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Editor's Forward

I would like to thank all who volunteered to serve as reviewers, particularly those who actually participated in reviewing the articles submitted for publication in the current issue. I would like to also thank Ron Bauerly and Jack Elfrink of Western Illinois University for all the help and assistance they provided me.

The number of papers submitted this year for publication in the Special NAAS Edition of JCBI was much higher than that of last year. Like last year, the articles accepted for publication in this issue are of high quality and tackle important theoretical and practical accounting issues.

In the first article, Mary Stone concludes that student performance on online homework, projects, and overall points in the introductory financial accounting course were not significantly different between the face to face students and the online students. In the second article, Jason Haen and Iris Jenkel found that reward systems have a significant relationship with the willingness of both males and females to report peer cheating. In the third article, Tim Fogarty and Reed Roig conclude that conventional economic modeling of internal capital flows does not explain the difference in divisional performance. In the fourth paper, Matthew Phillips and Andrew Bashore present a new approach for teaching auditing that flows from the practice of auditing in both public accounting and an internal audit function. In the fifth paper, Kel-Ann Eyler and Mimi Ford argue that the federal income tax penalties of marriage maybe exceed its bonuses. In the sixth paper, John Elfrink, Kasing Man, and George Mangalaraj show that university students are deficient in their knowledge of practical financial matters and argue that completion of a course in personal finance does not appear to raise literacy but taking courses in finance and economics improve financial literacy among senior business students. In the seventh article, Sandra, Michael and David Byrd conclude that students choosing to attempt online review questions, in addition to the assigned homework, score higher on assessment exams in a financial accounting course. In the final paper, Tim Fogarty and Paul Goldwater studied the gendered patterning of communication on a discussion board used as part of an introductory cost accounting course and their results show that females are much more enthusiastic participants and much more likely to request assistance, and to pepper their free-form commentary with an emotional subtext.

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PERFORMANCE DIFFERENCES BETWEEN ONLINE AND TRADITIONAL STUDENTS IN PRINCIPLES OF ACCOUNTING

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The current research examines the differences in performance between face to face and online students on course assignments. Simonson's Equivalency Theory (1999) predicts that equivalent learning environments would lead to equivalent performance. The theory was supported by three of the four measures of performance in this current study. Only performance on exams was marginally significantly different for face to face students and online students. Implications from this research suggest that in most circumstances the medium of communication does not affect the student's performance. Future studies need to focus on how universities can effectively utilize existing and developing technologies to enhance the educational experience, including both communication of knowledge from faculty to student and performance measures from student to faculty.

Introduction

As universities strive to provide a quality educational experience, they need to understand the factors that lead to student success. Prior research has examined the demographic, attitudinal, and environmental factors which motivate students towards or distract from successful performance in college classes (Maksy, 2012). Because of the increased use of online instruction, a new environmental factor needs to be analyzed. The environment of the student in the course; face to face or online, could also be a motivating or distracting factor in the student's success. The demand and the need for online instruction have been growing in the past decade. Both the types of courses and the types of students utilizing online instruction have expanded, as well as the percentage of courses offered via an online format. Ongoing concern exists in most disciplines over the equality of the education received in online courses compared to face to face courses. The purpose of this

research is to compare the performance of students in an online introductory college accounting course with the performance of students in a traditional introductory college accounting course.

Literature Review

Research in distance education is vast. Recent offerings of online courses, and online degrees fueled the streams of research. The disciplines studied in the research, the types of students covered by these studies, and the outcomes measured by these studies are very broad.

Many different academic disciplines have utilized online education programs. Disciplines that have been studied include: marketing (LaBay and Comm 2004), industrial technology (Mupionga, Nora, Yaw 2006), statistics (Al-Asfour 2012), (Bowen, Chingos, Lack, and Nygren 2012), management information systems (Larson and Sung 2009), 8th grade algebra

(Heppen et al 2011), philosophy (Smith and Palm 2007), information systems (Nguyen and Zhang 2011), health care discipline (Cook et al 2008), professional development in corporations (Pang 2009), college of business and college of education (Gibson, Harris, Colaric 2008), accounting students (Garza 2011), (Chen, Jones, Moreland 2013), and business courses (Davies and Graff 2005).

In addition to academic discipline, research also includes a wide variety of academic levels. The levels studied range from 8th graders (Heppen et al, 2011), to MBA students (Cao, Park, Honda 2010), Masters students (Ferguson & Tryjankowski 2009), corporate professionals (Pang 2009), medical students and professionals (Cook et al.2008), and faculty (Gibson, Harris, Colaric 2008). The majority of prior research analyzed undergraduate college students.

The effect or outcome studied also varied over the prior research. Outcomes measured include academic performance (Cao, Park, Honda 2010), (Larson and Sung 2009), (Bowen, Chingos, Lack, and Nygren 2012), (Cook et al 2008), retention (Pontes and Pontes 2012), student satisfaction (Al-Asfour 2012), (Larson and Sung 2009), (Cook et al 2008), predispositional attitude towards online class (LaBay and Comm 2004) (Mupinga, Nora, Yaw 2006), faculty satisfaction (Larson and Sung 2009), instructor compensation costs (Bowen, Chingos, Lack, and Nygren 2012), faculty acceptance (Gibson, Harris, Colaric 2008), end of year algebra assessment (Heppen, et al 2011), performance on assignments and exams (Ferguson & Tryjankowski 2009), attitudes towards process and outcomes (Nguyen and Zhang 2011), amount of interaction online and relation to performance (Davies and Graff 2005),

antecedents to student satisfaction and to successful learning outcomes (Eom, Wen, Ashill 2006), knowledge gained and pedagogical effectiveness (Pang 2009), (Chen, Jones, Moreland 2013) and perceived cognitive effort and perceived communication ambiguity (Garza 2011).

Some of the research found that distance education had a positive effect on the outcome being examined, while other studies showed a negative effect, and some showed no effect at all. A common concern among faculty is whether the online class is equivalent to the face to face class. Simonson, Schlosser, and Hanson (1999) suggest that distance education should be built on the concept of equivalency of learning experiences. The authors state, "The more equivalent the learning experiences of distant learners are to those of local learners, the more equivalent will be the outcomes of the educational experiences for all learners." (Simonson et al, 1999).

Equivalency Theory

Simonson et al (1999) developed equivalency theory in light of the technological advances and the surge in online classes offered in the 1990s. Their theory proposes that greater equivalency of learning experiences of distance learners and local learners leads to greater equivalency of educational outcomes for all. While the delivery medium may be different, the learning experiences will be equivalent for both groups of students, and this will lead to equivalent performance for both groups of students.

Lapsley et al (2008) used Equivalency Theory to study the performance of students in online and traditional courses of Human Resource Management, a junior level course. The

authors incorporated Simonson et al's guidelines for equivalency by having the two sections of the same course taught by the same instructor, during the same semester, using the same syllabus, and utilizing most of the same assessment assignments. The authors' findings provided support for Equivalency Theory. Bernard, Abrami, Wade, Borokhovski, and Lou (2004) conducted a meta analysis of distance education studies. They analyzed synchronous and asynchronous distance education studies. The authors examined achievement, attitude, and retention effects for synchronous distance education course versus traditional, and for asynchronous courses versus traditional. Mixed results were found.

Bryant, Kahle, and Schafer (2005) provide a review of distance education research and suggest how the current body of knowledge can be used to guide future research on distance education in the accounting discipline. These authors present a model of distance education, containing four constructs: Educational Organization, Teacher, Communication Medium, and Learner. Each of these constructs plays a part in the effectiveness of the distance education experience. It is the communication medium construct that Simonson's Equivalency theory focuses on. Although the communication medium is different for the online students and the face to face students, if educators can utilize the communication medium in such a way as to maximize the equivalency of the learning experiences, this should result in equivalency in student performance and achievement.

In their 2013 study, Chen, Jones, and Moreland examined the association between delivery method and course level and their

effects on perceived course effectiveness. They found that lower level managerial accounting students were not significantly impacted by the delivery method, but the upper division students perceived greater course effectiveness in the face to face class. This current study expands their research in a few ways. First, the Chen, et al study did not include any students from an introductory financial accounting course. The current study examines only Principles of Financial Accounting students. Second, Chen et al (2013) measure perceived course effectiveness via a five point Likert scale. The current study measures actual performance on course assignments. Building on the research of Chen, Jones and Moreland (2013), the current research examines Simonson's Equivalency Theory by measuring the performance of students in two sections of Principles of Accounting, an undergraduate introductory course in Business.

Research Questions

The inconclusive results found in the prior research leave room for additional studies on the effects of online education. Because equivalency of educational experiences is still of prior importance to faculty and students, an additional examination on performance in traditional and online classes is warranted. This leads to the following research question.

RQ1: Does student performance, as measured by scores on exams, and homework assignments differ between traditional students and online students?

Data Collection

Students at a medium sized public university in the mid-west United States were measured. Two online sections and three face to face sections of the same course, taught by the same instructor were compared. Because of small sample sizes in a semester, data was collected for two semesters: Fall 2012 and Fall 2013. Course assessment metrics were analyzed. The content covered in each section was the same, but the delivery medium differed. In lieu of classroom lecture by the professor, the online students had publisher produced videos available to view each week. In lieu of watching the professor demonstrate textbook problems and solutions on a white board in class, the online students had pencasts available to view every week. Pencasts are audio and video of the instructor demonstrating and discussing the problem solution on a piece of notebook paper. Both sets of students had access to the same information throughout the semester. Both sets of students had oversight by the same professor. Both sets of students were assessed using the same assignments, with the same time limits. The face to face class and the online class were designed in order to provide equivalent learning environments and experiences for all students.

A survey of faculty and administrators with experience in online education indicated that a comparison of online student achievement with face to face student achievement will be the most popular means of assessing the quality of online learning. Less popular quality assessment methodologies included student course evaluation, course completion rates, and student satisfaction. (Kim and Bonk 2006). In the current study student

achievement was measured by student scores on course assessment assignments. Student scores on four non-comprehensive exams, ten weekly homework assignments and ten weekly practice assignments were calculated for all students in both the traditional and online courses. The assessments were objective measures such as multiple choice questions. All assessments for the online students and the weekly assignments for the traditional students were scored using a computer, ensuring the objectivity and the validity of the measures. The traditional students took their paper and pencil exams in the classroom with the instructor serving as a proctor. The online students were required to take their online exam at an approved proctor test center. Both classes of students were allowed ninety minutes to take each exam. The paper and pencil exam was a printed version of the exam given via computer to the online students. Although the exams questions were multiple choice, both classes of students had the opportunity to show their work on computational problems in order to earn partial credit on exam problems. This helped students who selected the incorrect multiple choice option but were able to demonstrate that they knew most of the accounting process. The face to face students wrote out their work on their paper and pencil test. Online students had an open ended "essay type" question at the end of their exam which explained that they could show their work for all the computational exam problems in the "essay" question space.

Table 1 shows the number of students enrolled and students participating in each section for each semester. Participation in the study was completely voluntary and most students chose to not participate. The online students received the

description of the study and the consent form electronically. In order to maintain equivalent environments, the face to face students also received the consent form and study description electronically. Because of

the lack of the researcher's physical presence when the study was being presented, student participation rates were small.

Table 1: Total Students Participating (Enrolled) in Each Section

	Fall 2012	Fall 2013	Total
FTF	14 (24)	14 (56)	28 (80)
Online	10 (20)	5 (15)	15 (35)
Total	24 (44)	19 (71)	43 (115)

Table 2: Comparison of scores on different course assignments

	N	Mean for FTF	Mean for Online	Significance
Homework	ftf = 28, on = 15	230.68	235.47	.457
Exams	ftf = 28, on = 15	306.32	279.51	.077
Projects	ftf = 28, on = 15	52.14	51.00	.596
Total points	ftf = 28, on = 15	589.14	565.97	.211

Data Analysis

T-tests were utilized to compare performance between the two sets of students. Comparisons of each individual exam and each individual assignment were performed, as well as comparisons of each type of assignments overall. If significant differences exist, any patterns of direction of the differences were noted.

Results

The initial analysis of the data is shown in Table 2. Only one comparison reached marginal significance. FTF students and online students scored differently on exams. FTF students scored better than the online students on the exams.

Because of the results in table 2, an additional test was run to look at each individual exam to see where the differences lie. The results for the test of each exam between FTF and online students are shown in Table 3.

Table 3: Comparison of scores on each of four exams

	N	Mean for FTF	Mean for Online	Significance
Exam 1	ftf = 28, on = 15	86.96	83.17	.274
Exam 2	ftf = 28, on = 15	75.64	69.60	.214
Exam 3	ftf = 28, on = 15	68.64	66.47	.591
Exam 4	ftf = 28, on = 15	77.57	60.27	.001

These results indicate that the scores on Exam 4 were statistically different between FTF and online students, with FTF students outperforming their online counterparts.

The robustness of the analysis is affected by several characteristics of the methodology and the data. First, the sample size is small. The study needed to be conducted and data collected over two semesters in order to generate a large enough sample size. The limited sample size influenced the decision to perform univariate over multivariate tests. Second, the students self-selected into the face to face and the online sections. Random assignment to groups is not possible in this study. Third, the rate of participation in the study was low for all sections of the courses. The researcher could not assign students to course sections nor require participation in the research. These characteristics could impact the strength of the conclusions drawn from the data analysis to the larger population of face to face and online students.

Conclusion and Discussion

The current study examined the performance differences of online and face to face students in a college accounting course. Scores on online assessments for both groups of students were analyzed.

Equivalency theory provided support for the hypotheses that students should perform equivalently if the learning experiences are equivalent. The face to face class and the online class were designed to be equivalent in all aspects except for the mode of information delivery. Statistical results showed significant differences between the two groups of students in one performance measurement. Face to face students outperformed online students in their exam scores, particularly in the score for exam four. The two groups were asked the exact same questions on the exams. Both students were given the option, and encouraged, to show their work as they completed the test. This seems to be easier to do for the students taking a paper and pencil exam. Students taking the online test were encouraged to explain their computations in an end of exam, open essay type question. Despite being encouraged to do so, very few students took advantage of this opportunity and their scores suffered because of it.

