Strength of High School Accounting Qualification and Student Performance in University-Level Introductory Accounting Courses in Hong Kong

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ABSTRACT. Prior studies on the effects of high school accounting qualification on student performance in university-level introductory accounting courses have focused primarily on the United States and other Western countries. For this article I examined (a) the generalizability of U.S. results to Hong Kong and (b) the effect of strength of high school accounting qualification, by incorporating different accounting strength variables in the U.S. model. Results show that students who had passed accounting in a public examination at the end of either the fifth or seventh forms all significantly outperformed students without high school accounting qualification in the first, but not the second, introductory accounting course. Despite differences in culture and educational system, determinants of student performance in university introductory accounting courses were found to be similar to those in the United States.

The effect of prior study of accounting in high school on student performance in a first university-level accounting course has received much attention from accounting educators because of its policy implications for enrollment criteria, course structuring, and student counseling. If previous exposure to accounting provides an advantage, and students with and without accounting exposure are put in the same class, several problems may arise. For instance, students who studied accounting in high school may find the course offers relatively little new knowledge and may lose interest in the subject. On the other hand, students with no prior study of accounting may be evaluated unfairly if the evaluation standard is influenced by the superior performance of students with prior accounting knowledge.

In the United States, Eskew and Faley (1988) developed a comprehensive model and found that high school accounting exposure improved performance on the first university-level accounting course. However, studies in other countries using different models have produced mixed findings (e.g., Keef, 1988 in New Zealand and, Mitchell, 1985, 1988 in the United Kingdom). Because prior studies have been confined mainly to the United States and other Western countries, it would be interesting to study the effect of high school accounting qualification on university accounting performance in countries with different cultural and educational systems. In this study, I investigated the generalizability of Eskew and Faleyís results to Hong Kong. A second objective of this study was to examine the effect of the strength of high school accounting qualification on student performance.

Previous studies have made recommendations on curriculum development and course design based on the assumption that students with a strong accounting qualification would outperform students with a weak accounting qualification. For example, Bergin (1983), Mitchell (1985), and Eskew and Faley (1988) suggested that a pre-introductory course for students with inadequate or no prior exposure to accounting be provided. Schroeder (1986) and Eskew and Faley (1988) suggested that differently structured introductory accounting courses be offered to students with strong or appropriate school accounting backgrounds. However, what defines a strong or adequate accounting qualification? Previous studies have focused primarily on the presence or absence of high school accounting qualification, and no comprehensive study on the strength effect has been performed to date. Although Keef (1991, 1992) examined the effects of the level and amount of prior accounting study, grade in high school accounting was not included, and other factors that could affect student performance in the first university accounting course were not controlled, which may affect the validity of the results. To develop an equitable enrollment or exemption policy, we must have a better understanding of the effects of the different measures of strength of school accounting qualification. In this study, I examined the effect of high school accounting strength by

incorporating different strength variables (level, grade, and duration of school accounting study) in the Eskew and Faley (1988) model.

Previous studies on the effect of prior school accounting exposure have produced mixed results. Baldwin, Wasson, and Howe, researching in the United States in 1978, and Keef, researching in New Zealand in 1988, both found that prior accounting exposure carried no benefits. On the other hands, Jacoby (1975), Baldwin and Howe (1982) and Bergin (1983), all reporting on the United States, found that high school accounting education provided an advantage only in the early stages of the first university-level accounting course. Mitchell (1985, 1988) found that, in the United Kingdom, the benefits of school accounting were apparent only in the quantitative examinations. On the other hand, studies in the United States (Smith, 1968; Schroeder, 1986; Eskew & Faley, 1988; Doran , Bouillon, & Smith, 1991); in Australia (Farley & Ramsay, 1988); and in New Zealand (Keef & Hooper, 1991) showed that high school accounting exposure improved performance on the first university-level accounting course.

Most researchers have attributed the variance across studies to disparities in the education systems and methodologies[1] used. However, differences in the strength of school accounting qualification possessed by the students also are likely to have accounted for some of the variability in findings. My aim in this study was to investigate whether student performance in the university introductory accounting courses depends on the strength of high school accounting qualification.

