

PERFORMANCE PREDICTORS IN A GRADUATE ACCOUNTING PROGRAM

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ABSTRACT

We explore the validity of Graduate Management Admission Test (GMAT) scores and grade point averages (GPAs) for predicting comprehensive student performance in an accelerated-cohort masters of accountancy (MA) program from 2002 through 2009. We confirm findings of prior studies that graduate accounting student performance increases in GMAT scores and undergraduate GPAs; however, undergraduate GPA is significant only for U.S. students. International student performance is overwhelmingly explained by language ability, as measured by GMAT verbal and analytical writing scores. When performance is defined as job placement with a public accounting firm after graduation, we find no significant association between performance and either GMAT scores or undergraduate GPA. Additionally, the factors that are significantly associated with obtaining a job in public accounting differ for U.S. and international students. These findings may have implications for admission decisions and curriculum design of U.S. graduate accounting programs.

The academic community has studied extensively the predictors of student performance in undergraduate accounting and MBA programs, but has extended little attention to predictors of success in masters of accountancy (MA) programs. Growth of MA programs and increasing enrollments of international students in U.S. graduate schools warrant an examination of predictors of student success for a new population of graduate business students. This chapter focuses attention on the factors that predict student performance in a graduate accounting program and examines whether the predictors differ for U.S. and international students studying at one U.S. university.

Student success is of obvious importance to graduate accounting students. The graduate programs and accounting firms admitting and hiring these students have vested interests in their success as well. A master's degree in accounting allows students to meet the 150-hour education requirement in effect in almost all states and is valuable in securing a job in public accounting. Accounting firms depend on universities to admit qualified applicants, whether U.S. or international, and prepare them for careers in a constantly changing business environment. If international students differ markedly from U.S. students in terms of preparation or language ability or if standardized admissions tests have differing validity for U.S. and international students, graduate accounting programs may need to adjust curricula or admissions criteria.

This chapter tests whether the standard predictors of performance in prior validity studies, grade point average (GPA) and Graduate Management Admission Test (GMAT) scores, are effective in predicting student performance in a graduate program in accounting. In addition to using an academic measure of student performance, this chapter specifies a market measure of student performance: success in securing a job in public accounting upon graduation. The chapter tests validity for all students in an accelerated-cohort MA program from 2002 through 2009. As large numbers of students in the program are international students, we are able to test the hypothesized relationships for both U.S. and international students.

We find that GMAT scores and undergraduate GPA are positively, significantly associated with program performance for the entire sample of MA students; however, significant predictors of performance are different for U.S. and international students. International student program performance is associated primarily with measures of communication skills and is unrelated to undergraduate GPA. When we explore the factors associated with obtaining a job in public accounting, we again find significant differences between U.S. and international graduates in our

program. In spite of their higher scores overall on GMAT admission exams and overall performance in the graduate program, international students are less likely to be hired in public accounting than their domestic counterparts. Success in obtaining a job with a public accounting firm increases significantly in MA GPA, but only for international students.

HYPOTHESIS DEVELOPMENT

Enrollment in MA programs in the United States generally has been increasing since the 1980s. According to Reigle (2008, p. 27) in a study commissioned by the American Institute of Certified Public Accountants (AICPA), 26% of accounting degrees granted in 2006–2007 are master's degrees compared to fewer than 13% just 10 years earlier. At the same time, increasing numbers of foreign students are applying to and matriculating in U.S. graduate programs. The Council of Graduate Schools (2007) reports a 7% increase in international students studying in the United States in 2007 across all disciplines, including 15% and 14% increases in students from China and India, respectively. International students are increasingly attracted to study in U.S. business schools. Although there are no specific data concerning graduate accounting program enrollments, first-time enrollment of international students in U.S. business programs increased by 12% from 2006 to 2007, a rate of increase higher than for any other field of study.

Most U.S. graduate schools of business rely on several inputs, including undergraduate GPAs, GMAT scores, ranking of undergraduate institution, work experience, and recommendations, to assess applicants to their programs. For international students, it may be difficult to rank undergraduate institutions and verify work experience and recommendations. The graduate school, if it chooses to admit international students, may place greater reliance on quantifiable indicators of student ability; thus, the validity of GPAs and GMAT scores in predicting student performance becomes a critical factor in student selection by MA programs.

Measures of Performance

Although no prior studies examine predictors of performance for graduate accounting students or international students in a U.S. graduate program, student performance in business schools is a well-studied subject. Representative studies are summarized in Table 1. Most of the studies

Table 1. Summary of Literature Reviewed.

