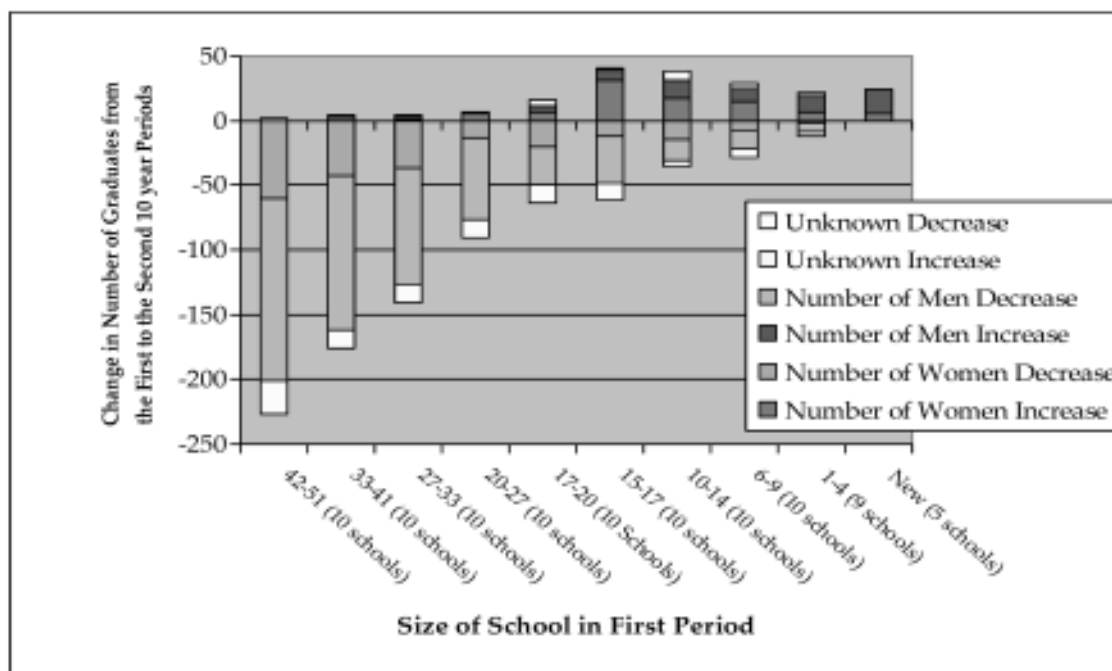


See, for example, Buchheit et al. 2000; Carolfi et al. 1996; Collins et al. 1998; Dwyer 1994; Jordan et al. 2006; Lanier & Tanner 1999; Norgaard 1989; Rama et al. 1997; Streuly & Maranto 1994; Tinker & Fearfull 2007.

Figure 8: Number of Graduates by Gender and Program Size

To put this drop in the number of male graduates in perspective, Figure 8 illustrates the number of males, females and unknown gender graduated from the first decade to the second decade, by each program size group.

For Figure 9 the size of the school was determined by the number of graduates in the first 10 years of our study. This chart shows that all the largest schools decreased both the number of male and the number of female graduates from the first 10 year period to the second 10 year period. With minor exceptions the same is true for the next three size group. Only the smaller size programs show any substantial increase in the number of male or female graduates.

Figure 9: Change in the Number of Graduates by Size of School and Gender

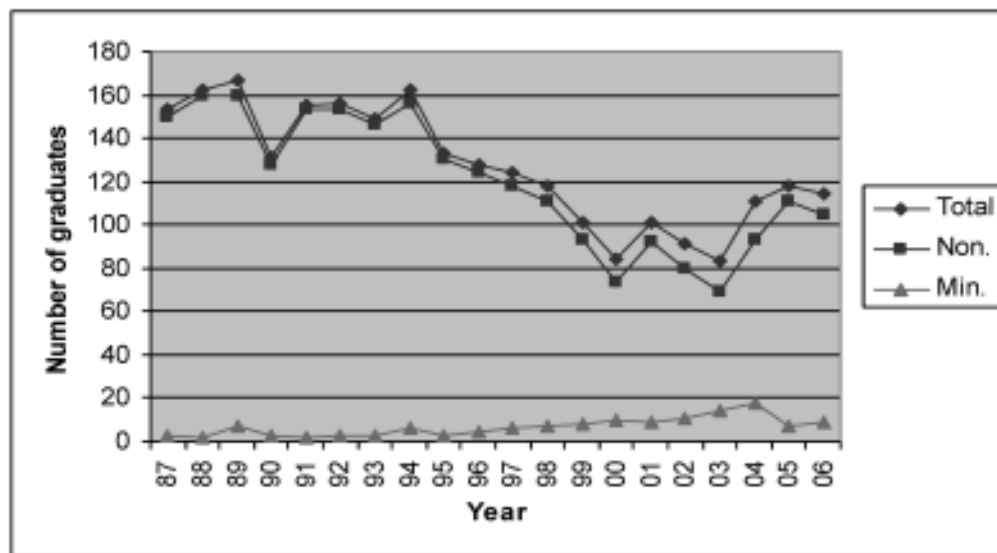
The patterns of growth are evident in the smaller half of the programs, though the growth and the decline in most of those smaller programs appear to zero out. However in these smaller categories the increases in women exceed the decreases. In the larger program groups, no sizable increase in female graduates is evident, while decreases are evident in all categories.