High School Education in Hong Kong

In this study, students with a high school accounting qualification were defined as those who had passed accounting in one or more of the public examinations. These examinations occur at two different levels. The Hong Kong Certificate of Education Examination (HKCEE) is a public examination taken by students at the end of the fifth form (grade 11). The Hong Kong Advanced Level Examination (HKALE) is taken at the completion of the seventh form (grade 13). U.K. accounting textbooks and principles are used in schools.

The syllabi of HKCEE and HKALE were similar in content, covering topics in financial accounting such as the basic concepts of accounting, the accounting cycle, preparation of financial statements, and partnership and company accounts. In essence, these were similar to the topics covered in the first accounting principles course at the university level. It was expected that students who had passed accounting in one of the public examinations would have an advantage over other students in the first university accounting course. However, the adoption of U.S. accounting textbooks and principles at the university level would reduce the benefit of common syllabi to a certain extent.

The University Introductory Accounting Courses

The study was based on data collected for the two first-year accounting principles courses (Accounting I and Accounting II) offered at the Chinese University of Hong Kong. Accounting I was only offered in the first semester, and Accounting II in the second semester. Completion of Accounting I was a prerequisite for Accounting II. Both courses were compulsory for students in the Faculty of Business Administration. Accounting I consisted of basic accounting concepts, recording of transactions, preparation of financial statements, and accounting for various asset items. Accounting II consisted of financial accounting, covering topics on partnerships and corporation accounting (about 40%), and management accounting and costing systems (about 60%).

Each course consisted of three 45-minute lectures and two 45-minute tutorials per week for 13–14 weeks and 10 weeks, respectively. Accounting I and II were divided into nine and eight sections,[2] respectively, and were taught by five lecturers. Because a quota was set for each section, class size was approximately the same across sections; therefore, section size was not a variable in this study.

Students enrolled in Accounting I and II were assessed through different components weighted as follows: midterm examination, 30%; final examination, 45%; homework, 10%; and quizzes, 15%.

All class sections used the same textbook and had the same final examination which contained two parts. Part 1 consisted of multiple-choice questions, representing 20% of the total examination points. Part 2 was mainly computational problems. About 10% of Part 2 consisted of essay questions. In format, the examination combined elements of the U.S. and U.K. examinations (see Eskew & Faley, 1988, for the U.S. format and Mitchell, 1988, for the U.K. format for the first university-level accounting course examination).

Method

The student performance model developed by Eskew and Faley (1988) in the United States was used, with some minor modifications to suit the situation of Hong Kong. Eskew and Faley (1988) found that performance in the first university-level accounting course was significantly and positively related to the students' academic aptitude, past academic performance, effort/motivation, previous accounting experience, and previous related experience. Doran et al. (1991), using the model developed by Eskew and Faley, also showed that gender has a significant effect on student performance in Accounting Principles I and that the grade in Accounting Principles I was an important determinant of performance in Accounting Principles II. In addition, Mitchell (1985, 1988) found some evidence that a student's numerical ability may affect performance in accounting. All of these factors except previous related experience[3] were included in the model to control for their effects.

In this study, the strength of school accounting was indicated by three attributes: (a) the level of public examination in which the student had passed accounting (level), (b) the grade achieved in high school accounting (grade), and (c) the number of years of prior school accounting study (duration). Because HKCEE and HKALE are taken at different forms

(or grades), they should differ in intensity and scope of coverage. A review of the syllabi confirmed this. Students who had achieved higher grades in school accounting and students who had studied accounting at school for a longer period were more likely to have mastered the subject better. Therefore, the level, grade, and duration of school accounting study were expected to be positively related to student performance in university introductory accounting courses.