Results from the current study provide support for Equivalency Theory. Equivalent learning experiences produce equivalent performance. Student performance on online homework, projects, and overall points in the course were not significantly different between the face to face students and the online students. Significant differences were found on the students' performance on the exams,

specifically exam four. This difference can be explained by the FTF students making use of the opportunity to show their work to receive partial credit.

These conclusions provide direction for future research. A further analysis of equivalency theory could be examined by extending the current methodology to include online synchronous class structure in addition to face to face and online asynchronous sections of the same class. Future research could also address the utilization of other technologies in education. One motivation for this study stems from the increasing use of technology in education. Three types of increases have been seen. First, there is an increase in the number of people using technology. Second, an increase in the functions for which technology is used is occurring. Third, there is an increase in the variety of hardware/software/or tools available for use in education. Although there is an increase in the number of students and faculty using technology, the results of the current study show that the face to face or online learning environment of the user does not impact their performance or the success of their academic experience. Future research in the area of technology efficacy in higher education could look at the other two types of increases; functionality and software. The functions for which technology is used has grown from e-mail to video, lecture capture, online web conferencing, dropbox, discussion boards, and more. Are these functions useful? In what additional functional areas can technology add value to the higher education experience? Will different types of students continue to find

the technology in these new functional areas equally usable? The list of hardware, software, tools, applications, and services is large and continues to grow and change. Whether the new tools will continue to be equally usable by both face to face and online students is an area for future research.

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THE INTERACTION OF REWARD SYSTEMS AND GENDER ON WHISTELBLOWING IN COLLEGE: A LABORATORY EXPERIMENT

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This study examines the interaction of reward systems and gender on the actual whistleblowing behavior of students. In a laboratory experiment, students were confronted with a cheating situation during an extra credit test. This study found that reward systems have a significant relationship with the willingness of both males and females to report peer wrongdoing.

Introduction

Cheating in academia is pervasive. According to Whitley (1998), an average of 70.4% students in 107 separate studies reported partaking in some form of cheating. More recent studies continue to report that cheating in college is a significant problem (see Brown and Choong, 2005; Klein et al., 2006; McCabe et al., 2006; Simkin and McLeod, 2010). With cheating being so prevalent, it is not surprising that in a survey of college students, cheating and deciding whether or not to report peer cheating were three of the top five ethical problems students encounter (Kerr and Smith, 1995). As academic institutions continue to search for effective ways to combat cheating, how students react to these ethical dilemmas is of utmost concern.

The encouragement of peer reporting of wrongdoing is a device available to colleges that may help improve their ethical environments and lower incidents of cheating. Peer reporting of wrongdoing is

considered a form of whistleblowing (Trevino and Victor, 1992). Since there have been few previous whistleblowing studies conducted in academia, whistleblowing studies conducted in the workplace were also reviewed to gain insight into the reporting decision.

Whistleblowing models have been developed with various individual and structural factors that affect an individual's likelihood to report misconduct (Miethe and Rothschild, 1994; Moberly, 2006). One of the factors previously explored by research is the gender of the observer (Simon et al., 2004; Kaplan et al., 2009, Miceli and Near, 1988; Sims and Keenan, 1998; MacNab and Worthley, 2008). An understanding about whether the motivation to report peer wrongdoing is different between males and females may aid the development of more effective reporting mechanisms. The results of previous studies have been mixed which could indicate that some other factor interacts with gender in the decision to report misconduct.

This paper reports the results of a laboratory experiment that examines the influence that the interaction of reward systems and gender have on college students' actual reporting behavior. This laboratory experimental design measuring actual whistleblowing behavior will provide a stronger basis on which to evaluate the relationships between reward system, gender, and whistleblowing than studies that measure reporting intent as is used by most other whistleblowing research. The results of this study may be informative to academic policy makers who are interested in designing a reporting system that encourages the reporting of unethical behavior regardless of the gender of the observer.

Literature Review

Whistleblowing

Whistleblowing has been defined as "the disclosure by organization members (former or current) of illegal, immoral or illegitimate practices under the control of their employers, to persons or organizations that may be able to effect action" (Near and Miceli, 1985, p. 4). Past research has suggested that whistleblowing is a process (Dozier and Miceli, 1985; Gundlach, Douglas and Martinko, 2003) with various situational factors affecting this process and influencing the decision whether to report.

Rational choice theory suggests that whistleblowing is more likely to occur when the perceived benefits of reporting wrongdoing exceed perceived costs (Miethe and Rothschild, 1994; Dozier and Miceli, 1985). An effective whistleblowing process will reduce the perceived costs of reporting by lowering pressures to remain quiet (Miceli and Near, 1988; Ayers and Kaplan, 2005). Additionally, increasing the

perceived benefits, including economic rewards such as promotions or intrinsic rewards such as the self-satisfaction of doing the 'right thing', should also increase the likelihood of whistleblowing (Dozier and Miceli, 1985). Furthermore, research has found that observers of wrongdoing are more likely to report if the wrongdoing affects them personally (Miceli and Near, 1985; Trevino and Victor, 1992). The effect could be in the form of less of a benefit for not reporting or more of a potential benefit for reporting. This study controls for the potential benefit that observers of peer misconduct may receive by using individual and group (curved grading scale) reward systems.

Gender and whistleblowing

Research has frequently considered the effect gender has on an individual's willingness to whistleblow. The results have been mixed. Some studies have found females are more likely to report (Simon et al., 2004; Kaplan et al., 2009), other studies have found males are more likely to report (Miceli and Near, 1988; Sims and Keenan, 1998), while MacNab and Worthley (2008) did not find any significant difference between genders. Perhaps there is some other factor so far not considered in the literature which is contributing to these inconsistent results. No study is known to have controlled the interaction of gender and reward structure when measuring the likelihood to whistleblow.

Gender and competition

Control of the type of reward structure (individual or group) introduces competition into the experiment. A curved grading scale can be considered a competitive environment where the first-place finisher receives a higher benefit

(higher grade) than the last place finisher. Research has shown that males typically respond more favorably to competitive environments than females (Price, 2008; Gneezy, Niederle and Rustichini, 2003; Gneezy and Rustichini, 2004). Additionally, Niederle and Vesterlund (2007) found that more males will elect to compete in a competitive environment than females partially because males are more overconfident in their abilities. In other words, during a fair competition, more males than females expect to “win”. Will a male’s overconfidence result in a strong reaction (whistleblow) when someone uses an unfair advantage in a competition? No studies were found that examines whether competition in the form of rewards significantly affects the willingness of males (but not females) to whistleblow.

Hypothesis

Whistleblowing literature suggests that if the observed wrongdoing affects the amount of benefit received by the observer, reporting is more likely to occur. However, no research was found that considers whether this affect is similar for both genders. Based on the literature review, competition influences males more than females, thus it is expected that males will be more sensitive to a change in reward system. Therefore, the hypothesis is:

Hypothesis: In a laboratory experiment, there will be a significant relationship between the type of reward system and reporting behavior for males but not females.

Method

The design of the experiment was first reported in “Influences on Students’ Decision to Report Cheating: A Laboratory Experiment” (Jenkel and Haen, 2012). In this current study the purpose of the laboratory experimental design is to examine the influence of two independent variables on the actual decision to report cheating (dependent variable). The independent variables are reward system and gender. The experiment was designed to control for other potentially influential factors and to maximize the probability that students (participants) taking an extra credit test would observe another student (confederate) cheating. The experimental situation was controlled by (a) providing the same test and rules to all participants, (b) selecting an obvious visual misconduct and (c) limiting cell size to four participants and one confederate. After the test, all participants completed a survey which provided them with the opportunity to report the cheating. The experiment was conducted three times with different participants during the same evening. This experimental design was approved by the College Institutional Review Board.

Participants were volunteer undergraduate business and accounting students in the researchers’ accounting courses all at the same college. Students were offered the opportunity to earn 10-20 extra credit points for participating in an experiment. Students were told that the experiment would test mathematical computational ability without reliance on calculators under a time constraint (pseudo-experiment). Participants were randomly assigned to rounds and treatment cells with each treatment cell limited to four participants and one confederate. An effort

was made to also maintain the gender mix within treatments as much as possible with males as confederates.

At the beginning of each round, participants and confederates were instructed to read the test rules provided below:

Test Rules:

- Do not start the test until instructed.
- Do not use any mechanical device such as a calculator.
- Stop the test when the timer buzzes.

The test rules were identical across all treatment cells. The ‘Do not use any mechanical device such as a calculator’ was stated to make a clear statement regarding what would constitute misconduct. In each treatment cell a researcher announced the start of the test, set a timer for five minutes and left the room.

Treatments

The extra credit reward information was specific to the treatment type being measured and is illustrated in Figure 1. The Individual Reward System mimics an uncurved academic grading system where students must reach particular standards in order to receive the corresponding grade. With or without cheating, individual subjects receive points based solely on their own results. Instructions in the Group Reward System stated that extra credit points would be awarded based on individual rankings within the group. The score of each participant in the group would be ranked from the highest to the lowest number of correct answers. This group ranking treatment is similar to curving an exam and could potentially influence the payout of points to each individual since the ‘cheater’ would probably have more correct answers.

Figure 1: Extra Credit Reward Systems

Individual		Group	
Extra credit points will be awarded on the following individual basis:		Extra credit points will be awarded on the following group ranking basis:	
Number of correct answers	Points Awarded	Ranking	Points Awarded
0-10	10	Individual with the most correct answers	20
11-25	14	Individual with the second most correct answers	18
26-40	16	Individual with the third most correct answers	14
Over 40	20	Remaining individuals	10

Misconduct

To maximize participants' awareness of the misconduct, a clear and visual violation was used. With only minutes left in the test, the confederate physically removed a calculator from his jacket to compute answers and replaced the calculator in his jacket before the test ended. At the end of the five minute math test, all participants completed a survey.

The survey included questions relating to demographics and the pseudo-experiment on mathematical computational ability (e.g. level of math courses, feelings about pressure under time constraints). The last question related to the 'real' experiment on reporting misconduct; "Did you observe any rule violations during the experiment? If yes, please explain". The confederates were instructed to race through the survey and leave the room as fast as possible to minimize possible discomfort to participants. Participants dropped their math test answer sheet and survey into a box and were directed to the debriefing area. Each participant was told that the true nature of the experiment was to examine factors influencing the decision to report cheating which required the researchers to hire students to intentionally cheat.

Results

Students were randomly assigned to reward system treatments prior to the test. Table 1 reports the treatment sizes and gender of the 44 participants.

Table 2 reports that under the individual reward system, 33.3% of females and 35.7% of the males reported the wrongdoing. While under the group reward system, 100% of females and 78.6% of males reported the misconduct.

As predicated by previous research (Miceli and Near, 1985; Trevino and Victor, 1992), a significant relationship exists between reward system and reporting behavior when all participants are considered (Fisher's exact test, $\alpha = .05$, $p = .000$). Fisher's exact tests ($\alpha = .05$) were also conducted separately for each gender. Significance was found for both genders with females exhibiting a p-value of .008 and males exhibiting a p-value of .027. Thus the hypothesis is not supported. There is a significant relationship between reward system and reporting behavior for both genders.

Table 1: Treatment size

Reward System	Gender		Total
	<i>Female</i>	<i>Male</i>	
<i>Individual</i>	6	14	20
<i>Group</i>	10	14	24
Total	16	28	44

Table 2: Percentage Reporting by Gender: Individual Reward vs. Group Reward

Reward System	Gender		Total
	Female	Male	
<i>Individual</i>	2 (33.3%)	5 (35.7%)	7 (35.0%)
<i>Group</i>	10 (100%)	11 (78.6%)	21 (87.5%)
Total	12 (75.0%)	16 (57.1%)	28 (63.6%)

Conclusion and Limitations

This study contributes to the existing whistleblowing literature by examining the effect gender and reward structure has on a student's actual decision to report cheating. While the effect of perceived benefits on the willingness report has been considered previously, no research was found that considered whether this effect varied by gender. This study found that reward structure (benefits) has a significant relationship with actual reporting behavior of individuals regardless of gender.

While this laboratory design breaks new ground by testing actual reporting behavior in lieu of reporting intentions as is used by most other whistleblowing research, participant selection and task limits the ability to generalize the results to other academic situations. Demographic variables such as age and GPA were not controlled which may have affected the results. Also, since the confederates were classmates of some of the participants, it is possible that existing friendships and the level of familiarity with the confederates may have affected the results. Additionally, the small size in this study was necessary in this

laboratory experiment to maximize the likelihood of participants observing the confederate's misconduct and to manage individual debriefings immediately after the experiment, but a larger sample could lead to different conclusions. Another limitation is that volunteering for an extra credit exam is different from other academic testing or assignment situations where the task and outcome are required components of a course grade. Perhaps participants would have reported differently if the activity was a required exam which possibly could be viewed as a more competitive environment.

Still this study should be considered by academic institutions when developing academic reporting systems. Even though it is possible some of the reporting may have been influenced by factors other than reward structure, the reporting rate under the group reward system (87.5%) is extremely high in comparison to a range of 3% to 36% indicated in other academic whistleblowing research (see Burton and Near, 1995; Sierles et al., 1988; Simon et al., 2004; Rennie and Crosby, 2002; Nuss, 1984). Academic institutions should consider whether it is possible to encourage the reporting of peer misconduct through reward structures

without creating an ultra-competitive environment where students are unwilling to help others through ethical means.

Businesses should also take into consideration the results of this study when developing whistleblowing systems. Similar to previous whistleblowing research (Dozier and Miceli, 1985), this study found observers of wrongdoing are more likely to report when rewards are provided. Businesses may be able to encourage whistleblowing by implementing programs similar to the IRS Whistleblower Program which offers monetary awards based on a percentage of the discretion involved.