Authors	Nationality	Major/Program	Variable of Interest	Predictors of Student Success
Adams and Hancock (2000)	US	MBA	GGPA	GMATQ, GMATV, UGPA, work experience, gender, full-time status, business undergraduate major, international
Braunstein (2002)	US	MBA	GGPA	GMATQ, GMATV, UGPA, gender, work experience, UG business degree
Braunstein (2006)	US	MBA	GGPA	GMAT, UGPA, gender, work experience, institution, undergraduate business degree
Dockweiler and Willis (1984)	US	Accounting (UG)	UGPA	Grade in introductory accounting classes, age
Drennan and Rohde (2002)	US	Accounting (UG)	Course grade in advanced management accounting	ESL, performance in introductory managerial accounting
Eddey and Baumann (2008)	Australia	MBA	GGPA	GMATQ, GMATV, UGPA, age, business UG, language, country of origin
Fish and Wilson (2007)	US	One-year cohort MBA	GGPA	GMATQ, GMATV, UGPA, experience, international student, business UG, Canadian
Gist et al. (1996)	US	Accounting (UG)	Grade in entry-level graduate accounting course	Math grades, cumulative UGPA, SAT, gender, area of study
Hancock (1999)	US	MBA	GGPA	GMAT, gender
Hyde et al. (1990)	US	Primary through UG	Various math test scores	Gender, age, cognitive level of test
Jackling and Anderson (1998)	Australia	Accounting (UG)	Course grade in introductory managerial accounting	Full-time student, gender, language, entrance score, Year 12 accounting course
Keef and Rousch (1997)	New Zealand	Accounting (UG)	Exam grades in intermediate management accounting course	Gender, race, self-concept ratings

Koh and Koh (1999)	Singapore	Accounting (UG)	UGPA	Math grades, gender, work experience, high school accounting
Koys (2005)	Bahrain, Hong Kong, Czech Republic	MBA	GGPA	GMAT, UGPA
Krausz, Schiff, Schiff, & Van Hise (1999)	US	MBA	Course grade in entry-level graduate accounting	Prior accounting work experience, course work in accounting
Krausz et al. (2000)	US	MBA	Course grade in entry-level graduate accounting	GMATQ, GMATV, prior accounting course work, work experience, UGPA
Krausz et al. (2005)	US	MBA	Course grade in entry-level graduate accounting	GMAT, TOEFL, work experience, course work in accounting
Kuncel et al. (2001)	US	Various graduate degrees	GGPA	GRE, UGPA, language, area of study
Owens and Talento-Miller (2006)	US	MBA concentrations	Mid-program GGPA	GMATQ, GMATV, AWA, UGPA
Stolzenberg and Relles (1991)	US	MBA	GGPA	GMAT, English fluency, nationality
Talento-Miller (2005)	Western Europe	MBA	GGPA	GMATQ, GMATV, AWA, gender, UG major, language, nationality
Talento-Miller and Rudner (2005)	US, Asia, Europe, Canada	Executive MBA, MBA	Mid-program GGPA	GMATQ, GMATV, AWA, UGPA
Tyson (1989)	US	Accounting (UG)	Course grade in entry-level graduate accounting	Cumulative GPA, SAT scores, gender, achievement motivation
Ward et al. (1993)	US	Accounting (UG)	Course grade in entry-level graduate accounting	Math and English ACT scores
Wright and Bachrach (2003)	US	MBA	GPA in core courses	GMAT, gender
Yang and Lu (2001)	US	MBA	GGPA	GMATQ, GMATV, UGPA, age, gender, language

Notes: ACT, American College Testing; AWA, analytical writing assessment portion of graduate management admission test; ESL, English as a second language; GGPA, graduate grade point average; GMAT, score on graduate management admission test; GMATQ, score on quantitative portion of graduate management admission test; GMATV, score on verbal portion of graduate management admission test; GRE, score on graduate record exam; SAT, score on scholastic aptitude test; UGPA, undergraduate grade point average.

(26 out of 27) use GPA, usually in one course or in one year of study, as a measure of student performance. Consistent with the prior literature, this study also uses GPA as a measure of student performance; however, our measure of GPA is the program GPA at the end of study (GGPA). This allows a more comprehensive measure of performance than most prior studies and includes grades in introductory courses taken early in the program as well as more abstract capstone courses taken near program end.

Student GPAs at one institution may not be comparable to those at other graduate programs, because either grading standards or student populations differ; however, in using a sample of students in one graduate program, the inconsistencies in grading across many faculty at numerous universities and the concomitant effects on student GPAs are reduced. Whether GPA is measured for students in one graduate program or many, GPA still is a measure of performance generated by graduate programs and may be biased to achieve program and university goals.

To eliminate program bias in the measure of student success, we specify a second measure of student performance: job placement. Reigle (2008, p. 35) finds that in 2007, 70% of MA students began their careers with public accounting firms. As the first job for most MA students is in public accounting, we examine the factors associated with student placement in public accounting firms at graduation. The variable of interest in this case is a categorical variable taking the value of 1 if the student is placed in a public accounting firm upon graduation and 0 otherwise (PAJOB).