Based on the preceding discussion, the following regression models are specified for Accounting I and Accounting II:

Accounting I:

$$AC1_i = B_0 + B_1CEE_i + B_2ALE_i + B_3GRADE_i + B_4DURATION_i + B_5HSGPA_i + B_6AM_i + B_7BA_i + B_8GENDER_i + B_9MATHS_i + B_{10}E/C_i + B_{11}INSTRUCTOR_i + e_i$$

Accounting II:

$$AC2_i = B_0 + B_1CEE_i + B_2ALE_i + B_3GRADE_i + B_4DURATION_i + B_5HSGPA_i + B_6AM_i + B_7BA_i + B_8GENDER_i + B_9MATHS_i + B_{10}E/C_i + B_{11}INSTRUCTOR_i + B_{12}GPA_i + B_{13}AC1_i + e_i$$

where :

AC1 = grade in Accounting I;

AC2 = grade in Accounting II;

CEE = 1, if HKCEE was the highest level of public examination in which the student had passed accounting; 0, otherwise;

ALE = 1, if HKALE was the highest level of public examination in which the student had passed accounting; 0, otherwise;

GRADE = grade in HKCEE accounting; Grade A = 5 to Grade E = 1;[4]

DURATION = the number of years of school accounting study;

HSGPA = average of grades in English, Chinese, Mathematics, and four other best subjects in HKCEE;

AM = 1, if the student intended to major in accounting; 0, otherwise;

BA = 1, if the student was from the Faculty of Business Administration; 0, otherwise;

GENDER = 1, if the student was a female; 0, otherwise;

MATHS = grades in General Mathematics in HKCEE;

E/C = 1, if the student had come from an English school; 0, otherwise;

INSTRUCTOR = 1, if the student was in the section(s) taught by Instructor i; 0, otherwise;

GPA = overall grade point average of the first term;

e_i = a random error term.

The dependent variables for Accounting I and Accounting II are the students' grades[5] in Accounting I and II, respectively. Grades were awarded in descending orders as A, A-, B+, B, B-, and so on up to D. Students who failed the course were graded with an F. Grades A to F were given numbers 10 to 0.

For the high school accounting strength variables, "level" is represented by two dummy variables, CEE and ALE, which were coded 1 if HKCEE and HKALE, respectively, were the highest level of public examination in which the student had passed accounting, and 0 otherwise. "Duration" is indicated by the number of years of high school accounting study, and "grade" is indicated by the grade achieved in accounting taken in the HKCEE examination. Grades achieved in accounting in HKALE were not used because only 25 of the 68 students with school accounting qualification had taken the HKALE, whereas all students with school accounting qualification had taken the HKCEE.

There is no standardized measure of academic aptitude such as SAT or ACT scores in Hong Kong, as there is in the United States. Because all students must take the HKCEE, these results may be regarded as an appropriate surrogate measure of academic aptitude.[6] In this study, academic aptitude/performance was measured by the average of the grades received in English, Chinese, Mathematics, and four other subjects with the best results (HSGPA).[7]

Eskew and Faley (1988) used the number of quizzes taken by the students as a measure of effort. This variable is not relevant in this study because normally all students except one or two took all the quizzes. Therefore, two other variables were used to indicate effort/motivation in this study. The first variable was accounting major (AM), because students who intended to major in accounting were expected to be more highly motivated in an accounting course than students who intended to major in other areas. This variable was used in Doran et al. (1991) as one of the measures of academic aptitude. The second variable used was business administration students (BA)—because Introductory Accounting I was required for all business students, they were expected to be more highly motivated and to perform better than nonbusiness students.

Gender was represented by an indicator variable, GENDER, which was coded 1 if the student was a female; 0, if otherwise. Student numerical ability was measured by the grade achieved in HKCEE General Mathematics (MATHS). It should be noted that because HSGPA had incorporated the grades of HKCEE Mathematics, MATHS could only measure the excess effect of numerical ability on performance.

College grade point average was only included in the model for Accounting II because over 90% of the sample for Accounting I were first-year students for whom college grade point average was not available in the first term.

Two additional factors were included to account for the particular situation in Hong Kong:

1. "English" school or "Chinese" school: In Hong Kong, English or Chinese may be used as the language of instruction. About 90% of all secondary school students studied in schools where English was the medium of instruction, whereas the rest studied in Chinese schools.