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INTERNAL CAPITAL MARKETS: WHERE ECONOMICS SHOULD FEAR TO TREAD

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The capital markets, as the somewhat efficient allocator of investment money, have been hailed as one of the greatest contributions of modern capitalism. An extension of this thinking would have us believe that large corporations have developed internal capital markets for the efficient allocation of investment capital across divisions. This paper studies the possibility using data for publicly traded US companies to test the efficiency of internal allocations. The results suggest that conventional economic modeling of internal capital flows can explain none of the variance. This failure clears the way for alternative conceptions & research methodologies that draw upon developing non-economic theories.

Introduction

One of the founders of modern thought on the Theory of the Firm, Oliver Williamson (1975, 1985) proposed that an internal capital market existed within multi-divisional firms. This market essentially replaced the external capital market & could be more efficient at allocation. Since that time, other research has suggested that the growth of the multi-divisional structure in corporate America has been motivated by the desire to create an internal capital market to take advantage of its allocative efficiency (Hubbard & Palia, 1999; Stein, 1989; Matsusaka & Nanda, 2002). Accordingly, research has shown, however, that nearly three quarters of tangible capital investment projects are financed internally (Mackie-Mason, 1990).

Accounting research should be concerned with whether this line of thinking is correct. While much of our concern with accounting information is based on the assumption that it will be externally consumed & eventually impounded into valuation, an internal capital market takes us to other concerns & priorities. Without pricing, accounting information itself takes on primary importance for guiding internal allocations. Perhaps more importantly, a richer & potentially more idiosyncratic version of accounting can be consequential if it can escape the rigorous regulation that is needed for the broad & context-free distribution of capital to external capital providers.

Surprising, no clear consensus has emerged about whether internal capital markets are efficient. Part of the cloudiness of the literature can be attributed to our

ability to discern the real divisions of a firm & the activities that occur between & within each division from information that the firms disclose externally. Another element is changes in our thinking about what constitutes efficiency & how it should be measured. Most would agree however, that Williamson's theoretical expectations were broadly over-optimistic.

Prior to the implementation SFAS 14's segment reporting in 1977, consistent information on the divisions of companies was only available haphazardly & relative corporate profit based measures indicated more or less efficient internal capital markets. The introduction of SFAS 14 provided a window into some activities within the firm & enabled a more precise measure of divisions based on industry classification. This information provided a basis for the introduction into the literature of division-based measures of efficiency, most notably Tobin's q . This measure has served as the gold standard for our understanding of the capital market, & is still subscribed to as superior to equity approaches (see Wulf, 2009). However, mixed results trending toward inefficiency have been produced with the current state of measurement.

This paper restates the inquiry in terms of the more advanced segment reporting now available under Statement of Financial Accounting Standard (SFAS) 131. SFAS 131 requires that segment information be disclosed consistent with the internal organization of the firm, therefore providing a more faithful proxy for the composition of the internal capital market. Better classification should heighten the ability to do standard economic analysis.

This paper also attempts to improve upon Tobin's q as the basis of measuring the efficiency of the internal capital market. Tobin's q introduces several layers of measurement error into this literature. First, since it is a market-based measure, it is not directly available for divisions of a firm & therefore a proxy (median q of the single segment firms in the same industry) must be used. Secondly, the more readily measurable average q is substituted for marginal q , the true measure of growth opportunities which should be used to determine efficiency. Perhaps the problem lies in the central measure that has been adopted.

Going further, this paper attempts to address the economic bias in this literature. By utilizing first a game theoretic approach, the paper taps into a behavioral logic that attempts to capture the decision-making of the division managers. However, beyond efforts to enhance the economic model lie the distinct possibilities that the theoretical model itself is the problem. This necessitates considering some of the organizational & political dimensions of the situation.

The remainder of the paper acquires four substantive sections. The first reviews the literature & sets out specific hypotheses. The second explains the conduct of the empirical work with particular attention to measurement choices. The empirical results, including various alternative attempts are summarized in the third section. The final section, & perhaps the most important one, considers the implications for the future direction of the literature on the internal capital market.

Literature Review & Hypothesis Development

Williamson (1975), as an extension of his transaction cost economic model, advanced the superiority of the multi-divisional form as long as appropriate governance mechanisms ensured unit autonomy & competition for future project funding. Greater efficiency for the allocation of capital could result due to the lower information asymmetry & greater flexibility inside companies when compared to the external markets.

Although the general premise of the model has been accepted by most, small refinements have heightened its application. Some writers note that the investment opportunities available to the firms cannot be unlimited. In other words, the firm must be financially constrained (Gertner et al. 1994; Liebeskind, 2000; Inderst & Laux, 2005). Others have debated the consequences of the agency problems that exist between corporate headquarters, division management & investors. The assumption that top managers are committed to maximizing profitability through capital allocations is central, & therefore worthy of debate & modeling (see Hill, 1985; Liebeskind, 2000; Gertner et al. 1994). Another set of concerns are caused by the relatedness of divisions & the possibility of synergy & diversified risk (Liebeskind, 2000; Matsusaka & Nanda, 2002; Stein, 1997). This work suggests that firms with more related divisions (focused firms) will have more efficient internal capital markets. Subsequent research also indicates that higher levels of efficiency should also result if divisions have comparable size & opportunities (Inderst & Laux, 2005; Billett & Mauer, 2003). Finally, rent seeking behavior by weak divisions & power

struggles among the divisions cannot be ruled out by Williamson's logic (see Wulf, 2002; Scharfstein & Stein, 2000; Rajan et al. 2000). However, no relationship has been found between overall efficiency & CEO option compensation (Dutta et al. 2009).

The early empirical studies that produced support for the efficiency of internal allocation markets, such as Armour & Teece (1978) & Teece (1981) have more recently been critiqued for their use of uncontrolled profitability measures such as return on assets (ROA) & return on equity (ROE). These studies did not analyze the composition of the internal capital market, but instead examined the overall profitability of the multi-division firms structured as Williamson suggested, relative to those not so structured. With the availability of segment data under SFAS 14, internal capital market efficiency has been generally tested by reference to the market-based Tobin's q (measured for segments as the median performance of single segment firms in the same industry). Although these results have been very mixed, & difficult to precisely compare, they generally point to very limited efficiency of the internal capital markets (e.g., Scharfstein, 1998; Wulf, 2002). In that studies that have not used SFAS 14 data or Tobin's q have consistently found efficient internal capital markets (Khanna & Tice, 2001; Maksimovic & Phillips, 2002), the prospect that conclusions are considerably dependent on measurement choice is likely.

Empirical work that depended on segments defined by SFAS 14 may be seriously flawed. Subsequent work has discovered poor mapping to actual industries (Berger & Hann, 2003; Hermann & Thomas, 2000) & poor correspondence to the actual internal structure of multi-division firms

(Street et al. 2000). The pronouncement of SFAS 131 was designed to reduce these imperfections. While this problem by itself would be serious, when combined with growing recognition that Tobin's q fails to capture marginal investment/growth opportunity (see Howe & Vogt, 1996; Whited 2001), one could doubt the predictive power of the past literature.

More recent studies could be seen as defensive efforts to identify what has become unexpected pockets of efficient capital allocation. For example, divisions in distressed industries tend to better whether short-term economic storms (Gopalan & Xie, 2011). Efficiency also increases after divisions are spun off (Ahn & Denis, 2004). Almeida & Wolfenzon (2006) suggest that efficiency can only be achieved by making periodic capital allocations to divisions with mediocre growth prospects. More broadly, Choe & Yin (2009) argue for a complex & multidimensional tradeoff between divisional rents & corporate returns.

Even if past studies had deployed much better measures, they could be critiqued for by-passing the governance structures that Williamson (1975, 1985) believed to be critical. For the most part, their focus on *ex ante* fixed asset investment allocations represents a black box outcome that assumes all preconditions to be in place. The implicit theory needs better development & to be brought to the forefront. This path is encouraged by recent findings by Duchin & Sosyura (2013) & Hoehle et al. (2012).

Game theory has proven to be a powerful & robust perspective to explore economic phenomenon. Its use in this context is premised on the idea that the efficiency of internal capital markets cannot

be understood apart from the means by which exchange among corporate divisions is organized & maintained. Game theory studies incentives underlying cooperation & defection. In its application to this context, game theory entails a social dilemma among the division managers that is patterned by game length (Taylor, 1987), group size (Olson, 1965; Bendor & Mookherjee, 1987) & sanctions (Bendor & Mookherjee, 1987). Although social dilemmas may be resolved (cooperative equilibrium) by individual actions of the group members, the assignment of a central authority improves this possibility (Bendor & Mookherjee, 1987). Corporate management acts as the centralized authority in the internal capital market with responsibility to create & manage a set of governance mechanisms to improve the probability of cooperation. Game theory is consistent with studies that have focused on information available to, & incentives held by, budgetary participants. For example, distinguishing between proprietary & agency motives, Berger & Hann (2007) suggest alternative reasons managers have to distort high & low divisional profits, respectively.

Social dilemmas can only find a cooperative solution if there is the anticipation of on-going interactions among the players (game length), the size of the group is not too large (group size), & there is a realistic probability the defecting (non-group enhancing) behavior is detected & sanctioned (sanctions). Without this structure, division managers have no need to seek a cooperative solution (best corporate/firm investment), but instead have incentive to seek only the highest investment allocations for themselves (defection). A focus on future interactions can only be achieved in a firm by addressing career

concerns of division managers (Gibbons & Murphy, 1992; Holmstrom & Costa, 1986; Motta, 2003). Group size is not only a matter of the number of divisions, but also how it affects the social aspects of interactions such as perceived efficacy, group identity & intra-group communication. Firms with fewer divisions (Hamburger et al. 1975) of relatively equal size & profitability (Mannix, 1993), that promote a corporate identity (particularly through compensation practices) (Kollock, 1998; Itoh, 1992), & that promote division manager group decision-making & communication (Kollock, 1998; Fox & Guyer, 1978) will likely have a more efficient internal capital market. Monitoring & appropriate sanctions by the corporate officers are necessary to assure on-going cooperation since division managers that see “defecting” managers go undetected &/or unpunished would lose incentive to continue cooperating (Bendor & Mookherjee, 1987). Williamson (1975) notes that it is monitoring by an internal audit function that gives the internal capital market one of its advantages over the external market. In addition, a focus strategy (economically related divisions) by the firm enhances the ability to monitor (Liebeskind, 2000; Stein, 1997).

In summary, divisional managers have incentives, by virtue of contingent compensation, to obtain as much corporate capital as possible. These individuals cooperate by minimizing rent-seeking behaviors. Thus, the ground rules for managers in how they play this capital budget game should be an empirical question that can be described with specific hypotheses.

Method

In an economically rational world, a company’s capital would flow to their highest value use. This suggests that more investment would go to high growth potential projects. The better structured the corporation is, the more responsive allocations should be to growth opportunities. Reduced to implicit form, the following equation captures the highest order cross-sectional expectation of the internal capital market literature:

$$\text{Investment} = f(\text{Growth Opportunities, Governance Mechanisms})$$

This equation does not imply that governance mechanisms & investment opportunities are separate & potentially equal factors explaining the allocation of corporate investment to the segments. Instead, returning to the original theoretical formulations discussed above, the internal capital market governance mechanisms should be considered contingent factors that moderate the strength of the basic relevance of growth opportunities. Our main attention should not waiver from the extent to which the internal allocation of capital follows the reasonable expectation of future profits inside varying segments.

The governance mechanisms allow the incorporation of game theory & the overarching social dilemma conception. For reasons that become apparent in the Results section below, a justification of each separate hypothesis in this area would not be appropriate. Instead, the specific expectations used in this research are listed in Appendix A to this paper.

The functional form of the measure of efficiency was adapted from Wurgler (2000). Wurgler examines the effect of financial market development on capital allocation efficiency in an international setting. His measure of efficiency (shown below in simplified form) captures the extent to which each country increases investment in growing industries and decreases investment in declining industries.

$$I = \alpha + E(V) + \varepsilon$$

where I equals the change in investment and V equals the change in value-added growth for each segment-industry and year. The coefficient E represents the elasticity of investment by a firm to value added growth opportunities in the marketplace – a measure of efficiency of investment. This approach offers a conceptually simple measure that is not prone to the measurement error issues of Tobin's q . At the same time, it is measured at the industry level, similar to the way that Tobin's q has been used in the literature (the median q of single segment firms in the same industry is essentially an industry level measure). Wurgler (2000) found correlations of .513 and .614 between his efficiency coefficient and sales growth and q , respectively.

Appendix B contains the exact equation, and more detail on measurement. Value-added growth is derived by reference to U.S. Census Bureau information. An ambitious measure of investment was attempted to address the tendency of the literature to limit itself to fixed asset changes. Investment was defined to include fixed asset expenditures, business acquisitions and divestments, changes in working capital, research and development spending, and spending on human capital.

Another set of equations in Appendix B provides details on the measurement of the different types of segment investment.

In addition to the value added and investment variables, additional variables were assigned to test each of the hypotheses. The hypotheses were to be tested by reference to the effect that each of these variables had on the coefficient of efficiency E in an expanded form of the regression with interactions.

The design chosen also creates some assurance that the segment structure of the firms in the sample is industry-based (the requirement under SFAS 14) so that the industry measure of efficiency should apply. This stipulation created an eight-year time series that would allow sufficient time for investment allocations to bear fruit. Initially, 250 firms met this requirement. Note that the small number of firms retaining their segment structure is consistent with research examining the impact of SFAS 131, which has found significant segment restructuring in the conversion to SFAS 131 (Berger and Hann, 2003; Herrmann and Thomas, 2000; Street et al. 2000).