An Even Greater Minority Shortage

Accounting doctoral programs labor to attract under-represented minorities (Hammond 1995), including African-Americans, Native Americans and Hispanic Americans. For more than a decade, efforts have been made to increase the number of minority graduates of accounting doctoral programs. In 1994, KPMG and others created the PhDProject, whose purpose is increasing faculty diversity in U.S. business schools. The PhDProject provides financial and other support to under-represented minorities such as African-Americans, Hispanic Americans and Native Americans pursuing doctoral studies in business, including accounting (AICPA 2006; PhDProject 2007; Stewart et al. 2008). In addition, professional groups, such as the AICPA and IMA are also involved in minority initiatives with doctoral candidates and faculty (AICPA 2008b). The AACSB, of course, expects accredited schools to define diversity within their missions and cultural contexts (Weisenfeld & Robinson-Backmon 2007).

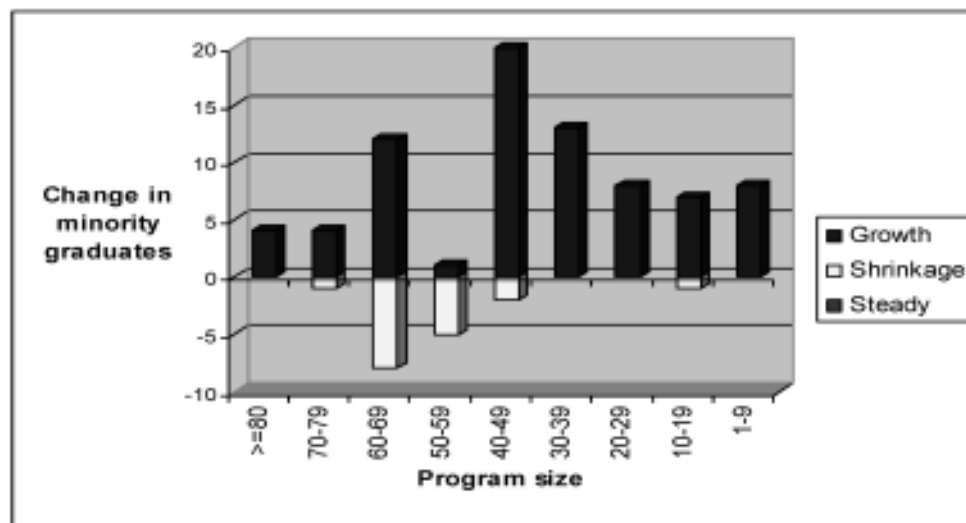
Returning to Figure 4's data, Figure 10 adds a dimension for under-represented minorities and non-minorities. The number of underrepresented minorities is increasing in recent years, which is encouraging. However, the increase is not large.