In my experience, students from Chinese schools often have difficulty understanding the university accounting course materials, which are all in English. Thus, given that the performance of students from Chinese schools may be hampered by a language disadvantage, a dummy variable was included that was equal to 1 if the student had come from an English school and 0 if he or she was from a Chinese school.

2. Instructor: Because the students were taught by five different lecturers, four dummy variables were included in the original model to indicate the instructors. In the final model, only one instructor dummy variable was included

because the coefficients of all the other instructor variables were statistically insignificant at the 5% level.

The Data

The samples consisted of full-time students enrolled in Introductory Accounting I and II at the Chinese University of Hong Kong, 479 in Accounting I, and 405 in Accounting II. They were mainly first-year students from the Faculty of Business Administration, who were required to take the course. Students from other faculties took the course as an elective. All of these students completed the whole course because they were allowed to drop it only within the first 2 weeks of each term. The students' grades were obtained from the lecturers, aand information on HKCEE and HKALE results and other independent variables, such as student profile and school study of accounting and intended academic major, were collected by administering a questionnaire during accounting tutorial sessions.

Over 80% of the students in both courses returned completed questionnaires. Three students who were repeating the course and two students who had studied accounting for 1 year at the collegiate level were excluded from the analysis. In addition, 15 students who had studied accounting for a few months (usually in summer or evening courses) but did not take accounting in any of the public examinations also were excluded. After eliminating these students and those with incomplete information, a final sample of 349 and 287 observations was obtained for Accounting I and II respectively. Descriptive information on the samples appears in Table 1.

Results

Accounting I

The regression results appear in Table 2. The adjusted R-squared was 0.35, which compares well with those reported in the U.S. studies (0.54 in Eskew & Faley, 1988, and 0.30 in Doran et al., 1991). The F statistic was 17.92 ($df = 11, 337$), significant at the 0.0001 level. Tests indicated that the regressions were well specified.[8]

Among the school accounting strength variables, only the level variables were significant. GRADE and DURATION did not have significant impact on student performance in Accounting I, which can be explained by the high multicollinearity between GRADE and DURATION, as indicated by the VIF values of higher than the critical value of 10 (Neter, Wasserman, & Kutner, 1989). On the other hand, despite the presence of multicollinearity, both level variables were significant, indicating the importance of passing accounting in a public examination. Because the insignificance of GRADE and DURATION may be explained by the high correlation between them, two separate regressions were run with GRADE and DURATION eliminated. The level variables remained significant, but not the GRADE or DURATION variable.

Consistent with the findings of Eskew and Faley (1988) and Doran et al. (1991), academic aptitude (HSGPA) and effort/motivation (AM and BA) were significantly and positively correlated ($p < .05$) with student performance in Accounting I. However, GENDER, which was found to have a significant effect in Accounting Principles I in Doran et al. (1991), was not significant in this study. Doran et al. (1991) explained that their finding may have been due to the large number of male engineering students enrolled in Accounting Principles I.

Accounting II

Regression results for Accounting II show that all accounting strength variables were insignificant (see Table 2). This may be explained, in part, by the fact that Accounting II consisted mainly of managerial accounting, which was absent in the school curriculum. Because the insignificance of accounting strength variable may be due to multicollinearity, the model was re-run with GRADE and DURATION excluded, but the "level" variables (CEE and ALE) remained insignificant despite the much

TABLE 1. Descriptive Information of Samples

	No. of students	
	Accounting I	Accounting II
Without school accounting qualification	289	231
With school accounting qualification	60	56
The highest level of public examination in which accounting was taken		
CEE	35	31
ALE	25	25
Grades achieved in HKCEE accounting		
A	22	20
B	21	19
C	13	13
D	4	4
Years of school accounting study		
1	1	1
2	19	15
3	13	13
4	20	20
5	6	6
7	1	1
Intended major		
Accounting	113	109
Nonaccounting	236	178
BA Students	300	287
Non-BA Students	49	—
Male	172	138
Female	177	149
English School	310	251
Chinese School	39	36

lower VIF values (less than two) (results were not reported). The model in Table 2 explains 48.6% of the variation in student performance with an F value of 23.51 ($df = 12, 274$), significant at .0001 level. The higher explanatory power of the model for Accounting II may be explained, in part, by the higher homogeneity of students (all were BA students) and by the inclusion of AC1 and GPA, which were not available for the Accounting I model.