A second screening dropped companies that were missing data for some years during the sample period (148), did not appear to be managed under the governance structure required by Williamson (1975) (14), and for other reasons (4) – leaving a final sample of 84 firms. At the corporate level, the sample firms were all designated as manufacturing based upon their assigned NAICS codes. Although a diverse industry representation existed in the final sample, minor concentrations were noted in the fabricated metal, chemical and transportation

equipment manufacturing areas. Although the sample companies were all designated as primarily manufacturing firms at the corporate level, 16 (19%) of the sample companies had segments that were classified as non-manufacturing.

Various attempts were made to compare the sample to their industry, both at the corporate and the segment levels, and at several points of time throughout the sample period. At the corporate level, most indications were that the sample contained firms that were significantly larger (based on both assets and sales), better able to grow and to hold their value over time. The sample firms also were less financially constrained than the typical firm in their industry, and as a result were more inclined to make acquisitions. However, sample segments were more consistent with other segments in the same industry across most measures, with only sales significantly higher for the sample.

Results

Data issues associated with working at the segment level of analysis challenged the empirical work. There was insufficient reported segment data available to expand the definition of investment to include spending on human capital and research and development. In addition, the proposed computation of investments in working capital by segment also failed. Although these data constraints needed to be worked around, a set of four investment variables - starting with a computation from its detail components (*I*) and ending with computations using the change in segment identifiable assets (*Ita* and *TAchg*) - were generated and found to be highly correlated, and therefore practically interchangeable.

Also, the value added variable was computed at two different levels of analysis - at the 4-6 digit NAICS code level (*V*) and again at the 2-3 digit level (*Vbea*). Numerous other data issues forced seven variables to be dropped from the empirical analysis and a change in the method of computation of one other variable (*fin constraint*), although there remained at least one variable in the analysis to test all but one of the hypotheses.

Surprisingly, descriptive statistics indicated that there were significant, but low first order correlations between the investment variables and the growth opportunity (value added) variables. Furthermore, there were almost no significant correlations of the other variables remaining to test the hypotheses and the investment variables. Only *Ownership* had a significant positive correlation with the investment variables (see also Ozbas and Scharfstein, 2010). Of particular concern was that the historical performance of the segment had no significant relationship with segment investment and the correlation that was reported was in the opposite direction from expectations.

Based on the correlation results, the most promising variations of investment change (*Ita* and *TAchg*) and growth opportunities (*Vbea*) were selected for the regression analysis. Although the coefficient that captures efficiency is significant in both variations that were considered, the explanatory power of these models (R^2) was zero when rounded to two or three decimal places (see Table 1). These values should be comparable to the United States efficiency coefficient (0.723), standard error (0.069) and R^2 (0.126) obtained in Wurgler (2000).

TABLE 1
REGRESSION RESULTS – BASIC EMPIRICAL EQUATION

Equation 1a	$\frac{Ita_{it}}{Ita_{it-1}} = \alpha + E \ln \frac{Vbea_{it}}{Vbea_{it-1}} + \varepsilon_{it}$			
	F Value	Prob	Observations	Adj R²
	7.99	0.0048	1,837	0.0038
	Parameter	Std. Error	t value	Prob
Intercept	2.09721	0.17081	12.28	< .0001
Efficiency (E)	6.06408	2.14541	2.83	0.0048
Equation 1b	$\frac{TAchg_{it}}{TAchg_{it-1}} = \alpha + E \ln \frac{Vbea_{it}}{Vbea_{it-1}} + \varepsilon_{it}$			
	F Value	Prob	Observations	Adj R²
	14.09	0.0002	1,837	0.0071
	Parameter	Std. Error	t value	Prob
Intercept	1.72726	.14819	11.66	< .0001
Efficiency (E)	6.98717	1.86126	3.75	0.0002

Thus, the testing of any of the specific hypotheses, all of which were to be tested in terms of its effect on the efficiency coefficient, could provide nothing of substance. In other words, since we cannot say that organizational capital is allocated in accordance with growth opportunities, it is pointless to concern ourselves with variation across firms. It does not matter whether firms are properly structured for the capital budgeting game when we cannot assert that the firms allocate based on the expectation of future returns.

Many variations of the basic regression were considered in attempts to explain some of the variance. For example,

firms with only manufacturing segments were isolated. Another variation involved bypassing the natural log with a conversion that was used to sequence the relationship between growth opportunities and investment. Finally, to determine if either the sample size of this study or the data challenges associated with the sample were the issue, the empirical methodology was applied to all multi-segment firms in the Compustat segment database for the period 1997 – 2002 (all segments reported under SFAS 131). Albeit small improvement was detected, the basic inability of the equation to “work” was resilient, no matter how the variables in the equation or the sample were re-specified.

Discussion

Williamson (1975, 1985) offered explanations for the superiority of internal capital markets. The model has strong intuitive merit since many of the transaction costs that are necessary in the external capital market can be conserved. However, the fact that empirical support for an even partially efficient internal capital market could not be produced should introduce some doubt.

Game theory should have made a material contribution to the behavioral bedrock of Williamson's thinking. Its focus on the interplay among the division managers as key to the allocative process, as compared to just the interaction between the corporate office and the divisions, provided new insights into the internal capital market. Understanding that humans will not necessarily adhere to the master plan where quality information is transmitted and a perfectly formulated capital allotment received, the metrics of motivation must be treated as empirical propositions. The empirical verification of these possibilities will have to be the subject of continuing research. Game theory continues to be usefully elaborated in tightly controlled artificial settings and may find it difficult to predict outcomes found in the "real" world. Game theory results might also fall into the category of things that ought to be true.

The overall failure of the empirical analysis could be attributable to the basic conceptual contribution of the paper. Efficiency in the allocation of capital was drawn from a macro-level study (Wurgler 2000) that evaluated investment spending across nations. Although the Wurgler's efficiency coefficient is an industry level

variable similar to the usage of Tobin's q in this literature, translating this to the micro-level of firms and industries may have created difficulties that were not perfectly anticipated. For example, whereas firms often reduce investment in a segment, material disinvestment is very unlikely for nations. This created division by zero and natural logarithm conversion problems in the mathematics that could only be imperfectly addressed.

The concept of industry segments lies at the heart of this analysis, and therefore also needs to be reconsidered in light of the disappointing empirical results. The efforts of standard setters to conform financial reporting to managerial conceptions of the business may not have been very successful. If segments are strategically reported, any empirical analysis of their capital allocations becomes very problematic, since growth lacks an appropriate benchmark. The broader issue is whether segment reporting is similar to earnings, insofar as they are mostly true but widely acknowledged as managed. Unfortunately, a stronger literal truth may be needed to do economics-based analysis.

The results may also have been affected by the skew of the data. Extreme values did exist and may have exerted undue influence upon the analysis. Conventional winsorizing techniques were used, resulting in acceptable reduced data sets. The procedures did not produce major improvements in the overall results. More radical tapering or manipulation of the data, for the sake of yielding results that we believe should be produced, is a self-fulfilling approach that undermines the integrity of the data analysis.

The present research made a diligent attempt to overcome a raft of empirical and conceptual problems in the literature. We need to confront the possibility that that which we appreciated about the efficiency of the internal capital markets was built upon a slippery foundation of inadequate disclosures and limited operationalizations. Perhaps the reason that the analysis did not work as planned was that the attempt to do all this remediation was inconsistent with the limits of economic analysis. In other words, efforts to induce higher levels of realism move us further away from what we can expect to accomplish with mathematics. In the end, information that firms disclose externally about segments under any accounting standard may not give a complete enough picture of what is actually occurring inside the firm. Although it opens a window into the firm, we get only a limited view of what is actually occurring inside the walls. We suspect that it is the view that the inhabitants want us to see.

The results may have been forecast by Brusco and Panung (2005) who argue that corporate diversification always destroys value, even in the presence of perfect allocation. Expecting the economically rational result also ignores what Bernardo et al. (2006) called socialistic capital allocations.

Toward A New Approach

A major supposition of economic analysis is that decision makers have adequate information to make rational choices. Given a certain set of investment opportunities across operating segments, economics offer a bright line between the rational and the irrational. This may be an impoverished way of interpreting the world. The decisions that are made may be partially

rational and partially irrational. The latter may be motivated by a diverse set of social and political concerns that are cultural in the maintenance of an organization (Jackson, 2003).

Much as we may wish to deny it, the capital budgeting process is a fundamentally political one. Economics does not begin to address the outcomes that it produces. We should instead begin to examine the power of the participants, and how this resource is deployed in interaction (Glaser et al. 2008). Economics and its stepchild, accounting, is the legitimate language for the expression of will. It can justify our beliefs about what we wish would happen. We get into trouble as researchers when we begin to believe it on a literal basis.

A small portion of the internal capital market literature recognizes the political agenda of the CEO to remain in office and to be perceived as doing well. Xuan (2009) for example shows how capital allocations can be used as peace-keeping bridges to divisions that are likely to become disaffected. Somewhat of an opposite suggestion is offered by Duchin and Sosyura (2013) who show that social ties to the CEO can be the path for divisional managers to get higher capital allocations. Whether the key mechanism is favoritism or reverse favoritism, economic rationality needs considerable supplementation.

Burchell et al. (1980) specify several roles for accounting information, some of which remind us that accounting has social and symbolic overtones. In the present research, we have assumed that segment budgeting is a structured and rational decision making process. Accounting information might also be used to rationalize allocative decisions that have already been made. Furthermore, accounting information

might be a small part of the ways in which companies explore the possible and gradually learn about their environments. To pretend that accounting must contain and provide the answer to managers, rather than ammunition for an answer that has been derived in other ways, is somewhat naïve. In short, accounting, like other corporate processes, sustains the legitimacy of less calculative decisions.

The growing recognition that the external capital market may not be very efficient makes the inability to extend its logic to internal capital markets less of a surprise. The rapid volatility and inexplicable valuation changes lays bare the mystical nature of the belief in efficiency and the distributional consequences of doing so. The internal capital market may not be efficient, but how can we expect it to be? We need to also see who gains from the expansion of this belief. Perhaps our trust in institutions should be the object of our study.

The allocation of resources in corporations requires us to confront some dimensions that are not as important in external capital markets where trading is mostly anonymous. In general, we must be willing to incorporate psychological variables. Some of the fruitful avenues that have been identified by the budgeting literature include attribution theory (e.g., Ho and Vera-Munoz, 1998) and locus of control (e.g., Brownell, 1981). Because corporations also vary in how participative their budgeting processes are, the expression of psychological forces might itself be variable (see Shields and Shields, 1998). The inquiry takes on more sociological complexity when reputational elements are embraced (see Webb, 2002). Psychology should not be limited to the free interaction of peers. Top

corporate managers are interested in sustaining the motivation of divisional leaders, but also need to ensure that they are governable going forward. This embarrassment of riches might exceed the capabilities of game theory as conventionally understood.

Conclusion

Gertrude Stein offers us the following: "...there ain't any answer, ...there ain't going to be any answer, there never has been any answer, that's the answer." This should be taken to suggest that some things are not reducible to the type of solutions that we would like. Perhaps actual capital allocations are too complex to model, at least in terms of efficiency. Alternatively, they may be idiosyncratic. They may have a logic that does not transcend the specific rationality of that organization.

The results have strong implications for what we teach our students. The reductive economics of capital budgeting techniques probably do more harm than we suspect. Although one could argue that the allocation of capital to projects or divisions according to some projected return is an ideal type, the deviation between the computations and the empirical world is so large that it cannot be brushed aside as a minor imperfection. If capital budgeting is to be taught, it should be approached as a somewhat powerful rhetorical device.

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Appendix A
Specific Governance Hypotheses

- H1:** Firms that address career concerns of division managers will have a more efficient ICM.
- H2a:** The larger the number of divisions in the ICM of a multi-division firm the less efficient the ICM.
- H2b:** The more diverse the size of the divisions in a multi-division firm, the less efficient the ICM.
- H2c:** The more diverse the profits of the divisions in a multi-division firm, the less efficient the ICM.
- H2d:** Multi-division firms which promote corporate identity will have a more efficient ICM.
- H2e:** Multi-division firms which promote corporate identity in their compensation practices will have a more efficient ICM.
- H2f:** Multi-division firms which promote communication and group decision-making among division managers will have a more efficient ICM.
- H3a:** Multi-division firms which are less diversified will have a more efficient ICM.
- H3b:** Multi-division firms which have an internal audit function will have a more efficient ICM.
- H4:** Multi-division firms which have an effective sanctioning system will have a more efficient ICM.
- H5:** A properly structured ICM is more efficient at resource allocation than the external market.
- H6:** Stock ownership by management will positively affect the efficiency of resource allocation in any market.
- H7:** Higher financial constraints on the firm will positively affect the efficiency of resource allocation in any market.

Appendix B

Equation and Measurement Details

Wurgler's (2000) measure of efficiency (equation (1)) captures the extent to which each country increases investment in growing industries and decreases investment in declining industries.

$$\ln \frac{I_{ift}}{I_{ift-1}} = \alpha + E_f \ln \frac{V_{ift}}{V_{ift-1}} + \varepsilon_{ift} \quad (1)$$

where I equals investment, V equals value-added growth, i indexes manufacturing industry, f indexes firm and t indexes year. The coefficient E_f represents the elasticity of investment to changes in value-added growth in manufacturing industry – which is the measure of efficiency. This might be called an Opportunity Response Coefficient (ORC) since it measures the response of firm investment to growth opportunities presented in the marketplace. As noted by Wurgler, the causality assumed by the regression – that current industry growth drives investment – is supported by research that shows that investments in fixed assets take approximately two years to effect growth.