Figure 10: Accounting doctoral graduates by year and minority status

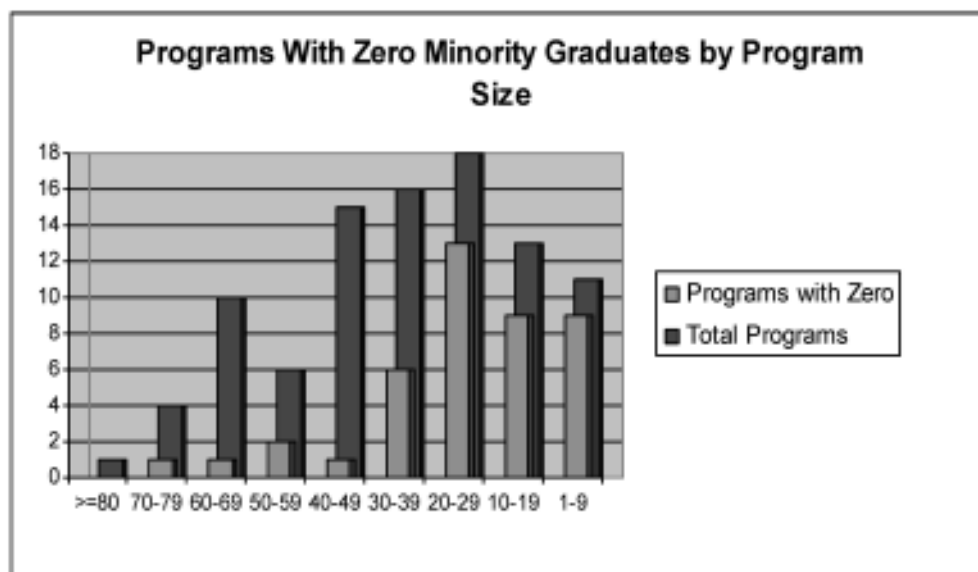


Over this twenty year period, the percentage of under-represented minorities earning accounting doctorates is 5.7 percent, 6.7 percent in the most recent year. While progress is encouraging, these percentages fall far short of the related data for the U.S. population. The U.S. population includes more than one-third minorities and has been becoming more diverse over time. The under-represented minorities now comprise about 30%, of which Hispanic Americans are 15%, African-Americans are 13.5%, and Native America/Alaskan/Hawaiians are 2% (U.S. Census Bureau 2008). U.S. society is becoming more and more diverse and, therefore, academic accounting must become more accepting and encouraging of diversity (Blanco and de la Rosa 2008). What can be done to attract more under-represented minorities to academic accounting?

Figure 11 examines the change in minority graduates from decade one to decade two for each program size group. A few programs, mostly in the upper-middle size range, are graduating fewer minorities than in the past. Most programs are graduating more minorities than in the past. Strangely, the programs of the 50-59 group (graduating 2.5 to 3 graduates per year on average) have a net decrease in minority graduates. This group, however, represents a relatively small number of programs.

Figure 11: Change in Under-Represented Minority Graduates by Program Size

Programs in a steady state have no change in minority graduates. This is primarily due to most of these programs having no minority graduates in either decade. Most programs have increased their minority graduates at least 60% in the second decade. The numbers of minority graduates have decreased 60% or more in some programs. While many smaller programs have no minority graduates, most of the larger programs have at least one minority graduate (Figure 12).

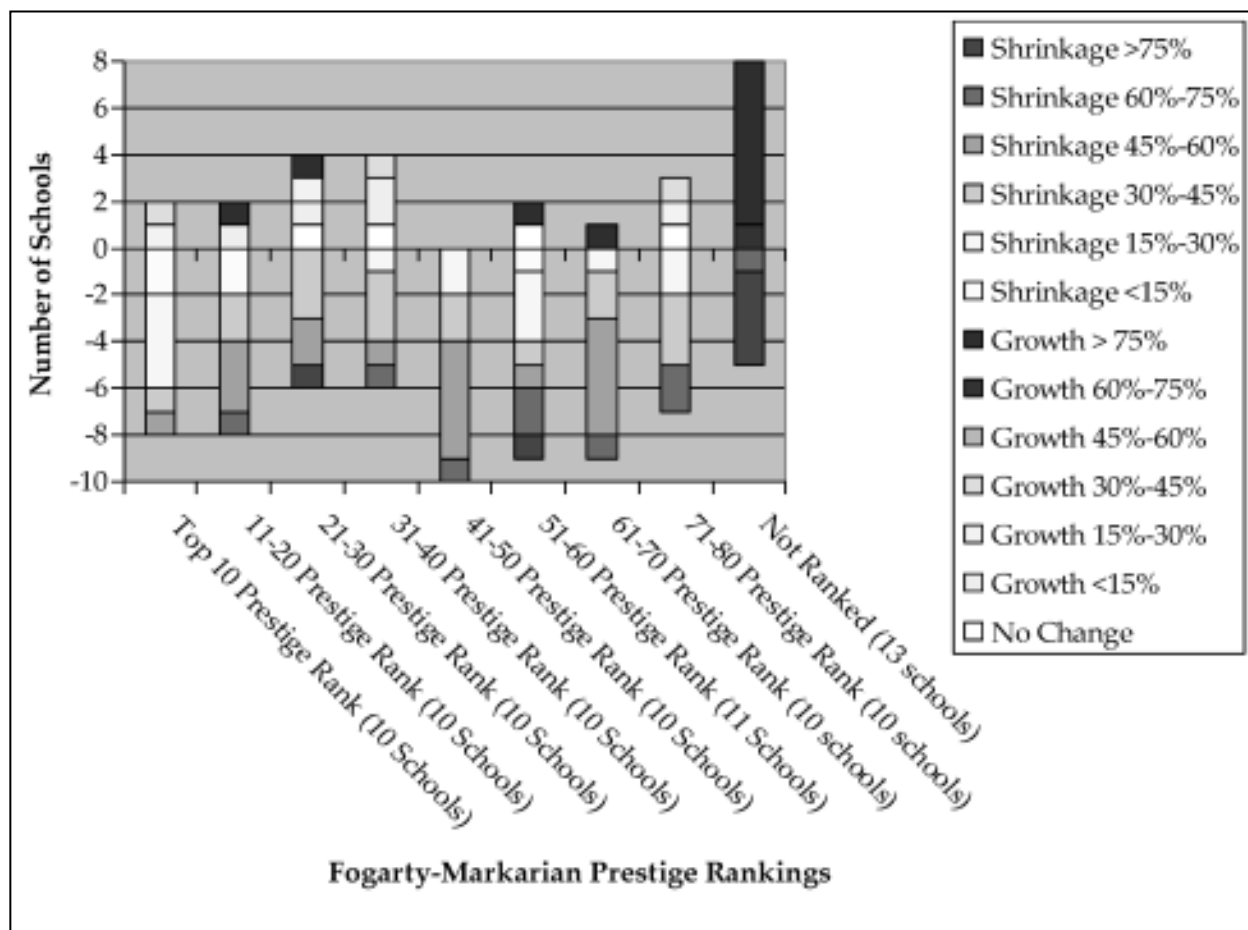
Figure 12: Total Programs Compared to Programs with No Minority Graduates by Program Size