Prior Ability and Performance

Numerous studies examine the effectiveness of standardized test scores and GPAs in predicting graduate student performance, and most find a positive, significant association. In a meta-analysis, Kuncel, Hezlett, and Ones (2001) conclude GRE scores and undergraduate GPA are significant in explaining graduate performance across multiple disciplines. Edey and Baumann (2008), Fish and Wilson (2007), Braunstein (2006), Talento-Miller and Rudner (2005), Yang and Lu (2001), and others confirm that GMAT math and verbal scores and undergraduate GPA are significant in predicting performance in MBA programs.

There is little evidence that GMAT scores are valid in predicting performance in graduate accounting programs. Owens and Talento-Miller (2006) find GMAT scores and GPAs have a significant association with the performance of students who indicate they plan to study accounting, but

qualify their results because they cannot confirm whether the professed accounting students actually major in accounting in graduate school. Krausz, Schiff, Schiff, and Van Hise (2000) find that MBA performance in the first graduate accounting class is strongly related to quantitative GMAT scores, but present no evidence relating GMAT scores and performance in graduate accounting programs.

Three prior studies suggest that GMAT scores may have differential validity for U.S. and international students. For instance, Koys (2005) and Talento-Miller (2005) find GMAT scores have greater validity in explaining performance of foreign students enrolled in MBA programs in their own countries than for U.S. students studying in the United States. Talento-Miller and Rudner (2005) suggest that components of GMAT exams have differential effects in explaining student performance. Specifically, they find the GMAT quantitative component has greater validity for U.S. programs than for non-U.S. programs. These studies test GMAT validity for students in graduate programs in Bahrain, Singapore, Australia, the Czech Republic, and western Europe.

While exploring differences in test validity for U.S. and international programs, prior studies do not separately examine test score validities for international and U.S. students enrolled in U.S. graduate schools or graduate accounting programs. Accordingly, this chapter tests for an association between prior ability and performance in an MA program using scores on the quantitative (GMATQ) and verbal (GMATV) graduate management admissions tests and student undergraduate GPA (UGPA). It tests whether the associations are different for international and U.S. students by using an indicator variable (INTERNAT) taking the value 1 when a student is international and 0 when from the United States. If the findings of prior studies can be projected to the mixed U.S./international sample in this study, we expect GMATQ to be more significant in explaining U.S. student performance than that of international students.

Language Ability

Increasing numbers of international students in U.S. graduate programs could alter the association between both entrance exam scores and GPAs and student performance due to language ability. Previous research explores the effects of language ability on student performance with mixed results. In studies largely focused on native English speakers, there is no strong association between language skills and performance. Ward, Ward, Wilson, and Deck (1993) and Jackling and Anderson (1998) report no language effects on performance in principles and managerial accounting courses,

respectively. Drennan and Rohde (2002) find language ability is not significant in explaining student performance in lower-level managerial classes, but is significant and inversely related to performance in advanced managerial accounting. All of these studies are for undergraduate accounting majors.

Several studies report contrary results for graduate MBA students. Eddy and Baumann (2008) find business students more proficient in English perform better in an Australian graduate program. Fish and Wilson (2007) report a positive relationship between GMAT verbal score and performance in a one-year cohort MBA class. Yang and Lu (2001) find language and GMAT verbal scores affect performance in MBA programs. Stolzenberg and Relles (1991) conclude that English fluency and country of origin jointly affect academic performance.

In the one study examining performance in an introductory graduate accounting class, Krausz, Schiff, Schiff, and Van Hise (2005) report that GMAT scores, rather than Test of English as a Foreign Language (TOEFL) scores, are more significantly related to performance for a sample of international MBA students. They suggest that language skills may be less significant in explaining performance in an introductory accounting class, which may be more quantitative in orientation and in testing. They further suggest that language skills may be more significant in predicting performance in accounting classes requiring written communications. Finally, Talento-Miller and Rudner (2005) find the analytical writing assessment (AWA) component of the GMAT has greater predictive validity for performance in non-U.S. programs than for non-U.S. programs.

The coursework in this study ranges from introductory accounting classes to communications classes to auditing classes. We include student scores on the AWA portion of the GMAT specifically to capture any association between language ability and program performance. Students who perform well on the AWA would presumably have better communications ability and be able to succeed in a U.S. graduate accounting program. If findings from prior studies are predictive for our mixed student sample, we expect AWA to be more significant in explaining international student performance than U.S. student performance.