Similar to Wurgler (2000), this paper uses V (value added growth) as a measure of investment opportunities. Value added is collected from the U.S. Census Bureau *Annual Survey of Manufactures* and is computed by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (adjusted by the addition of value added by merchandising operations plus the net change between the beginning- and end-of-year inventories). Investment is measured using the following equation:

$$I_{ift} = CAPX_{ift} + R\&D_{ift} + workcap_{ift} + HC_{ift} + NetAquis_{ift} \quad (2)$$

where $CAPX$ is the capital expenditures, $RandD$ is research and development expenditures, $workcap$ is changes in working capital, HC is changes in human capital, and $Netaquis$ is the net acquisitions/disposals for each industry (segment), firm, and year. Data for $CAPX$ and $RandD$ will come from the Compustat segment database, supplemented with data in each firm's Annual Report (10K) where necessary. The change in human capital (HC) will be computed as follows:

$$HC = \Delta EMP \times AVGCOMP \quad (2a)$$

Where ΔEMP equals the change in the number of employees from the Compustat segment database and $AVGCOMP$ equals the average employee compensation cost for the applicable industry and year from the *Annual Survey of Manufactures*.

The change in working capital will be computed in two ways. The first computation will be a “fitted” change in working capital ($WC1$), where the coefficients a_t and b_t are obtained from a regression of the change in working capital on the change in sales for all single-segment firms for each year and industry and applied to the change in sales of the segment ($\Delta SALES_i$)¹.

$$WC1_{it} = a_t + b_t \Delta SALES_{it} \quad (2b)$$

Method two involves several computational steps in order to estimate the change in each segment’s net working capital. Since only asset values are available for each segment, the first step is to independently compute each of the sample segment’s change in working capital assets for each year ($AChg_{ift}$) using this equation:

$$AChg_{ift} = (IA_{ift} - IA_{ift-1}) - CAPX_{ift} - NetAquis_{ift} + DEPR_{ift}^2$$

where IA represents the reported identifiable assets associated with the segment, $CAPX$ represents the reported capital expenditures, $NetAquis$ represents the net acquisitions identified with the segment, and $DEPR$ represents the reported depreciation and amortization.

Since there is not available data for liabilities of segments, the actual change in working capital liabilities is collected and allocated to the segments based on the change in segment working capital assets computed above.

$$Lchg_{ift} = Achg_{ift} / \sum_{i=1}^n Achg_{ift} * Lchg_{ft}$$

The change in net working capital for the segment as the sum of the change in segment working capital assets and allocated segment working capital liabilities as follows:

$$WC2_{ift} = Achg_{ift} - Lchg_{ift} \quad (2b)$$

1. Working capital is defined as receivables, inventories & accounts payable. The change in these accounts will be obtained from the cash flow statement & sales will be adjusted for increases from acquisitions for the year to segregate growth in these amounts from other than acquisitions.

2. If the segment reports investments using the equity method, then changes in this amount from year to year will also be accounted for in this calculation.

The results of the computations of working capital change by segment-year (equations 2a and 2b) are then summarized to determine a total firm change in working capital each year under each method.

$$WC1_{ft} = \sum_{i=1}^n WC1_{ift}$$
$$WC2_{ft} = \sum_{i=1}^n WC2_{ift}$$

Finally, the computed changes in working capital for each firm-year determined by the segment data under both methods are compared to the actual change in working capital for the firm. The method that yields the smallest difference will be the source of the working capital variable by segment (*workcap*) in this analysis

$$workcap_t = \min(WC_{ft} - WC1_{ft}, WC_{ft} - WC2_{ft})$$

A PRACTICAL PATHWAY TO TEACHING AUDITING: SERVICE-LEARNING

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Auditing pedagogy can be more effective for students and the accounting profession through a hands-on, practical approach rather than traditional lectures. Indeed, based on a 25 year career in accounting roles, one author is confident that an actual attestation engagement coupled with service-learning will afford students a learning opportunity to not only complement the classroom, but also best prepare them for their career as accounting professionals. The Pathways Commission recommends we “develop curriculum models [and] engaging learning resources...in support of sustaining a robust curriculum”. In this article, the authors present a new approach for teaching auditing that flows from the practice of auditing in both public accounting and an internal audit function. We identify several articles integrating service-learning opportunities into a business school environment. The student teams performed agreed-upon procedures for three small churches in this qualitative study, with qualitative data then presented from both students and church personnel that support this pedagogy. We develop practical implications for an upper-level undergraduate auditing course.

Introduction

From a practitioner’s perspective having spent a great deal of a career prior to the academy in auditing, both in public accounting and as Chief Audit Executive at a public company, the preparedness of new accounting graduates in an audit function was often lacking. Dickens and Reisch defined the issue succinctly in their December 2009 article for the Internal Auditor magazine, asserting that potential “...employers frequently complain that students are not work ready. In fact, study results suggest that a large percentage of employers question whether students have the skills needed for workplace success” (p. 43). In the article the authors further identified the need for a service-based learning pedagogy to accompany audit curricula.

The Pathways Commission Report issued jointly by the American Accounting Association (AAA) and the American Institute of Certified Public Accountants (AICPA) agreed with Dickens and Reisch, stating:

Professional education is a synthesis of three apprenticeships – a cognitive apprenticeship wherein one learns to think like a professional, **a practical apprenticeship where one learns to perform like a professional**, and a moral apprenticeship where one learns to think and act in a responsible and ethical manner that integrates across all three domains [emphasis added] (American Accounting Association, 2012, p. 69).

With this in mind, what is the best way to teach auditing to future accounting professionals while also bringing an effective synthesis of a practical experience to the classroom? "The educational preparation of accountants should rest on a comprehensive and well-articulated vision of the role of accounting in the wider society" (American Accounting Association, 2012, p. 21). The teaching of auditing is not unlike several disciplines where foundational material is taught using the lecture method. The subject matter, while critical, can be tedious and uninteresting. Educating (and therein, learning) in this environment is at best, challenging, and at worst, short-term rote memorization with limited application. With the latter, students leave the experience wanting more and lacking the passion to pursue the subject further (Pale, 2013, p. 557).

This is the dilemma our project attempts to solve: to transform auditing pedagogy by combining a real world, hands-on experience with service-learning to a subject that, traditionally, does not lend itself to applied learning techniques. This new approach to teaching auditing will not only afford students the required knowledge of the discipline as learned in the classroom, but also the essential core competencies needed to succeed after leaving the academy (Bolt-Lee and Foster, 2003, p. 37). Some may argue that this apprenticeship issue can be mitigated to an extent with internships. From a practitioner's view, internships do allow students to gain certain hands-on experiences while surrounded by specialists in their field, performing similar tasks as a full-time professional.

We find, however, several drawbacks to the internship process. In practice, it may be difficult for students to

relate classroom material to an applied setting. Also, internships generally occur when the student is away from the classroom / university, and the supervisor may not be able to make the necessary connections between the classroom and the work experience. Indeed, as noted by Black, "the classroom experience is diminished by the distance between pedagogical content and practice reality" (Black, 2013, p. 21). If while on an internship assignment away from the appropriate subject matter, the student may find the experience lacking due to the absence of frequent pedagogical reinforcement or the feeling that they are not in a safe environment that welcomes numerous questions or academic curiosity.

Service-learning is "a balanced pedagogy anchored in reciprocity: the service-learning experience benefits students and community" (Govekar and Rishi, 2007, p. 4). The project we implemented is a good way to fill the gap of the full breadth of experiences left out during an internship experience, including frequent instructional reinforcement and linkages of foundational auditing principles to core competencies. During a service-learning project, students have the opportunity to go out in the field with professionals and bring the experience back to the classroom for discussion and analysis on how to apply the coursework to the experience in the field. The hands-on experience along with an interactive dialog allows students to complete a circle of knowledge and fully understand the material covered in class (Dickens and Reisch, 2009, p. 44). Also, the service-learning experience, as opposed to the internship, helps the community and churches, while gaining practical knowledge for students as well as an appreciation of social responsibility (Govekar and Rishi, 2007, p. 4).

From a practice perspective, since it can be very ineffective to teach certain auditing concepts including substantive testing and auditing sampling with traditional lecture style classes, we integrated a service-learning project into our undergraduate Auditing II class. In this service-learning project, student teams performed agreed-upon procedures (AUPs) for small churches as volunteers. This paper is in response to the Pathways Commission Report issued by the AAA and AICPA. Being a part of an AUP engagement for a small church will enhance the financial auditing education and interpersonal communication skills of accounting students by improving the quality of the overall learning experience through a hands-on, practical approach (Bolt-Lee and Foster, 2003; Dickens and Reisch, 2009).

First we present literature supporting the lack of effectiveness in auditing pedagogy and churches' need for financial assistance. We then present our method of research and the steps we took in implementing our service-learning project, followed by results and reflections from participants including the authors.

Literature Review

It has become increasingly apparent over the past few years that accounting education has been doing a less than superior job of preparing accounting students to become accounting professionals (ASEC AAA, 2003; Albrecht and Sack, 2000; Dickens and Reisch, 2009). The AAA along with the AICPA has taken steps to restructure accounting pedagogy to move the accounting profession forward in a changing world. The Pathways Commission Report was released in July 2012 to, among other things, lay the foundation of restructuring accounting, and therein,

auditing education. One of the recommendations in the Report is to "develop curriculum models, engaging learning resources, and mechanisms for easily sharing them as well as enhancing faculty development opportunities in support of sustaining a robust curriculum" (American Accounting Association, 2012, p. 12). It is this recommendation to which this paper endorses a hands-on, practical pedagogy.

The accounting profession has earned much criticism with the scandals at Arthur Andersen, Health South, Tyco, Enron, WorldCom, and others in the early part of the century (Whittington and Pany, 2010; Enofe, 2010). The Sarbanes-Oxley Act of 2002 is an example of a regulatory measure that has been taken to bring the profession back to a positive light (Enofe, 2010, p. 60). Amernic and Craig (2004) have explored ways of reforming "accounting education in the post-Enron era" (p. 342). Historical casework increases awareness of what has happened in the history of accounting so that measures can be taken to ensure that the profession can "move ... out of the shadows" (Amernic and Craig, 2004, p. 347) and bring forth the proper knowledge to conduct responsible business.

Moving from practice to the academy, auditing can be a challenging subject to teach within the confines of accounting pedagogy. Concepts taught in an initial auditing course "are often abstract, difficult to learn, and even considered a bit boring for many undergraduate students" (Kaciuba, 2012, 248). The majority of an introductory auditing course is foundational; examples include: defining what an audit is, what it is used for, and why it is important in the business world (Whittington and Pany, 2010, p. 1). The course progresses into the

practice of how to actually perform an audit starting with engagement meetings, audit planning, testing, and finally issuing an audit report (Whittington and Pany, 2010, p. 187). All of this information in a formal classroom setting can be very dry and may not get the attention of the students (Kaciuba, 2012; Pale, 2013).

A student in our first course in auditing stated that after an entire course of Auditing, they were still unclear what actually happens in an audit. To in part address this, many curricula have focused auditing education on casework to provide students with a practical approach to complement the theory taught in class (Kranacher, et al., 2008; ASEC AAA, 2003; Drake, 2011; Tonge and Willett, 2012; Albrecht and Sack, 2000; Amernic and Craig, 2004). Most core courses that cover primary business disciplines begin by presenting a vast amount of information that is difficult to consume without application.

Many universities have integrated service-learning in accounting curriculums as a tool for enhancing learning and student performance in the classroom by addressing the call for accounting education to move beyond 'number crunching' to critical analysis and problem solving (Dickins and Reisch, 2009; Gujarathi and McQuade, 2002; Gujarathi, McQuade, and Sarmiento, 2002; Still and Clayton, 2004; Wilson, 2008). Further, service-learning "takes on an experiential learning approach by exposing the learner to self-reflection and synthesis" (Wilson, 2008, p. 54). It is important for students to be interested in what is being taught in auditing classes so they can take the knowledge, skills, and abilities (KSAs) into the accounting profession (Tonge and Willett, 2012; Dickins and Reisch, 2009; McCoskey and

Warren, 2003; Weisz and Smith, 2005; Kolb, 1984; McClam, et al., 2007; Drueth and Drueth-Fewell, 2005; Govekar and Rishi, 2007).

Auditing skills are not, however, the only KSAs necessary to be successful in the accounting profession. "Recruiters believe that the specific discipline is often not as important as all-round abilities and attributes such as interpersonal and relational skills" (Weisz, 2000, p. 33). In addition, "teaching methods must also provide opportunities for students to experience the kinds of work patterns that they will encounter in the public accounting profession. As most practice requires working in groups, the curriculum should encourage the use of a team approach" (Black, 2013). Since it is increasingly apparent that the accounting and auditing professions are actively looking for students with demonstrated interpersonal, communication, and teamwork skills, service-learning programs have included these attributes with exceptional results (Still and Clayton, 2004; Dickins and Reisch, 2009; McCoskey and Warren, 2003; Weisz and Smith, 2005; Govekar and Rishi, 2007; Montano, et al., 2001; Weisz, 2000; Cates and Langford, 1999).

As a part of service-learning opportunities, it is important that each party in the project benefits from the project experience (Still and Clayton, 2004; McCoskey and Warren, 2003). Religious organizations as a whole have been facing an integrity crisis and present an excellent auditing prospect for a service-learning experience. In a religious organization, internal control is viewed as a worldly activity that is not necessary in a Christian environment (Enofe and Amaria, 2011). Since the financial position of many

churches is precarious and church personnel are not often experts in accounting and auditing, an annual audit, review, or similar procedures performed for churches can be beneficial to both the church and the students as a service-learning opportunity (Enfoe and Amaria, 2011; Capin, 2001).

Research Method

Churches have been facing integrity issues for some time (Capin, 2001) and student-led audit teams can be a solution to addressing the issue as well as a vehicle for positive change to audit education. Conducting AUPs at churches in the second auditing class for undergraduate students came as an idea from the churches themselves. Also, as noted earlier, auditing can be a difficult subject to teach within the laboring accounting pedagogy professionals (ASEC AAA, 2003; Albrecht and Sack, 2000; Dickens and Reisch, 2009; Kaciuba, 2012). The Pathways Commission Report is aimed at improving the overall teaching of accounting (American Accounting Association, 2012). Classes that integrate service-learning opportunities in subject matters that are generally taught via theory and lecture style have generated success in students' ability to learn and attain the purpose and process of the material.