Program Prestige and Graduates

Having examined these patterns according to program size, a further examination is warranted according to program prestige. Fogarty and Markarian (2007) combined the rankings in two prior studies (Hasselback and Reinstein 1995; Fogarty 1995) to create a diverse prestige construct based on pre-1993 information. Using this measure, the programs are divided into nine groups. The last group includes programs that were not rated, presumably because they did not exist at the time the prior studies were undertaken.

Figure 13 shows the number of schools in each prestige grouping that increased and decreased in the number of graduates from the first 10 year period to the second 10 year period.

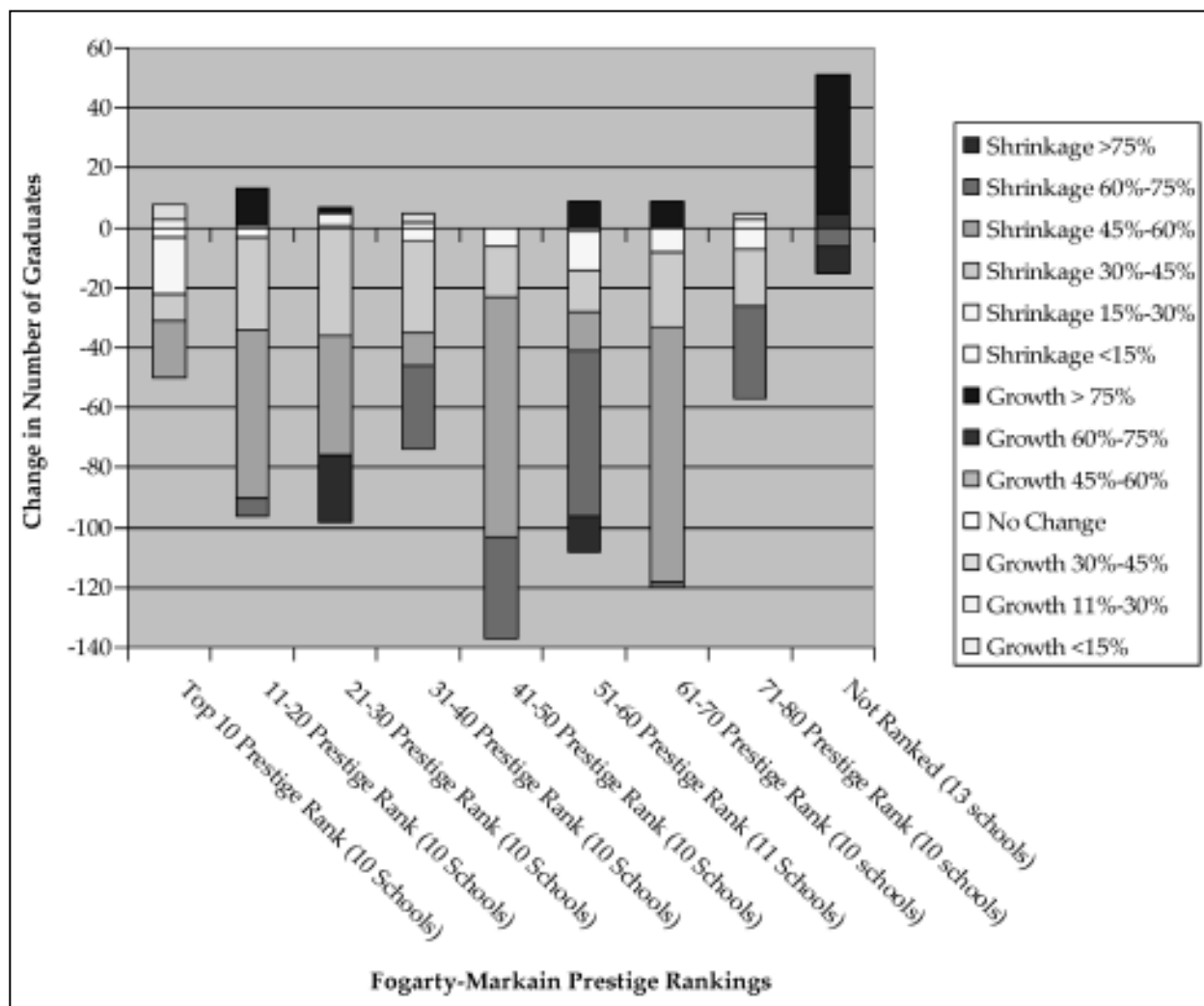
Figure 13: Program Stage by Prestige Rankings