Demographic Factors and Performance

Many studies control for demographic factors affecting student performance, such as gender, work experience, and age, and therefore, we include

several control variables in this study. The effects of these demographic factors on performance are mixed in studies of both graduate and undergraduate business programs.

Gender

As reported by the AICPA in 2008, 52% of master's of accounting graduates are women and a small, but increasing, percentage of partners at CPA firms are women. Women succeed in school and in the workplace alongside their male counterparts; yet, the literature still finds some effects of gender on academic performance. Braunstein (2002) finds that women perform better in MBA programs than do men; however, Hancock (1999) and Wright and Bachrach (2003) report that although females in their studies have significantly lower GMAT scores than male MBAs, there is no significant difference in overall MBA performance.

Studies on gender effects in undergraduate accounting programs also generate mixed conclusions. Tyson (1989) reports that women perform better in introductory accounting classes. Conversely, Koh and Koh (1999) report that men in Singapore perform better than women in undergraduate studies. The significance of gender in this study is likely confounded with age and experience factors, because men in Singapore are subject to mandatory national service requirements. The results also may suggest that differences in performance attributed to gender are actually ethnic effects. Indeed, Hyde, Fennema, and Lamon (1990) find an association between gender and performance in mathematics and suggest the effect of gender may vary across ethnic groups. Other studies find no association between gender and undergraduate accounting student performance. After controlling for academic ability, Jackling and Anderson (1998) and Keef and Roush (1997) find no gender effect on performance for undergraduate accounting students.

This chapter uses a dummy variable (GENDER) having the value 1 if a student is female and 0 if male to examine the association between student gender and performance in an MA program. The expected association between gender and performance in this study is ambiguous for both U.S. and international students.

Age and Experience

Age often is hypothesized to be associated with student performance, but prior studies have complicated and often conflicting findings. For example, Eddy and Baumann (2008) report that younger students outperform their older counterparts in an Australian graduate program. Conversely,

Dockweiler and Willis (1984) find that performance increases in student age on entering undergraduate accounting studies. They conclude that age indicates greater maturity and contributes to student success.

Other studies examine the effects of work experience on student performance. Adams and Hancock (2000) report a significant positive association between years of work experience and performance in an MBA program. Koh and Koh (1999) find a positive association between experience and performance in their study of undergraduates in Singapore, but they also report better performance for male students who are older on average than female students. The variables representing age and experience in their study are likely highly correlated.

Jackling and Anderson (1998) report that part-time undergraduate students in Australia perform better in managerial accounting classes than do full-time students, but do not control for age. The authors suggest part-time students are older than full-time students and may exhibit greater levels of motivation and goal orientation. They also surmise that part-time students are employed full-time, often in accounting, but present no data to support these interpretations.

Work experience and age appear to be close proxies for each other in many of these prior studies, likely introducing collinearity and creating modeling misspecification. As most of the students sampled in this study have little relevant work experience, we include only the variable AGE to control for the effects of student age on performance in the MA program. The expected association between age and performance in this study is ambiguous for both U.S. and international students.

Quantitative Undergraduate Degree

Few studies examine the effects of undergraduate degrees on student academic performance. Braunstein (2006) finds students with undergraduate business degrees outperform those without a business background, whereas Eddey and Baumann (2008) find no significant difference in performance attributable to an undergraduate business degree. There is greater evidence that a student's quantitative ability influences performance in accounting coursework. In studies of undergraduates, a consistent, positive association exists between math grades and performance in accounting courses, including principles, intermediate, and managerial classes. For example, Ward et al. (1993) conclude that math ACT scores are positively related to performance in principles classes. Gist, Goedde, and Ward (1996) report a positive association between calculus grades and performance in accounting principles classes. Finally, Koh and Koh (1999) report that students with

strong math backgrounds perform significantly better than students with weaker math preparation.

We include QUANT to control for a quantitative undergraduate degree. QUANT takes the value of 1 if the student has an undergraduate degree in fields such as engineering, mathematics, computer science, or science and 0 otherwise. We expect a positive association between quantitative undergraduate degree and performance in this study for both U.S. and international students. We include no variables measuring either prior work experience or undergraduate business degree, as the MA program examined is designed for students without previous business experience or education.

THE STUDY

Our program is unique in many respects. Students submit GPAs, GMAT scores, and statements of purpose as part of the application process and all are personally interviewed to ensure they have the basic communication ability to succeed in the program. Students proceed through the program in an accelerated cohort group. Each class is taught in 2½ weeks and students take classes sequentially. All students are exposed to the same set of faculty and classes, reducing course selection effects. Table 2 lists the courses

Table 2. Required Classes in MA Program.