Student engagement teams were randomly assigned; had time permitted, it may have been beneficial to incorporate Learning Style Inventory (LSI) as a method to group students to create teams of complementary approaches. LSI has been used in higher education as a way to show different learning styles that are associated with different approaches to learning (Kolb and Kolb, 2005) and a focus of future teams using LSI will allow for future research. After the groups were assigned and to simulate an actual AUP engagement, each

was given information about their respective church client. Each group then met to take care of necessary housekeeping items such as when the group could gather for meetings and designating team member roles. As is the case with most audit teams, each group was required to have an engagement manager, quality reviewer, and staff accountants (Whittington and Pany, 2010, pp. 20-22).

After getting acquainted with the background of each church, the groups met with the financial leader of their church for an engagement kick-off meeting. In this meeting, groups discussed particulars of the church and were presented with the current year financial statements, prior year audit or review report, and the current year budget as well as any necessary financial software used by the church for testing purposes. In addition, each group was given the "Local Church Audit Guide" (hereafter, "The Guide") generally accepted by their church's denomination (while identical in content for each denomination, our reference document is *The Local Church Audit Guide for United Methodist Congregations*, 2001). It should be noted that contents of *The Guide* states clearly that the term "audit" as used in *The Guide's* title may actually be "...closer in professional jargon to a 'review'" (*The Local Church Audit Guide for United Methodist Congregations*, 2001, p. 4). Each church was looking for slightly different information, which made each AUP a unique engagement.

The process described in the following paragraphs is one used for audit or AUP engagements as noted by Whittington and Pany (2010). The AUP steps outlined in Figure 1 summarizes the real-world approach used including objectives and procedures. After the initial meeting with the client and gathering all required

documents, each team met to develop a time budget for their engagement, determine a materiality threshold, outline risk assessment procedures for their church client, and settle on items needed from the church personnel when it was time to conduct fieldwork. With the initial planning completed, the engagement manager of each group drafted an engagement letter that was then sent to and accepted by their client.

With the introduction and planning phases of the AUPs complete, the engagement managers drafted testing programs for the entire engagement and

determined with the team and financial leaders of their church, the timing of field testing for each. Each team then began fieldwork, which consisted of tests of controls and substantive testing. This process was different for each team based on the church and the experience of the students within each group. None of the teams had any prior year audit or review work papers; the project was simulated as though the groups were in a client takeover setting. In this situation, each team had to create new work papers to perform their tests from scratch. Testing varied based on the agreed-upon procedures with each church.

Figure 1: Agreed Upon Procedures (AUP) Steps

Pre Work	Value Proposition	Client Engagement / Management	Implementation	Client Feedback / Student Feedback
<ul style="list-style-type: none"> • Team organization • Establishing protocols • Articulating the problem 	<ul style="list-style-type: none"> • What is the benefit to the client? • What talents will the client have access to? • How will this promote learning at the deepest level for students? 	<ul style="list-style-type: none"> • Understanding the client’s needs and environment • Understanding the technical requirements of auditing including assessing risks • Communication skills • Project management skills 	<ul style="list-style-type: none"> • Execution of AUP program • Leveraging team skills • Maximizing the benefits to the students and the clients • Delivering on AUP and final report 	<ul style="list-style-type: none"> • Debriefing • Next steps • Client satisfaction • Student learning outcomes

It should be noted that the churches, while from different denominations, were all similar in that they were small and did not have a professional, independent audit or review performed annually. In years preceding our student-led AUPs, engagements varied widely from walkthroughs and reviews to agreed-upon procedures performed by internal church personnel that were not independent. In addition, documentation of procedures performed prior to our student-led teams was not always complete.

Upon completion of all the fieldwork testing, engagement managers, along with assisting staff accountants, tested the financial statements to complete the spreadsheet found in the “Local Church Audit Guide”, Addendum II (Appendix B). This spreadsheet records the balance of each fund at the beginning of the year, funds received, funds disbursed, and transfers between funds to arrive at the balance at the end of the year; this balance should match the amount recorded in the financial statements. Once each of the engagement teams had assured that the financial statements were free of material misstatement, the managers drafted the Independent Accountant’s Report on Applying Agreed-Upon Procedures for their church.

The AUP work papers along with the draft independent accountant’s reports were then emailed to the detail / quality reviewer of all three engagements as well as the general reviewer (the Auditing II professor). After all review questions were appropriately cleared, a draft of the independent accountant’s report, along with suggestions for improvement, was sent to each respective client. These reports were then presented to each of the clients at a closing meeting. The AUP closing meetings

included the financial leaders of each church as well as another member of the church leadership council. In addition, a different faculty member from the university attended each meeting along with the student engagement team. Discussion at the closing meetings primarily centered on the improvement suggestions for each church. Final revisions were made to the report after the closing meetings, and the AUP reports were signed and issued as final.

Given that each of the three groups was working with a different church for the service-learning project, each group had slightly dissimilar experiences. Initially, only one student had a significant auditing experience prior to the service-learning project. This allowed that group’s engagement to run smoother and be more organized than the other teams’ AUPs. This same group was required to travel to the church to perform their work on-site for their substantive and controls testing. The other two groups were given paper and electronic documents that were then tested on-site at the university.

Working with the electronic documents proved to be difficult at some points in the engagements due to software failures and the groups’ inability to access certain documents. The result, however, gave the group the opportunity to communicate with the financial leader of the church to fix the issues and therefore, enhance critical interpersonal communication skills. The group that worked at the church also had a chance to hone these skills as they worked directly with the client while at the site. Studies have shown that higher interpersonal communication skills are an imperative attribute in the business community. (Dickins and Reisch 2009; Kolb 1984; Rogers 1969)

Each team struggled to some extent with team members who did not want to put in the effort to participate in the AUP process. As abundant academic research on peer evaluations and other interventions demonstrate, this is a challenge for any team or professor in the academy (Carnaghan and Webb, 2007; Gammie and Matson, 2007; Wagar and Carroll, 2012; Elizaga and Markman, 2008; Vik, 2001). Dealing with issues such as these allowed the students, especially the engagement managers of the groups, to address the issues and encourage these individuals to pull their own weight. One group had to go so far as to have a meeting with an engagement team member that would result in the student's termination from the team if improvements were not made. Naturally, situations such as these are unpleasant but unavoidable in real-world business situations and give students a practical experience beyond the pedagogy of auditing.

Evidence

We gathered qualitative evidence for the church audits consisting of confidential surveys from both students involved in the service-learning project and the financial leaders of the churches involved. Given that the idea of a church AUP engagement, service-learning project was integrated into the auditing course after the semester had already begun, there was no time to gather empirical data from students or church personnel as baseline data. However, key qualitative findings were nonetheless obtained and conclusions drawn.

The purpose of implementing service-learning opportunities into accounting pedagogy is to create a real-world, hands-on experience to supplement the lecture style learning requested by the

Pathways Commission Report (American Accounting Association, 2012). One student stated, "The church [engagements] solidified what we were learning in class. In some instances, they taught us what we were supposed to learn [in class]. Sometimes it is difficult to learn concepts without being hands-on. The church [AUPs] gave us that valuable hands-on experience" (Student 1 comments, November 2012). Another student said, "It was my first experience with any auditing testing and the ability to have this portion was amazing to do in a class. The firsthand experience is priceless and it helped me understand the ideas we discussed during the first semester of [auditing] class" (Student 2 comments, November 2012). Students need to have confidence that they can and will succeed when they leave the academy and enter the business world. Their confidence was solidified by having this practical learning opportunity in not only being able to perform audit or similar testing, but also to manage projects for any field of business. "Within the project, we set internal deadlines to reach our goals in a reasonable amount of time. Having a 'real world' project helped me take project management seriously" (Student 3 comments, November 2012). This student, as well as many others, will be able to take experiences from this auditing class and implement them in many aspects of their business careers.

While it is important to understand the foundational principles of a business discipline, one must also have the interpersonal skills necessary to interact with others in the business community. As noted earlier, "recruiters believe that the specific discipline is often not as important as all-round abilities and attributes such as interpersonal and relational skills" (Weisz, 2000, p. 33). One student said, "By working

in teams, I learned how to effectively communicate and work with other individuals. Auditors often work in teams so I found this assignment very practical in that sense” (Student 4 comments, November 2012). Another stated, “We needed to use written communication to communicate with the financial leader of the church via email and oral communication when talking to the treasurer and secretary at the church during field testing. These different ways of communicating along with working as a team helped strengthen our interpersonal skills” (Student 5 comments, November 2012).

The church AUP engagement process is beneficial for the students involved while preparing to enter the business world; but a service-learning project will not only augment traditional audit education but also benefit the community as well (Gujarathi and McQuade, 2002; Gujarathi, McQuade, and Sarmiento, 2002; McCoskey and Warren, 2003). Since churches have been struggling with financial situations, a service-learning project with churches is a way for business schools and their students to engage in their communities while at the same time improving society. One of the financial leaders of the churches said, “The student [engagement] provided a more in-depth and independent review than our previous in-house audits. Student [improvement suggestions] triggered us to think more about small changes we could make to improve controls” (Church Leader A, November 2012). Another financial leader said that some years the audit or review “simply did not get done” if they could not find anyone within the church to do it (Church Leader B, November 2012). Several of the churches have also implemented new policies or internal

controls as a result of suggestions from the student engagement teams.

Reflection

The business academy has an opportunity to re-structure accounting and auditing pedagogies. Indeed, the AAA and the AICPA have stated through the Pathways Commission Report that accounting faculty should strive for new methods when it comes to teaching accounting. An ancient Chinese proverb, as noted by McCoskey and Warren (2003), says it best by suggesting:

What I hear, I forget.

What I see, I remember.

What I do, I understand.

Students learn better through hands-on approaches to teaching business topics; based on our research, they also prefer this strategy of active learning (Paisey and Paisey, 2003; 2005). This type of learning better prepares students for the experiences they will have in the business world by not only teaching the principles that must be known but also mastering them through practical applications of the foundational information presented in the classroom (reference Figure 2: Reflections).

Some students expressed dissatisfaction from time to time during the project. Multiple teams complained that some teammates were not pulling their weight as much as others. Students generally know that this may be an issue going into projects in which they work in teams. This, however, is the very reason why working in teams benefits the students in this service-learning project. Professional auditors generally work in teams very similar to the ones that were structured for

this project. Not all professionals contribute equally and students will likely face a similar challenge in the business world. Dealing with this issue hones interpersonal skills by encouraging a dialog with teammates on how to deal with the issue and communicating on what needs to be done to resolve the issue. This strengthens teamwork skills and overall interpersonal communication.

In addition, because this project involved churches that were not located at the university, some teams had more work to do for the engagement than other teams. Again, as is the case in the real world, some auditors will have bigger clients than others and in turn more work. Having this experience in school is a way to become even more acclimated with practical auditing.

Figure 2: Reflections

Key Reflections	Source *	Related Business Pedagogy	Related Service-Learning Tenet	Key Program Learning Outcome
Interpersonal Communication	S	Working as a team to create the best possible environment for the highest quality product.	Relying on others to combine efforts to assure project success rather than several individual pieces put together.	Teamwork, Trustworthiness, Cooperation, Support
Establishing Protocols	P	Establishing the necessary procedures to conduct a thorough agreed-upon procedures engagement or audit	Students learn the necessary procedures for a simple audit that can be applied to concepts in the classroom as well as in future careers. Churches receive the benefits of a quality audit and assurance that the financial and internal control aspects of the church are in order.	Sequential work, Client satisfaction, Real-life application
Articulating Problems	S	Communication skills and Project management skills	Students gain experience working as a team and putting in the effort expected so that the team is successful rather than the individual success. Students see how there is not always a clear-cut answer to real life situations as is the norm in textbooks.	Communication, Collaboration, Relationship

* Student (S) or Professor (P)

The overall feedback we received from this project was very positive. Students enjoyed the active learning aspect of the project and the business professionals saw desirable qualities from the students that they seek from potential employees. The churches involved in the service-learning project were very impressed with the quality of work from the students and have requested that future classes replicate the project. We have plans to repeat the service-learning project in the future with more Auditing II classes.

As the engagement manager of one of the teams, Author 2 personally enhanced his interpersonal communication skills through the church AUP engagement. As with the rest of the teams, none of the students wanted to take control of the testing and overall engagement, so the job ended up with him. Since Author 2 was the manager, he ran the process as he did with any other project. He was also the only student with any prior auditing experience so he was able to delegate different jobs to the staff accountants and do a significant amount of testing himself.

As the rest of the team began to finish the field testing for the engagement, Author 2 began testing the financial statements for the church. For this process, he picked one of his teammates to help him with the financial statement testing and together they finished the engagement without additional help from the rest of the team. At the end of the process, Author 2 personally drafted the final independent accountant's report and simply told the rest of the team about the reports' contents. At the closing meeting, he planned to be the one to do most of the talking and simply filter specific questions to his teammates for the testing they performed.

Less than a week before the closing meeting for the church AUP engagement, Author 2 took ill and was hospitalized for a week. Due to this, he was unable to be with his group during the closing meeting. To Author 2, this was not critical because the testing was complete so he did not believe that the rest of the team would have any problem stepping in to take his place. It was not until sometime after the semester had ended that Author 2 realized he had kept most of his team in the dark about their engagement throughout the entire process to the point where he alone knew every aspect of the testing. This was an important lesson for Author 2 and his teammates: that unexpected things happen in life all the time. Communication is a key element to interpersonal skills and business that could have prevented any problems that came from his illness. Hands-on situations such as these are skills that students simply cannot pick up with a textbook in a classroom setting and has benefited the entire team as they take what they have learned into the business world.