A very different picture emerges when the programs are viewed by prestige rankings. Fewer of the schools with higher prestige rankings had large declines when compared with schools at the lower end of the rankings. The vast majority of the growth in doctoral graduates is coming from programs that were unranked in the Fogarty and Markarian (2007) study, and presumably these are the newer programs for which data did not exist to be used in the earlier prestige rankings. So, the new (unranked) programs create some growth, but the decline in the number of graduates is fairly consistent across various levels of prestige groups.

Figure 14 shows the change in the number of graduates in each prestige grouping. The decline in the number of graduates from the top 10 ranked schools was relatively modest compared to those further down the rankings. Most of the decrease in graduates is from schools in the lower middle of the rankings (41-70), with a smaller but still substantial decrease in the upper middle rankings (11-40).

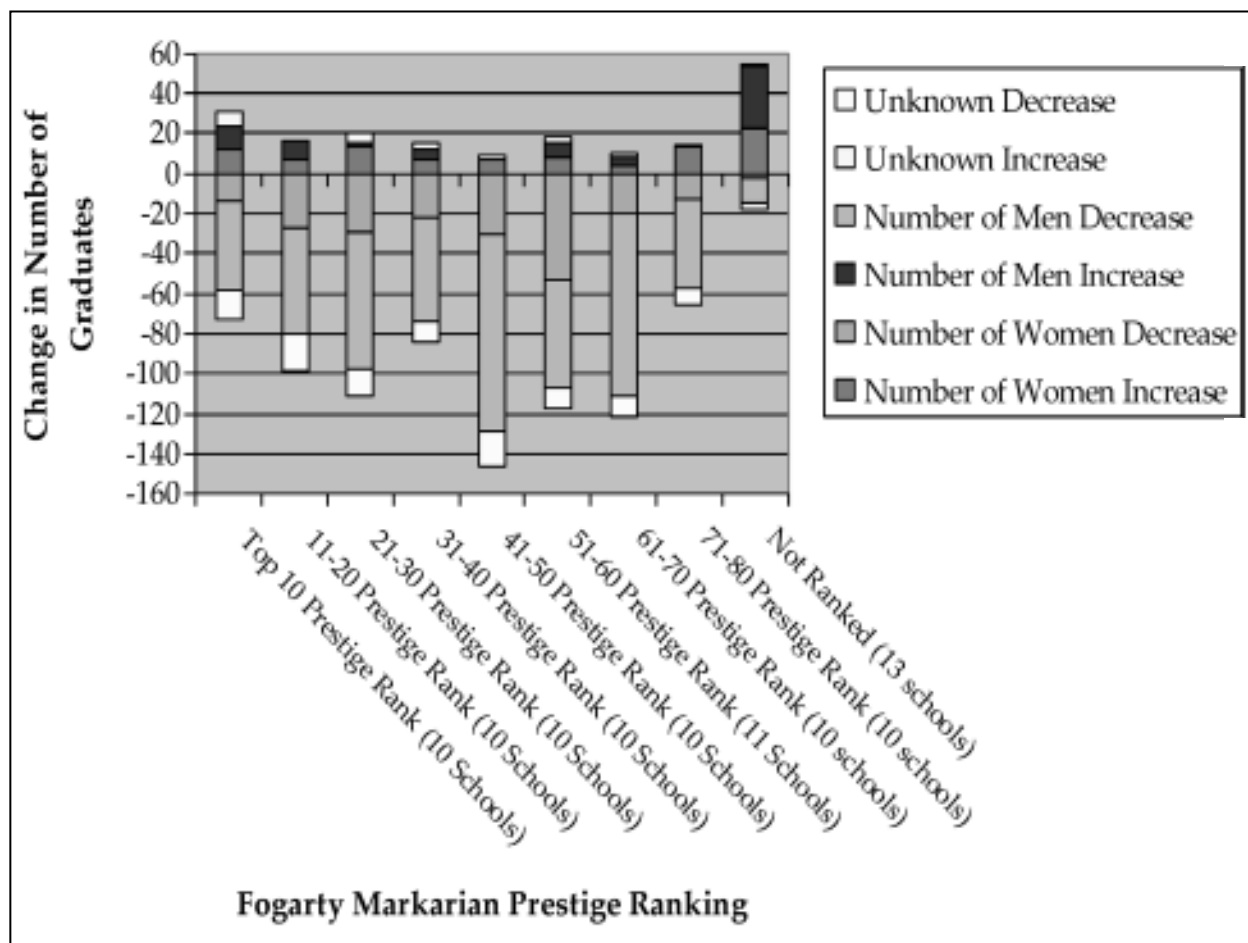
Figure 14: Change in Graduates by Prestige Rankings