In Accounting II, student performance was mainly determined by overall and related academic performance (GPA, AC1), motivation (AM), and numerical ability (MATHS). This is largely consistent with the findings of Doran et al. (1991).

In contrast to Accounting I, MATHS had a significant positive effect on student performance in Accounting II. Because Accounting II largely consists of management accounting, this is consistent with the results of Mitchell (1988) and Keef (1988), who found that previous study of mathematics provided an advantage in the management accounting section.

Conclusion

The results show that the student performance models established in the United States for Accounting Principles I and II are generally applicable to Hong Kong, suggesting that differences in culture and educational systems do not affect the major determinants of student performance in the introductory course.

Students who had passed accounting in one of the public examinations all outperformed students with no prior accounting qualification in Accounting I but not in Accounting II. Grade achieved in HKCEE and the duration of school accounting study did not have significant effect on student performance. These findings suggest that in determining the exemption criterion or the enrollment policy for differently structured introductory accounting courses, the passing of accounting in one of the public examinations should be the main factor.

The results also indicate that students without school accounting qualification need extra attention and guidance. On the other hand, students with school accounting qualification should be alerted to the fact that the benefits provided by school study of accounting are only short term and will not be carried to Accounting II. Because longer periods of school accounting study provide no additional benefit, high school students wishing to pursue a collegiate accounting degree may be advised to limit their study of school accounting to 2 years and to devote the time thus made available to a broader scope of study.

The findings on the effect of strength of high school accounting qualification are subject to several limitations. First, because students with high school accounting qualification all had more than 1 year of school accounting education except one, the findings of this study may be applicable only to students with more than 1 year of high school accounting exposure. Second, the results may not be generalizable to other universities in Hong Kong. Third, the results may be specific to the students and the education system in Hong Kong. However, despite the differences in students and institutional settings, the findings of this study are generally consistent with those of

TABLE 2. Regression Results

	Accounting I (n = 349) (Dependent variable: Grade in Accounting I)			Accounting II (n = 287) (Dependent variable: Grade in Accounting II)		
Variable	Coefficient	t statistic	VIF	Coefficient	t statistic	VIF
Intercept	–0.635	–0.758	0	–3.181	–3.717	0
CEE	1.675	2.385**	8.579	1.065	1.341	7.416
ALE	1.678	1.724*	8.262	1.366	1.620	7.735
GRADE	–0.032	–0.159	10.655	0.055	0.310	10.064
DURATION	0.191	0.754	12.626	–0.349	–1.573	13.351
HSGPA	1.134	6.417***	1.325	0.187	1.061	1.679
AM	0.481	2.192**	1.203	0.352	1.837*	1.152
BA1	0.590	2.077**	1.111	—	—	—
GENDER	0.019	0.096	1.069	–0.159	–0.881	1.081
MATHS	–0.016	–0.132	1.266	0.404	3.492***	1.320
E/C	1.883	6.078***	1.085	0.032	0.110	1.251
INSTRUCTOR	1.002	4.374***	1.018	0.689	3.465***	1.063
GPA	—	—	—	1.911	5.872***	2.365
ACI	—	—	—	0.255	4.025***	2.419
R^2		0.369			0.507	
Adjusted R^2		0.349			0.486	
F statistic		17.921***			23.509***	
df		(11, 337)			(12, 274)	

*Significant at the .10 level (two-tailed test).
**Significant at the .05 level (two-tailed test).
***Significant at the .01 level (two-tailed test).

previous studies in the United States, indicating the generalizability of the student performance models.