Finally, and looking back on the last two years of a young career, Author 2 can pinpoint the experiences gained through the church AUP engagement. As a staff auditor of a professional accounting firm, he can now emphatically state that the communication and teamwork skills gained through the experiences with the church personnel and AUP engagement team are incredibly important now when working with other staff auditors, managers, and clients. Another experience Author 2 didn't realize was so important was the ability to develop and work through testing programs and checklists during the engagement. Having this ability to create programs and professional working papers, all under the watchful eye of a CPA professor, is invaluable for a young professional.

As a Professor new to the academy and stung by first semester reviews requesting more hands-on application of auditing concepts, Author 1 wrestled to find a successful mix of lecture and experiential learning. Further, as a former Chief Audit Executive of a publicly traded company, he very much wanted his students to graduate with practical auditing skills as well as to better demonstrate those audit concepts that “are often abstract [and] difficult to learn” (Kaciuba, 2012, p. 248). As such, Author 1 jumped at the chance to allow students to perform agreed-upon procedures of a local church’s financial records when presented with the opportunity.

However, Author 1 initially struggled with several issues including how to fit this into a completed syllabus as well as how to accommodate an Auditing II class of 15 students with one engagement. The former was quickly resolved with the insertion of the church AUPs in place of two case studies. The latter issue of having enough work for three teams of five students was not resolved until one month into the semester; three churches eventually agreed to the idea of student engagement teams and the class was off and running.

Author 1 has left the details of the church AUP engagement process to Appendix A and invites you to review the steps that were followed if you plan on implementing a similar process. However, he cautions you not to think of this service-learning opportunity as a prospect solely for an auditing class. Indeed, as his student co-author noted above, the hands-on testing experience was only one benefit, albeit a strong one.

As Author 1 reflects on the experience of not only the first year but two years hence, the students also benefited from developing teamwork, leadership, project management, client service, work paper preparation and review, time budgeting, and problem resolution skills. In addition, and as noted by Hurtt et al, “professional skepticism, like independence, is essential to the auditing profession, but is often difficult to define and measure”, as well as difficult to teach (Hurtt, Brown-Libur, Earley, and Krishnamoorthy p. 46). The service-learning AUP engagement had a profound impact on students’ auditor skepticism, especially given their initial paradigms about churches and the employees in that environment. Many students later commented that a future job offer came as a direct result of the experience and the KSAs that they refined on the engagements.

The experience also provided a wonderful opportunity for our college of business and university to give back to our community. The church financial leaders were extremely complimentary of the efforts of the students and found that having an independent set of procedures performed of their financials was very beneficial to their church’s overall internal control environment. Further, the volunteerism enhanced our standing as a college with a significant local employer in the region for whom the three church financial leaders happened to all work. It also helped several students eventually secure regular full-time positions with this employer as the financial leaders could view the students’ excellent KSAs first-hand. Finally, as a new professor, it allowed Author 1 access to three local accomplished financial leaders

very early in his academic career. In one case, the connection has been invaluable not only for the church engagements but also for subsequent mentorship and speaking opportunities with the college.

Conclusion

Accounting and auditing pedagogy can be more effective for students and business through a hands-on, practical approach supplementing traditional lectures. We have found this to be especially true for an introductory auditing course as through the church AUP engagements. As stated in the introduction, the subject matter of auditing, while critical, can be tedious and uninteresting. Therefore, the aim of auditing for students and educators should be the same: the demonstration of practical methods and tools to complement the foundational auditing curricula.

Indeed, the Pathways Commission stated:

While the classroom-learning environment holds an important place as lab, as forum for discourse, as community for discussion, and as point of challenge within the accounting curriculum, formative education for practice cannot be accomplished exclusively in the traditional classroom setting. The Commission believes a foundational clinical learning experience in which students integrate technical knowledge, professional skills, and understanding of the accounting profession's broad societal purposes and commitments should be required (American Accounting Association, 2012, pp. 71-72).

Further, the Commission invited educators to “transform learning experiences” when designing “accounting’s curricula of the future” (American Accounting Association, 2012, p. 37). Combined with the service-learning and teamwork aspects of the project, the church engagements as a vehicle for a clinical learning experience can be this transformative opportunity for students to assimilate as they progress from the academy into the business world. Moreover, students gain the benefit of exercising not only their auditor skepticism, but also other KSAs that will be critical to their future success as accounting professionals. Finally, the academy benefits from their improved standing in the community while enhancing accounting and auditing pedagogy as advocated by the Pathways Commission.

A limitation of this service-learning AUP engagement is that there is no control data from audit classes in which there is no AUP assignment. In addition, one could theorize that repeated applications of the same engagement at the same churches could lead to waning hands-on impact or results. Future studies could benefit from using Learning Style Inventory as a method to group students to create the engagement teams. This would likely better simulate the real-world as student teams wrestle with solving an audit issue while approaching it from very different perspectives.

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Appendix A

CLASS in a box

There are several steps that one must go through in order to start a service-learning project such as the church agreed-upon procedures engagement. Following is one suggested approach that worked for our class and situation. You may find a better combination of steps but regardless, we encourage you to begin a service-learning engagement with your next class.

A preliminary step that we suggest you follow is to confirm with your institution's administration that students will be allowed to participate in a service-learning project such as this. This is critical to assure that the students, professor, college, and/or university cannot be held liable for the service-learning project. For our proposed engagements, we contacted our administration and eventually worked with legal advisors. Our legal team determined that a state statute allowed the students as well as their professor to participate as volunteers on an AUP engagement with little to no liability concerns.

Once legal and potential liability issues are addressed, the first step then is finding churches that are willing to work with students on this type of project. We have determined that many churches are in need of financial help if not audit or independent testing assistance. Due to this, it is likely that most colleges or universities will be able to find a church or other not-for-profit organization that will be willing to help students and therein, help their organization, through a service-learning opportunity.

After negotiating the terms of the AUP engagement with the church and agreeing to let the students perform it for the service-learning project, information and documents about the church will need to be exchanged between church personnel and the professor before the students contact the church personnel directly. Such documents should include but are not limited to the following:

- financial statements
- financial budget
- organization chart and/or committee organization
- prior-year audit, if available, and
- "Local Church Audit Guide" generally accepted by churches in the denomination

Once these documents have been exchanged, a meeting between the church personnel, professor, and the students should be arranged. The purpose of this meeting is to discuss the church including:

- items of importance regarding the church being tested
- scope of the AUP engagement
- key issues
- understanding of internal control
- areas of focus with the engagement

- expected source document review and engagement process
- discuss timing of the fieldwork and timing of the final report
- exchange contact information for both the church personnel as well as the students involved in the engagement

After the student team has successfully met and discussed the church AUP engagement with the church personnel, the students should meet as a team to discuss roles within the team and form a plan for the engagement. Such roles should include:

- who will act as the manager and lead the team
- who will act as an independent reviewer for the team, and
- who will perform the detailed testing and original work

Plans should include:

- when the students can meet for team planning and review meetings, and
- when, if necessary, students would be available to perform testing, by either:
 - traveling to the church
 - performing testing on-site at the college or university

Following all of the preliminary meetings and discussions, the manager will need to prepare an engagement letter. The letter should include any and all agreed-upon procedures, if there are any scope limitations or exclusions, work to be completed by the church's staff (i.e. client-prepared documents), and the output of the engagement (i.e. an independent accountant's report or church-designated document). This letter will need to be sent to the financial leader (or audit committee, as appropriate) of the church, and signed by both the student team manager and church financial leader.

The engagement team (or at a minimum, the manager) should then meet to assess risks of material misstatement, design testing procedures, and set a materiality threshold. Once this is completed, the team should determine the tests to be performed and the documents necessary for these tests. If the team has already received these documents from the church, they can begin testing. If not, the engagement manager will need to contact church personnel and either arrange to receive the documents or set up a time when the student team can travel to the church to perform substantive and controls testing. If contacting church personnel directly, make sure the team has a list of everything they will need for testing and prepare to be flexible as the church may not be able to meet the students in a timely fashion.

When the student team has received all necessary documents, substantive and controls testing can be performed. This will take the majority of the time since most students will likely be unfamiliar with this process. It is important for the professor to keep somewhat of a distance from the students during this process as this is how they will learn by doing. Timely guidance without explicit instruction should be the approach.

Upon completion of the AUP testing, the engagement manager along with the staff accountants, can begin verifying the financial statements of the church. Hopefully there will be few issues after substantive and controls testing such that the financial statements will tie out to supporting documents. If any problems occur, the professor may need to step in and make sure the students are performing the tests correctly and taking the necessary actions (should a significant disagreement occur, for example).

After all the testing has been completed, the student team can draft the Independent Accountant's Report on Applying Agreed-Upon Procedures for the church. In addition, a report of suggested internal control and process improvements (may be called a "supplemental report") should be prepared or integrated with the independent accountant's report. When the audit and any supplemental reports have been drafted and reviewed by the professor, the engagement manager can then send the reports to the financial leader (or audit committee, as appropriate) of the church for review before the closing meeting. This is a critical step to not only simulate the real world, but also to prevent surprises at the closing meeting.

At the end of the AUP engagement, the student team should again meet with the financial leader and / or audit committee of the church for a closing meeting to present:

- the financial statements as may be required by the church's "Local Church Audit Guide"
- the final independent accountant's report and any supplemental reports
- an explanation of the process followed

Any questions can be answered at this time and the reports can be revised, if needed.

To finish the service-learning project, the independent accountant's report and supplemental reports should be revised based on the comments and suggestions made during the closing meeting. After a review by the professor, the revision(s) should be sent to the client and the copy kept for the records of the professor, college, and/or university. Finally, consider surveying the students that participated in the service-learning project as well as the church personnel to evaluate the effectiveness of the project.

Appendix B

CHURCH Audit Guide

http://www.umcsc.org/PDF/forms/local_church_auditguide1.pdf

PENALTIES AND BONUSES FOR BEING MARRIED UNDER FEDERAL TAX LAWS: A BRIEF HISTORY AND UPDATE OF SOME IMPLICATIONS OF SAYING “I DO”

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Since the U. S. federal income tax was first levied in the early 20th century, there have been various provisions in the law that have affected taxpayers differently based on their marital filing status. Recent federal tax law changes and Supreme Court rulings, as well as the Affordable Care Act of 2010, have significant tax penalties for married taxpayers; for example, couples filing jointly with lower total “exclusions” than twice those provided for single taxpayers. Marriage bonuses might result from couples with one spouse having much higher level of income than the other spouse, with advantages from filing jointly compared with the tax liabilities if they filed as singles.

This paper will provide a brief history of this tax differential treatment of marital status, demonstrate some current examples of the penalties and bonuses, and conclude with a limited discussion of potential remedies for married and single taxpayers.

Introduction

Since the beginning of our federal income tax system in 1913, Congress has differentiated between married and unmarried taxpayers; sometimes to the advantage of single taxpayers (a marriage penalty) and sometimes to the advantage of married couples (a married bonus).

This paper defines the marriage penalty and the married bonus, and then tracks the legislative history of the tax treatment of the married versus the unmarried. Examples are given of marriage penalties and marriage bonuses as a result of recent legislation under the Affordable Care Act and the American Taxpayer Relief Act

of 2012. Now as a result of the *United States v. Windsor* decision, same-sex married couples must also consider the tax implications of marriage.

Because Congress cannot predict a couple’s particular situation, the authors urge that tax policy should encourage neutrality in the taxation of the married as opposed to the unmarried. However, in the past, Congress has vacillated on this issue. Although married taxpayers had mostly enjoyed a marriage “bonus” previously, with the Tax Act of 1969 Congress established a new rate schedule for single taxpayers. With this new rate schedule, Congress acknowledged that this change would result

in a marriage penalty. In the legislative history, this penalty was justified with the following somewhat contradictory and potentially erroneous reasoning:

With the new rate schedule for single persons, married couples filing a joint return will pay more tax than two single persons with the same total income. This is a necessary result of changing the income splitting relationship between single and joint returns. Moreover, it is justified on the grounds that although a married couple has greater living expenses than a single person and hence should pay less tax, the couple's living expenses are likely to be less than those of two single persons and therefore the couple's tax should be higher than that of two single persons (*General Explanation of the Tax Reform Act of 1969*, Staff of the Joint Committee on Internal Revenue Taxation, p.223).

This statement demonstrates Congress' ill-fated attempt to make assumptions and prediction based on marital status. Unmarried couples, married couples, and single taxpayers may all have unique situations which should not be dictated by tax issues; thus the case for marriage neutrality in taxation.

The Meaning Of Marriage Tax “Penalty” Or “Bonus”

Depending on the author, the definitions of marriage tax penalty or marriage tax bonus can differ slightly, but

generally might be summed up as follows: “When you marry, even if your incomes don't change, your total taxes may go up, down, or stay the same . . . because we have a progressive income tax and tax families rather than individuals. If taxes go up, you face a “marriage penalty”; if they fall, you get a “marriage bonus”” (Burman et al., 2013, p. 46).

In an exhaustive study by the Congressional Budget Office (CBO) issued in June 1997, marriage penalties and bonuses are attributed to three major important, but potentially incompatible goals of our federal income tax system: progressivity of rates such that higher income taxpayers pay higher marginal income tax rates; equal treatment of married couples (typically via using income splitting theory and methods); and marriage neutrality whereby the amount of taxes paid is neutral or unaffected by the marital status of the taxpayers and they are taxed as individuals.

In addition to these three goals cited by the CBO, others indicate another underlying theory or goal affecting our federal income tax system: the concept that taxpayers should pay taxes based on their ability to pay. (Murphy et al., 2003) This concept would indicate, for example, that a couple earning a certain level of income has less ability to pay tax than a single person earning the same total amount of income. The tax law thus uses several techniques to help recognize this “ability to pay” through the use of exemptions, standard deductions, and average (progressive) tax rates based on the taxpayer's marital filing status. This results in the four filing status categories still used today: single, head of household married filing jointly, and married filing separately.