Prestige and Gender

This prestige measure can be further described using gender and minority data. Figure 15 shows the changes in male and female graduates by prestige ranking groups. Increases in women are present in every prestige group and relatively similar in size. Decreases are also present in all prestige categories. In the highest and lowest prestige categories and the programs that were not ranked the increases in women exceed the decreases but in all other categories the decreases in women exceed the increases. In all categories, except unrated programs, the decrease in men far exceeds the increase in men.

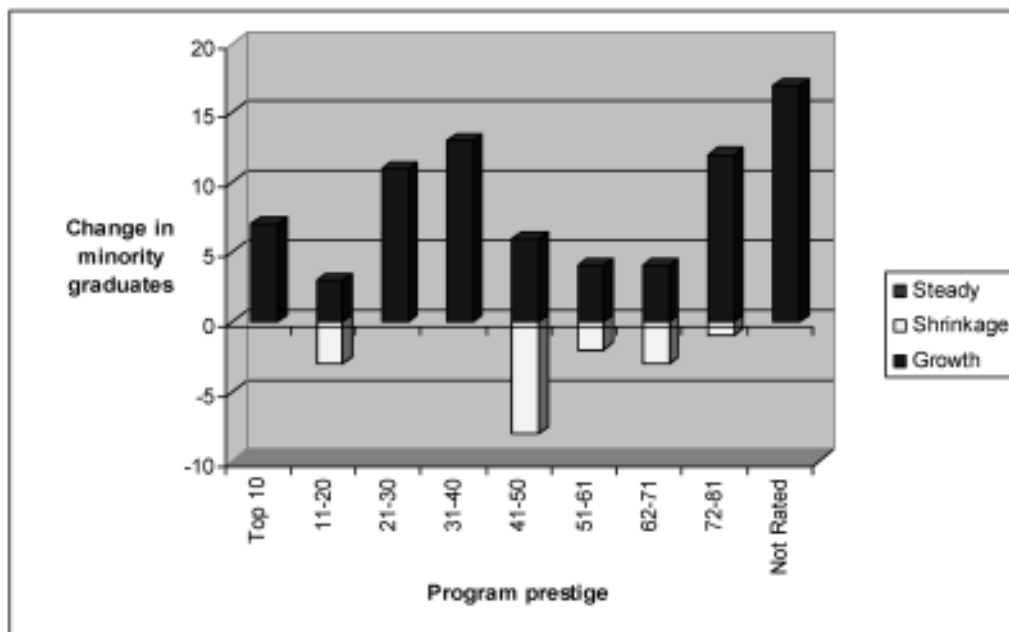
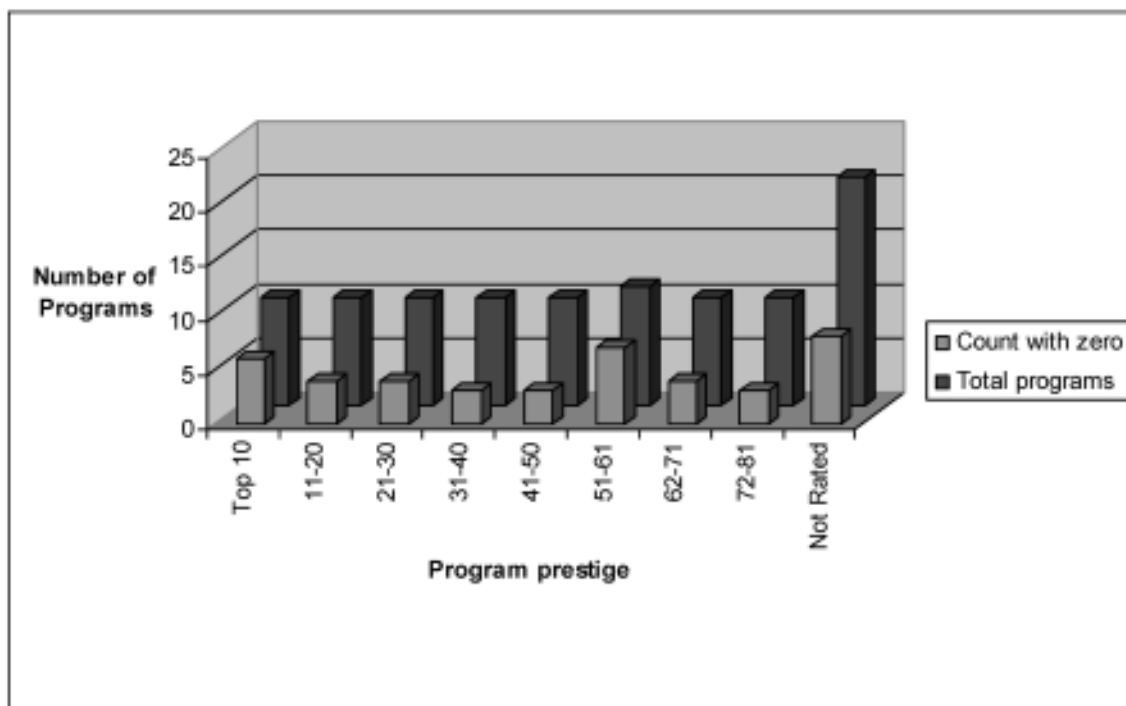
Figure 15: Change by Gender and Prestige Ranking



Minorities and Prestige

This prestige measure can be further described using gender and minority data. Figure 16 illustrates only the underrepresented minority graduates according to prestige group and whether the programs are shrinking, steady or growing. Note that no programs appear to have kept the numbers of minority graduates steady from the first decade to the second. The growing programs' minority graduates increases far outnumber the decreases in minority graduates of the shrinking programs.

Figure 16, however, does not give a complete picture of minorities according to prestige groups. Figure 17 compares the total number of programs in each prestige group to the number of programs that do not appear to have any underrepresented minority graduates in the 20 year period. So, a significant number of programs have not graduated minority graduates. These programs span the range of prestige groups. The unrated programs have a higher total and a higher number of no-minority programs. However, many of these unrated programs are very small, graduating only one or a few Ph.D. students.