Core concepts in accounting
Financial reporting and analysis I
Accounting information systems
Financial analysis and markets
Financial reporting and analysis II
Management accounting and control systems
Tax factors of business and investment decisions
Auditing concepts and practice
Forensic accounting
Professional communications and relationships I
Accounting practicum I (internship in public accounting)
Accounting practicum II (internship in public accounting)
Legal and ethical environment of accounting
Organizational behavior, structure and strategy
Taxation of individuals and pass through entities
Financial reporting and analysis III
Advanced accounting information systems
Professional communications and relationships II
Business analysis and valuations using financial statements

required of all students in the MA program. Students do not work during the 13-month program, but complete a paid internship as a component of the program.

The program is designed for students with no prior experience in accounting, although some students have taken introductory accounting before matriculating. Fewer than 6% of students have undergraduate degrees in business, and all but one of these are management or international trade majors. Approximately 52% of students have degrees in engineering, economics, mathematics, computer science, or science, and the remainder of students have undergraduate degrees in humanities and liberal studies. Over the seven class cohorts examined in this study, 42% are international students, allowing tests of language effects on performance. International student enrollments range from 25% in the 2003/2004 academic year to 65% in 2007/2008. Approximately 77% are women and the average age is slightly under 29. The mean GMAT score of matriculating students is 645, and 24% of these students already have one master's degree before entering the MA program. The mean program GPA across the seven years examined is 3.58. Average program enrollment is 26 students during the years studied. Summary statistics for all 184 students enrolled in the master's program for the 2002/2003 through 2008/2009 academic years are given in [Table 3](#).

Tests for Differences between U.S. and International Students

We perform one-way analysis of variance (ANOVA) tests to determine whether mean GPAs, GMAT scores, and demographic variables differ significantly between international and domestic students. In addition to summary statistics for all students, [Table 3](#) presents means for U.S. and international students and significance levels of the one-way ANOVA tests. We find significant differences in all values except GMAT verbal scores, undergraduate GPAs, and students with quantitative undergraduate degrees. Mean values for graduate GPA, GMAT total, GMAT quantitative, and undergraduate GPA are significantly higher for international students than for domestic students, indicating that international students in this program generally perform at a higher level than do U.S. students. These significant differences may suggest international students are better prepared academically on entering the program.

Demographic variables also differ significantly for U.S. and international students and could contribute to differing program performance.

Table 3. Summary Statistics and ANOVA Tests for Differences in Means for All Enrolled Students.

Variable	All Students ^a	U.S. ^a	International ^a	Probability
GGPA	3.58 (0.25)	3.52 (0.25)	3.66 (0.21)	0.0001
GMAT	645.35 (63.01)	620 (86.39)	679 (46.52)	0.0001
GMATV	70.82 (17.88)	71.88 (22.33)	69.37 (18.25)	0.3476
GMATQ	74.00 (19.42)	62.80 (19.23)	89.22 (14.92)	0.0001
UGPA	3.42 (0.33)	3.40 (0.33)	3.45 (0.22)	0.2638
AWA	4.63 (0.73)	4.72 (1.51)	4.50 (1.14)	0.0486
QUANT	0.52 (0.50)	0.55 (0.50)	0.49 (0.50)	0.4236
AGE	28.86 (5.64)	27.64 (6.34)	30.53 (3.99)	0.0005
GENDER	0.77 (0.42)	0.66 (0.48)	0.91 (0.29)	0.0001
GRAD DEG	0.24 (0.43)	0.07 (0.25)	0.49 (0.50)	0.0001

Notes: AGE, student age upon matriculating; AWA, the analytical writing exam score; GENDER, 1 if female; GGPA, graduate grade point average; GMAT, the GMAT total score; GMATQ, the GMAT quantitative exam score; GMATV, the GMAT verbal exam score; GRAD DEG, 1 if a student already has a graduate degree upon matriculating; QUANT, 1 if quantitative undergraduate degree; UGPA, the undergraduate grade point average.

^aMeans with standard deviations in parentheses.

International students are three years older than U.S. students and are more likely to be female. On average, half of international students already have a graduate degree on entering the MA program. The significantly higher performance of international students likely indicates that students who have already successfully completed graduate studies in another field are older and more experienced students.

Performance Measure: Graduate Grade Point Average

The following ordinary least square (OLS) model is estimated to determine the validity of GMAT scores and GPA in predicting student performance in our graduate accounting program:

$$\begin{aligned}
 \text{GGPA} = & \text{CONSTANT} + B_1 \text{ GMATV} + B_2 \text{ GMATQ} + B_3 \text{ AWA} \\
 & + B_4 \text{ UGPA} + B_5 \text{ AGE} + B_6 \text{ GENDER} + B_7 \text{ INTERNAT} \\
 & + B_8 \text{ GRAD DEG} + B_9 \text{ QUANT} + B_9 \text{ 2003} + B_{10} \text{ 2004} \\
 & + B_{11} \text{ 2005} + B_{12} \text{ 2006} + B_{13} \text{ 2007} + B_{14} \text{ 2008} + e
 \end{aligned} \tag{1}$$