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NOTES

1. For example, Mitchell (1985, 1988) used the nonparametric Mann-Whitney Test, whereas Eskew and Faley (1988) and Doran et al. (1991) used a multiple regression approach. In most of the studies, many of the factors that could affect student performance in the first university accounting course were not controlled.

2. Students enrolled in accounting sections that would fit in their schedule. Therefore, it can be assumed that students were randomly distributed among the different sections.

3. Because over 90% of the students taking Accounting I and II were in the first year, previous related experience such as the number of semester hours of completed college-level math and statistics courses as used in Eskew and Faley (1988), were not available.

4. Grade A in the HKCEE indicates distinction, Grades B and C credits, Grades D and E passes.

5. Grades instead of scores in Accounting I and II were used to measure performance for two reasons:

- Five lecturers taught the courses; therefore, there was likely to be greater variation in scores than grades across sections.
- The Chinese University of Hong Kong provides guidelines on distribution of grades to ensure equitable grading.

6. Although Form Six GPA or Form Seven GPA are more appropriate, they were not available.

7. The average of grades in English, Chinese, Mathematics, and four other best subjects was found to have a much better explanatory power than the average of only English and Mathematics, English and Chinese, or the average of English, Chinese, and Mathematics.

8. Assumption of constant variance was tested with the Goldfeld-Quant test. The calculated F ratio was 0.719, which was not significant at the .05 level. An examination of the residuals and the normal probability plots indicated that the assumptions of linearity and normality were not violated. There was no evidence of outliers, and Cook's distance measures indicated no influential observation.

REFERENCES

Baldwin, B. A., & Howe, K. R. (1982). Secondary-level study of accounting and subsequent performance in the first college course. *The Accounting Review, 57*(3), 619–626.

Baldwin, B. A., Wasson, D. D., & Howe, K. R. (1978). *The effect of homework requirements on student performance in an introductory financial course.* Paper presented at the Western Region American Accounting Association Meeting, Pasadena, California, May 5–6.

Bergin, J. L. (1983). The effect of previous accounting study on student performance in the first college-level financial accounting course. *Issues in Accounting Education*, pp. 19–28.

Doran, B. M., Bouillon M. L., & Smith, C. G. (1991). Determinants of student performance in Accounting Principles I & II. *Issues in Accounting Education, 6*(1), 74–84.

Eskew, R. K., & Faley, R. H. (1988). Some determinants of student performance in the first college-level financial accounting course. *The Accounting Review, 63*(1), 137–147.

Farley, A. A., & Ramsay, A. L. (1988). Student performance in first year tertiary accounting courses and its relationship to secondary accounting education. *Accounting and Finance, 28*(1), 29–44.

Jacoby, C. R. (1975). *The effect of teaching methods and experiences in achievement of business students in the first college level accounting course.* Unpublished Doctoral Dissertation, Pennsylvania State University, University Park, PA.

Keef, S. P. (1988). Preparation for a first level university accounting course: The experience in New Zealand. *Journal of Accounting Education, 6*(2) 293–307.

Keef, S. P. (1992). The effect of prior accounting education: Some evidence from New Zealand. *Accounting Education, 1*(1), 63–68.

Keef, S. P., & Hooper, K. C. (1991). Prior accounting education and performance in a first-level university course in New Zealand. *Accounting and Finance, 31*(1), 85–91.

Mitchell, F. (1985). School accounting qualifications and student performance in first level university accounting examinations. *Accounting and Business Research*, Spring, pp. 81–86.

Mitchell, F. (1988). High school accounting and student performance in the first level university accounting course: A UK study. *Journal of Accounting Education, 6*(2), 279–291.

Neter, J., Wasserman, W., & Kutner, M. (1989). *Applied linear statistical models.* Homewood, IL: Richard D. Irwin.

Schroeder, N. W. (1986). Previous accounting education and college-level accounting exam performance. *Issues in Accounting Education, 1*(1), 37–47.

Smith, J. W. (1968). *Articulation of high school bookkeeping and college elementary accounting.* Unpublished doctoral dissertation. Norman, OK: University of Oklahoma.