Figure 16: Change in Minority Graduates by Program Prestige**Figure 17: Comparison of All Programs and Those with No Minority Graduates by Prestige**

Observations and Unanswered Questions

This analysis uses unique and extensive data on accounting doctoral graduates to show that the changes in programs are not uniform whether considered by size or by prestige. While new programs have been created, their volume of graduates is not large enough to replace the established programs' decline in volume of graduates. With regard to overall trends, the shrinking programs outnumber both the growing programs and the steady state programs. In general, the new programs are growing, by default, and the older, larger programs, in general, tend to be shrinking.

The majority of the programs with steady graduation numbers are in the middle to smaller size range. This leads to a number of questions: Why are half of the doctoral programs reducing the number of Ph.D. students they have been graduating? Why are most larger programs (40-79 graduates in two decades) shrinking? Is it a funding issue? Is it a choice on the part of these programs to be smaller? Is it a lack of senior faculty mentors to advise graduate students and direct dissertations?

With regard to gender, the number of male graduates has been falling for the past two decades, much more sharply than the slight decline in the number of female graduates. The net decrease in male graduates is spread across the board, except for the largest programs and the smaller ones. Why are men less and less interested in pursuing accounting doctoral studies? The decrease in female graduates is similarly spread across the middle sizes of programs but the net decrease (i.e. few programs with growth in female graduates) is pronounced for the programs toward the larger end (50-79 graduates in two decades). Why are relatively fewer women attracted to or recruited by these relatively large programs?