where GGPA = graduate grade point average; CONSTANT = constant; GMATV = score on GMAT verbal exam; GMATQ = score on GMAT quantitative exam; AWA = score on analytical writing assessment test; UGPA = undergraduate grade point average; AGE = student age; GENDER = 1 if female, 0 if male; INTERNAT = 1 if international student, 0 otherwise; GRAD DEG = 1 if other graduate degree, 0 otherwise; QUANT = 1 if quantitative undergraduate degree; YEARS = six dummy variables taking the value of 1 or 0 for academic years 2002/2003 through 2007/2008.

We control for age, gender, status as an international student, whether a student is seeking a second graduate degree and whether a student has a quantitative undergraduate degree. We also include a series of six dummy variables to control for year effects.

Results of OLS regression of GGPA on the hypothesized explanatory variables are summarized in [Table 4](#). We find that GMAT verbal scores are positively, significantly associated with student performance across the MA program. The AWA score also is significant in explaining the variance in student performance. As prior studies have suggested, undergraduate GPA is significant in explaining performance. There is no significant association between GMAT quantitative scores and performance, likely indicating that admissions processes screen out applicants with lower scores and reduce variability in this predictor. Neither age nor gender has a significant association with student performance, but students seeking a second graduate degree demonstrate significantly lower performance. When performance is measured by graduate GPA, international students perform better than do domestic students in our program.

In [Table 4](#), we also present the results of separate regressions for domestic and international students. Overall, program performance of U.S. students increases significantly in GMAT verbal scores, but is not significantly associated with AWA scores, confirming the findings of [Talento-Miller and Rudner \(2005\)](#). Of more significance for U.S. students is undergraduate GPA. Performance is increasing significantly in age for U.S. students, perhaps indicating that older students are more focused or mature in their goals.

Table 4. OLS Regression of Graduate GPA on Explanatory Variables.

Variable	Coefficient		
	All students	Domestic	International
CONSTANT	2.375 (0.212)**	2.192 (0.267)**	3.068 (0.386)**
GMATV	0.003 (0.001)**	0.002 (0.001)*	0.003 (0.001)*
GMATQ	0.001 (0.001)	0.002 (0.001)	-0.001 (0.002)
AWA	0.020 (0.014)	-0.004 (0.017)	0.067 (0.026)*
UGPA	0.173 (0.050)**	0.204 (0.066)**	0.086 (0.085)
AGE	0.003 (0.003)	0.007 (0.004)*	-0.0030 (0.006)
GENDER	0.025 (0.039)	0.030 (0.046)	-0.006 (0.088)
INTERNAT	0.161 (0.049)**	-	-
GRAD DEG	-0.098 (0.044)*	-0.015 (0.088)	-0.063 (0.058)
QUANT	0.049 (0.034)	0.084 (0.044)	0.03 (0.055)
2003	0.049 (0.065)	0.039 (0.091)	0.150 (0.106)
2004	0.172 (0.067)*	0.144 (0.094)	0.208 (0.109)
2005	0.129 (0.062)*	0.161 (0.093)	0.094 (0.084)
2006	0.126 (0.062)*	0.215 (0.095)*	0.031 (0.082)
2007	-0.54 (0.063)	-0.056 (0.091)	-0.062 (0.093)
2008	-0.002 (0.058)	0.022 (0.098)	-0.039 (0.069)
F-statistic	5.43**	4.33**	1.88*
R ²	0.342	0.400	0.312
Number of observations	184	106	78

Notes: AGE, student age upon matriculating; AWA, the analytical writing exam score; GENDER, 1 if female; GGPA, graduate grade point average; GMAT, the GMAT total score; GMATQ, the GMAT quantitative exam score; GMATV, the GMAT verbal exam score; GRAD DEG, 1 if a student already has a graduate degree upon matriculating; INTERNAT, 1 if an international student; QUANT, 1 if quantitative undergraduate degree; UGPA, the undergraduate grade point average; YEARS, a series of dummy variables for years 2003 through 2008. Standard errors in parentheses.

**Significant at 1% level.

*Significant at 5% level.

The performance of international students is most significantly related to measures of English ability. For instance, GMAT verbal scores and AWA scores are significantly, positively associated with student program performance. No other predictors, whether performance or control variables, are significant for international students. This may suggest that quantitative skills for international students are generally high, with language ability being the main factor distinguishing among students. Unlike the significant association between GPA and performance for U.S. students, there is no significant association between undergraduate GPA and graduate performance for international students.