With regard to minorities, clearly the accounting doctoral market is falling short on recruiting minorities. The small bit of good news is the recent uptick in minority graduates, as well as the increase in graduates across different program sizes. The impact of the PhDProject seems obvious. However, many programs, including a few large programs and many in the smaller half, have not graduated any underrepresented minorities during the last twenty years. What more can be done to attract African-Americans, Hispanic Americans and Native Americans to careers in accounting academia?

With regard to prestige, all of the prestige groups have seen a net decrease in graduates from the first decade to the second. The only group with a net increase is the group of programs that were not rated, presumably the newer programs without enough history to have data for the prestige calculations used by Fogarty and Markarian (2007). The higher levels of shrinkage are in the middle 75% of prestige groups. The highest prestige and lowest prestige groups have smaller decreases in graduates than the intermediate prestige groups. Clearly the problem of decreasing numbers of accounting doctoral graduates is not centered on any one prestige group but is a widespread problem. The newer, unranked programs are not educating enough graduates to overcome the net decreases in graduates from all the other programs.

Given these results, some big picture questions still remain to be investigated: What can be done to train more doctoral graduates? How long will this high demand phase last? How can more qualified applicants be attracted to accounting doctoral studies? How can more minorities be attracted to accounting doctoral studies?

Proposed Future Research

Clearly, much research remains to be done. Hopefully, accounting academicians will become interested in this problem that so concerns us all and will start researching these difficult questions. To this end, this final section describes specific areas for research.

Why are the larger programs uniformly shrinking? Are some programs just too large? Have schools determined that moderately sized or small sized doctoral groups perform better or are in some other way better or desirable? Very few programs that graduate, on average, more than one graduate per year, are actually growing. Almost every program, in fact, that graduates more than one person per year is shrinking. Future research should examine this phenomenon and identify whether large size, or some related characteristic that is commonly found in large programs, is a detriment to long term program success and why.

Why are all the increases in graduate output coming from smaller programs? About half of the smaller programs (<15 graduates in 20 years) are providing all the growth in numbers of graduates, while the other half of small programs are shrinking in similar patterns to the large programs, which are uniformly shrinking. So, what are these small but growing programs doing right? What characteristics distinguish these growing small programs from their shrinking but similarly-sized counterparts? Future research should survey these programs, comparing a broad range of program features for the purpose of identifying demographics of successful small programs. This information may help new programs and endangered programs find paths toward success.

Can we investigate those who are choosing not to pursue doctorates in accounting to find out why? This is most difficult. However, the questions remain. Why are males earning fewer and fewer degrees? Females, while declining in total, have seen increases in the smaller programs (programs graduating less than 18 in 20 years). Of course, this could be the result of changes in recruiting practices over time since many of the smaller programs are also newer programs. Perhaps many of these programs have been working hard to attract more female students. Future research should examine the recruiting practices of doctoral programs to identify what methods of recruitment characterize those programs who have been recruiting most successfully.

Similarly, a significant portion (more than 40%) of accounting doctoral programs have not graduated any under-represented minorities in the past two decades (1987-2006). Discussions with doctoral program directors suggest this is due, in part, to the difficulty in recruiting these minority candidates. Future research should examine the recruiting practices of doctoral programs to identify what methods of recruitment characterize those programs successfully recruiting minorities.

Growth with regard to prestige of schools, appears to be greatest at schools with programs that are too new to have been ranked in the Fogarty and Markarian (2007) study which used rankings from the early to middle 1990s. Clearly, high prestige schools do not have a corner on the growth market. What are the newer growing programs doing to attract students that is different from more established, high prestige programs? Obviously, these schools are attracting students (accounting for most of the growth among an otherwise dismal picture). An examination of recruitment practices should shed light on how the recruitment practices of these unranked but growing programs differ from the ranked established programs.

When further parsing the prestige groups by gender, the biggest area of growth for both males and females is among the unranked, and presumably newer, programs. Similarly, the unranked and lowest ranked program groups, along with the middle ranking programs (21-40) show the most success in increasing minority graduates. Minorities do not appear to be attracted equally by the full range of programs by prestige. Further research should examine how applicants, both minority and non-minority, choose between programs. A survey of current and recent graduates on this topic should provide insight into the factors motivating program choice. Understanding how future doctoral graduates choose their programs will help struggling programs identify areas to target for change.

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