Pearson correlation coefficients for independent variables are summarized in Table 5 and indicate a high correlation between GMATQ and international student status. The foregoing regressions are reestimated omitting GMATQ and produce similar coefficients and significance levels with one exception. When GMATQ is omitted from the specification, QUANT is positively related to performance at a 5% level.

Performance Measure: Job in Public Accounting

Students may consider a job in public accounting, rather than GPA, as the best measure of their performance. Using logistic regression, we examine the association between the same independent variables specified in Eq. (1) (GMATV, GMATQ, AWA, UGPA, AGE, GENDER, INTERNAT, GRAD DEG, and QUANT) and PAJOB, where PAJOB takes the value 1 when a student is hired by a public accounting firm at the end of MA studies and 0 otherwise. Because the sample spans seven years and variable job climates, dummy variables again are included to capture year effects in hiring. Regression results are summarized in Table 6. The only variables significant in explaining student success in obtaining a job in public accounting for all students are gender and quantitative GMAT scores. Female students are hired significantly more than are men. Success in landing a job in public accounting decreases in GMATQ scores. Neither GMATV nor undergraduate GPA is significant in explaining student success. When the equation is tested solely for U.S. students, similar results are obtained. When estimation is performed for international students, no hypothesized variables are significant in explaining success in obtaining a job in public accounting.

As many variables significant in explaining GGPA have no significant association with student success in obtaining a job in public accounting, we perform one additional set of regressions. We test whether performance in the MSA program, as measured by graduate GPA, is significant in

Table 5. Pearson Correlation Coefficients.

	GENDER	AGE	QUANT	INTERNAT	UGPA	GRAD DEG	GMATV	GMATQ	AWA
GENDER	1								
AGE	-0.029	1							
QUANT	-0.015	0.012	1						
INTERNAT	0.292	0.254	-0.059	1					
UGPA	0.031	0.008	0.118	0.083	1				
GRAD DEG	0.075	0.219	0.039	0.484	0.280	1			
GMATV	-0.140	0.006	0.008	-0.070	0.016	0.095	1		
GMATQ	0.190	0.093	0.070	0.675	0.135	0.360	0.027	1	
AWA	-0.156	-0.036	-0.062	-0.146	-0.082	0.033	0.269	-0.076	1

Notes: AGE, student age upon matriculating; AWA, the analytical writing exam score; GENDER, 1 if female; GMATQ, the GMAT quantitative exam score; GMATV, the GMAT verbal exam score; GRAD DEG, 1 if a student already has a graduate degree upon matriculating; INTERNAT, 1 if an international student; QUANT, 1 if quantitative undergraduate degree; UGPA, the undergraduate grade point average.

Table 6. Logistic Regression of PAJOB on Explanatory Variables.

Variable	Coefficient		
	All students	Domestic	International
CONSTANT	0.581 (2.610)	1.054 (4.405)	-1.881 (4.745)
GMATV	0.010 (0.011)	0.012 (0.017)	0.007 (0.019)
GMATQ	-0.028 (0.014)*	-0.051 (0.024)*	0.006 (0.024)
AWA	0.184 (0.167)	0.155 (0.249)	0.599 (0.326)
UGPA	-0.303 (0.634)	0.384 (1.000)	-0.956 (1.058)
AGE	-0.017 (0.040)	-0.073 (0.064)	0.014 (0.079)
GENDER	1.290 (0.508)**	1.597 (0.717)*	-0.381 (1.310)
INTERNAT	-0.510 (0.621)	-	-
GRAD DEG	0.066 (0.544)	-0.326 (1.427)	0.042 (0.710)
QUANT	-0.135 (0.413)	-1.539 (0.805)	0.956 (0.631)
2003	0.921 (0.707)	1.757 (1.211)	0.754 (1.183)
2004	2.160 (0.795)**	3.676 (1.419)**	2.632 (1.365)
2005	3.464 (0.931)**	-	2.345 (1.047)*
2006	3.363 (0.850)**	3.606 (1.461)*	3.513 (1.288)**
2007	2.724 (0.819)**	3.912 (1.492)**	1.983 (1.120)
2008	1.876 (0.640)**	3.056 (1.367)*	1.587 (0.794)*
Log-likelihood	-83.647	-33.943	-39.183
Chi-square statistic	49.92**	32.78**	24.58*
R ²	0.230	0.326	0.239
Number of observations	184	91	78

Notes: AGE, student age upon matriculating; AWA, the analytical writing exam score; GENDER, 1 if female; GMATQ, the GMAT quantitative exam score; GMATV, the GMAT verbal exam score; GRAD DEG, 1 if a student already has a graduate degree upon matriculating; INTERNAT, 1 if an international student; PAJOB is 1 if student hired in public accounting; QUANT, 1 if quantitative undergraduate degree; UGPA, the undergraduate grade point average; YEARS, a series of dummy variables for years 2003 through 2008. Standard errors in parentheses.

**Significant at 1% level.

*Significant at 5% level.

explaining student hiring success. We control for age, gender, international status, and quantitative background. Results are summarized in Table 7.

Graduate GPA, gender, and status as an international student are significant predictors of landing a job in public accounting, whereas age and a quantitative undergraduate degree are not. Success in obtaining a public accounting job increases in graduate GPA and for females, but decreases for

Table 7. Logistic Regression of PAJOB on Explanatory Variables.

Variable	All Students	U.S.	International
CONSTANT	-7.174 (3.253)*	-2.843 (4.394)	-21.946 (7.491)**
GENDER	1.076 (0.488)*	1.555 (0.659)*	0.298 (1.062)
AGE	-0.016 (0.038)	-0.057 (0.057)	0.034 (0.080)
INTERNAT	-1.576 (0.515)**	-	-
QUANT	-0.357 (0.402)	-1.898 (0.761)*	0.660 (0.658)
GGPA	1.950 (0.892)*	0.972 (1.271)	5.212 (1.734)**
2002	1.013 (0.671)	2.100 (1.129)	0.321 (1.146)
2003	1.723 (0.703)*	3.076 (1.234)*	1.026 (1.034)
2004 ^a	3.230 (0.906)**	-	2.371 (1.060)*
2005	3.194 (0.826)**	3.049 (1.353)*	4.104 (1.341)**
2006	2.885 (0.816)**	3.852 (1.474)**	3.193 (1.439)*
2007	1.874 (0.643)**	2.652 (1.315)*	2.229 (0.896)*
Log-likelihood	-83.708	-36.381	-35.978
LR Chi-square	49.80**	27.90**	-35.978**
R ²	0.229	0.277	0.301
Observations	184	91	78

Notes: AGE, student age upon matriculating; GENDER, 1 if female; GGPA, graduate grade point average; INTERNAT, 1 if an international student; PAJOB, 1 if placement in public accounting after graduation; QUANT, 1 if quantitative undergraduate degree; YEARS, a series of dummy variables for years 2003 through 2008.

^aThe dummy variable for 2004 predicts success perfectly for domestic students, thus the variable and 15 observations were not used in the logistic analysis for U.S. students.

international students. When the sample is divided between U.S. and international students, different results are obtained. Gender is a significant factor for U.S. students, and hiring decreases for U.S. students having a quantitative undergraduate degree. Graduate GPA is not significant for U.S. students but is highly significant for international students. Actually, the only factor significant in explaining success in obtaining a public accounting job for international students is graduate GPA.

CONCLUSION AND LIMITATIONS

Our regressions of comprehensive student GPA in a master's of accounting program on an array of hypothesized variables confirm findings of prior studies that graduate accounting performance is explained by GMAT scores and undergraduate GPAs; however, these traditional measures of performance are valid primarily for U.S. students. We find different predictors of performance for international and domestic students centering largely on language ability. GPAs are insignificant in explaining international student performance, perhaps suggesting that admission decisions should de-emphasize undergraduate GPAs for international students and focus more closely on measures of language ability. Quantitative GMAT scores also are insignificant for international students sampled, likely because admission processes screen out students with lower scores, reducing variability in GMATQ.

We find no significant effects of gender for either U.S. or international students, suggesting that gender effects are lessening with increased participation of women in graduate accounting programs and in the accounting profession. Age has a significant association with performance only for U.S. students, perhaps because U.S. students in our sample are younger, on average, than international students.

When performance is measured by landing a job in public accounting, U.S. students fare better than do international students in spite of lower average graduate GPAs. Graduate GPAs are not significant in explaining variance in job placement for U.S. students, but are the only significant factor for international students. Being female and having a quantitative undergraduate degree are the only factors significant in explaining variance in job placement for U.S. students.

Our results confirm that different factors are associated with success of U.S. and international students, whether success is measured by program GPA or by securing a job in public accounting at the end of graduate

studies. Our analysis would be richer if we could obtain additional data. Winning a job in public accounting is likely influenced by factors other than academic performance, such as interview skills and perceived student interest. A better externally generated measure of performance would be student pass rates on CPA exams. Additionally, our analysis could more directly measure language ability with student scores on the TOEFL. These data are not available for most of the students in our sample; however, the personal interview process in our program lessens the dependence on TOEFL scores to assess language ability. In programs too large to conduct interviews, TOEFL scores may be used as a surrogate and may alter the relative significance of our predictor variables. Admission rankings of undergraduate programs would allow a more nuanced analysis of the effects of undergraduate GPA on MA program performance, but these data also are unavailable. Finally, our international students are largely Asian, and future studies could examine whether our findings can be generalized to other international students.

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