The CBO study (1997) summarized the factors resulting in marriage penalties or bonuses as primarily due to seven causes: personal exemptions, standard deductions, tax brackets, the Earned Income Tax Credit (EITC), phase-outs of personal exemptions, limitations on itemized deductions, and other fixed dollar limitations that can affect taxpayers differentially based on marital status. The approach and treatment of taxpayers in these seven areas could be considered all related to the ultimate consideration of the taxpayer’s “ability to pay” concept mentioned above in that, in all of these areas, tax treatment of taxpayers (based in part on their filing status) varies and becomes less favorable as taxpayers enter higher brackets of disposable income after giving consideration to their marital status, dependents, allowable itemized deductions and related characteristics.

Indeed, based on an analysis of 1996 Internal Revenue Service (IRS) Statistics of Income in 1996, the CBO concluded fewer than 10% of all jointly filing taxpayers are unaffected by marriage tax penalties or bonuses. The CBO notes that “the share of married couples who have two earners has risen sharply as the difference between the earnings of husbands and wives has decreased, particularly for couples with higher incomes. Those labor market and demographic changes . . . have helped to increase the fraction of couples incurring marriage penalties and drop the proportion receiving marriage bonuses” (1997, p. 37). The study concludes that the trends of more working-age couples with two earners, as well as the greater parity of earnings between the spouses, has led to higher likelihood of marriage tax penalties; additionally the incidence of one-earner couples has dropped, leading to fewer couples benefitting from marriage bonuses.

An updated study published in 2009 (Feucht et al.) indicates that many married filing joint couples were still incurring marriage tax penalties, especially at the lower and higher marginal tax rate brackets. While the researchers did find a reduction in overall marriage tax penalties due to provisions adopted in the Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA), the marriage tax penalty continued to affect many taxpayers, particularly those married couples with approximately equal income levels.

Other examples of marriage tax penalties and bonuses in addition to federal income taxes include social security benefits, estate taxation, alternative minimum tax (AMT), and Earned Income Tax Credit (EITC), to name a few (Burman et al. 2013). This paper primarily focuses on the federal income tax issues, but will also include a few recent examples of some of the other areas of tax differences due to marital status.

Brief History Of Marital Status Under Federal Tax Laws

In 1913, the federal income tax was first adopted. Even at that time, a slight marriage tax penalty existed as a result of personal tax exemptions; single taxpayers received a \$3000 exemption while married joint filers received a total of \$4000 (or \$2000 each). However, this penalty was apparently not significant, and often not mentioned in discussions of the history of tax penalties. Also, in 1918 joint returns for married couples were allowed, but still treated the taxpayers the same as if filing as individuals.

This situation continued until approximately 1948 with the adoption of income splitting. By 1948, a growing discontent was developing over the equal taxation of married couples living in states that were community property states (and thus allocating total income of a couple to assume each had earned the income equally) versus couples living in states that were not. Burman and Slemrod (2013) indicated that before income splitting, married couples faced inequities depending on their state of residence. Split income theory basically treated couples as they would be treated in a community property state. “This idea was first incorporated in tax law to put married persons in non-community property states on the same basis as married persons in community property states.” (Miles & Lane, 1974, p. 8-5).

As Pechman (1983, p. 97) states:

The classic argument in favor of income splitting is that husbands and wives usually share their combined income equally. The largest portion of the family budget goes for consumption, and savings are ordinarily set aside for the children or for the enjoyment of all members of the family. Two conclusions follow. . . . Married couples with the same combined income should pay the same tax irrespective of the legal division of income between them; second, the tax liabilities of married couples should be computed as if they were two single persons with their total income divided equally between them.

Concerns over the tax situation of single filers with family obligations led to the inclusion in the Revenue Act of 1951 a new filing status for head of household taxpayers, with tax rates that were higher than for singles but smaller than for joint filers. This resulted in married filing joint taxpayers with children having some additional tax penalties compared with their tax burden had they been able to file individually or as head of household.

However, single taxpayers grew increasingly upset by the perceived tax penalties they bore as a result of the avoidance of marriage tax penalties (after 1948) and the increase in marriage tax bonuses. The Tax Reform Act of 1969 created new tax rate schedules for single as well as married filers. This time, Congress acted partially to address perceived inequities for single taxpayers in some cases when compared with those married filing jointly or as head of household (Office of Tax Analysis 1999). Pechman notes: “Pressures on Congress to treat single persons more liberally—by broadening the head-of-household provision, increasing their exemptions and other devices---resulted in the adoption of a new rate schedule for single persons under the 1969 act” (1983, pp. 98-99).

In 1981, the Economic Recovery Tax Act provided for the marriage “deduction” of 10% of the first \$30,000 of earned income for the spouse earning the lesser amount. This provided at least partial relief from the marriage tax penalty for working spouses, but was eventually repealed by the Tax Reform Act of 1986.

In 1993, the Revenue Reconciliation Act increased tax rates, thus once again causing the marriage tax penalty to increase (Fiore 1995). Relief for the penalties was once again sought by those suffering from the higher taxes imposed. Fiore does note, however, that depending on the cohabitation laws in a state, the cohabitant of an unmarried couple living together might be able to be claimed as a dependent of the other if the dependency tests are met.

More recently, Congress passed the 2003 JGTRRA which allowed setting the tax brackets for the lowest two marginal tax rate levels (10% and 15%) for married filing joint taxpayers to twice that of single taxpayers, but disparities were allowed to continue for the next four higher tax brackets.

As noted below, significant recent significant legislation and judicial actions have affected the area of marriage tax penalties and bonuses, including the Supreme Court’s *Windsor* decision, the Patient Protection and Affordable Care Act of 2010, and the Taxpayer Protection Act of 2012.

The *Windsor* Decision And Its Implications

In *United States v. Windsor* issued in June 2013, the Supreme Court struck down Section 3 of the Defense of Marriage Act (DOMA). Section 3 states that in interpreting federal laws and regulations, the words “marriage” and “spouse” are defined to exclude same-sex partners (1 U.S.C. Sec. 7). This portion of DOMA was declared unconstitutional because in the opinion of the Court, it is a deprivation of the equal liberty of persons protected by the Fifth Amendment (*Windsor* 570 U.S. ____ (2013)).

The facts of *Windsor* involved two women, Edith Windsor and Thea Spyer, who under New York law were legally recognized as married. Spyer died and left her estate to Windsor. On the federal estate return, Windsor claimed the estate tax exemption for a surviving spouse. The Internal Revenue Service denied the exemption on the grounds that DOMA denies same-sex couples from qualifying as a surviving spouse. Windsor paid \$363,000 in estate taxes and brought a suit for refund. In declaring DOMA unconstitutional, the Supreme Court declared that same-sex couples who are legally married under state law are treated as married under federal law and receive the same benefits and burdens. Thus, Windsor was entitled to the spousal exemption.

Although the *Windsor* decision held that the federal government and its laws must give full effect to marriages in those states that provide for same-sex marriages, it did not decide whether or not states are required to provide for and recognize same-sex marriages. However, in Revenue Ruling 2013-17, the Treasury Department announced that same-sex couples who legally marry in a state recognizing same-sex marriage will be treated the same as opposite-sex couples for tax purposes, even if they have moved to a state that does not permit same-sex marriages. Thus, legally married same-sex couples are required to file federal taxes as either married filing jointly or married filing separately effective September 16, 2013. They will not have the option of filing as single (Rev. Rul. 2013-17).

As a result of *Windsor* and Revenue Ruling 2013-17, same-sex couples who are legally married can be subjected to a marriage penalty, or in the alternative,

receive a marriage bonus. This group must now consider potential tax issues in considering whether or not to marry.

Interestingly, this ruling would now eliminate in many cases potential advantages for previously unrecognized gay marriage couples; in the 2008 article on the tax advantages of gay marriage, Seto noted that due to the legally unrecognized status of gay marriage at that time, gay couples could pay systematically lower federal income taxes as single filers than similarly situated heterosexual couples whose marriages were recognized under the tax code. Indeed, even with the *Windsor* decision, uncertainty over the full implications and prospects for same-sex marriages seem to be likely in the future (Zaritsky 2013). However, the ruling issued by the U.S. Department of the Treasury and the Internal Revenue Service on August 29, 2013, clarifies that same-sex legally recognized married couples will be treated as married for all federal tax purposes, including for income as well as estate and gift taxes. The ruling does not apply to registered domestic partnerships, civil unions or similar relationships (U. S. Treasury 2013).

As a result of the *Windsor* decision, Ahroni and Silliman (2014) suggest that same-sex couples should seek tax advice to consider whether or not they should consider amending previously filed tax returns. The authors also suggest taxpayers affected by *Windsor* consider filing a protective refund claim to help preserve their potential refund claims as changes in tax laws are resolved.

Marriage Penalties And Bonuses Under Recent Legislation

As noted above, in June 1997 the Congressional Budget Office issued the study, “For Better or for Worse: Marriage

and the Federal Income Tax”. The study examined the ways in which federal tax law affects the income taxes married couples pay while also considering the influence of demographic and labor market changes. The study also analyzed possible changes in the federal tax code that could reduce the marriage penalty. Subsequent tax law did adopt (with modification) the suggestion of increasing tax bracket widths and standard deductions for joint filers to twice those for single taxpayers.

Although in recent years Congress has purported to mitigate the marriage penalty, the Patient Protection and Affordable Care Act of 2010 penalized married taxpayers. The American Taxpayer Relief Act of 2012, while in some circumstances favored married taxpayers, disfavored married couples in other situations, particularly higher income taxpayers where both spouses work and have approximately equal income.

The Patient Protection and Affordable Care Act Of 2010

This act was enacted March 23, 2010 and was designed to generate \$438 billion to help pay for health care reform (Treasury Inspector General 2014). In addition to increasing the adjusted gross income threshold for medical expense deductions (from 7.5% to 10% of AGI with some exceptions for taxpayers 65 or older), the act created two additional taxes; the first on investment income, and the second on wage or self-employment earnings.

Additional 3.8% Tax on Unearned Investment Income

The Health Care legislation initiates a new tax on unearned investment income. Taxpayers are assessed an additional 3.8%

tax on unearned investment income when adjusted gross income exceeds \$200,000 for single taxpayers and \$250,000 for married taxpayers. These threshold amounts are not indexed for inflation. The tax is 3.8% of the lesser of the investment income or the amount adjusted gross income exceeds the threshold amount (I.R.C. Sec. 1411).

Additional Medicare 0.9% Tax on Earned Income

The Affordable Care legislation initiates an additional Medicare tax of 0.9% on wages (and self-employment income) in excess of \$200,000 for singles and \$250,000 for married taxpayers. Note that the \$250,000 for married taxpayers is based on the combined wages of the couple. These threshold amounts are not indexed for inflation (I.R.C. Sec. 3101(b) (2)).

(1) Example of the marriage penalty.

Assume a married couple has wages of \$300,000 and dividends and capital gains of \$100,000. Their adjusted gross income is \$400,000. They have exceeded the threshold by \$150,000. The Medicare surtax would be taxed on the lesser of the \$150,000 threshold excess or the \$100,000 dividends and interest. Thus the investment tax would be \$3,800 calculated as $\$100,000 \times 3.8\% = \$3,800$. The additional tax on earned income would be \$450 calculated as $\$50,000 \times 0.9\% = \450 .

If the couple is not married and each file as single and each have wages of \$150,000 and dividends and capital gains of \$50,000, the adjusted gross income for each is \$200,000. Thus no investment surtax or 0.9% earned

income applies; therefore, a married couple pays an additional \$3,800 investment tax for the same income and an additional \$450 for earned income.

Note the disparity in taxes that occurs with the 0.9% earned income tax if married persons each have earned income of \$200,000. Together they earn \$400,000 and exceed the threshold by \$150,000 (\$400,000-\$250,000). They would owe an additional \$1,350. If they are not married they would not owe the additional tax.

(2) Example of the marriage bonus.

Assume a married couple has adjusted gross income of \$250,000, comprised of \$225,000 in wages and \$25,000 in dividends. The couple is not subject to either the 3.8% investment tax or the 0.9% earned income tax. An unmarried couple (assume the income is all attributed to one partner) with the same items of income would pay additional taxes of \$1,175. The 3.8% investment tax would be \$950 (\$25,000 dividend investment income \times 3.8%). The 0.9% earned income tax would be \$225 (\$25,000 excess earned income \times .9%). Thus there is a marriage "bonus" in this situation of \$1,175 for the previous taxpayers who are married filing jointly.

The American Taxpayer Relief Act Of 2012

This legislation was enacted on January 2, 2013, and increased taxes as well as extended some previously enacted tax provisions. Some of the changes affecting married taxpayers are highlighted below.

Estate and Gift Tax Provisions

The change for Estate and Gift taxes is an area where the legislation proves advantageous for married couples. The law makes permanent \$5,000,000 adjusted for inflation, the applicable exclusion amount for estate and gift taxes (I.R.C. Sec. 2010 (c) (3) (A)). Due to annual increases due to inflation, the exclusion amount has grown to \$5.34 million for 2014. Of great significance and tax savings for married couples is the provision that makes permanent portability of a deceased spouse's unused exclusion amount (I.R.C. Sec. 2010 (c) (4)). “Portability” allows a married couple to transfer by inheritance or gift a total of \$10,000,000 (adjusted for inflation) without paying any federal transfer taxes---double the amount a single taxpayer would be allowed to transfer tax-free.

Income Tax Provisions

The legislation made permanent the marriage penalty relief provided in the Economic Growth and Tax Relief Reconciliation Act of 2001. For married taxpayers, the standard deduction for joint filers and surviving spouses is twice the inflation-adjusted amount of the standard deduction applicable to single taxpayers and married taxpayers filing separately. Also, for joint filers the size of the 15 percent tax bracket is twice the size of the corresponding rate bracket for single filers (I.R.C. Sec. 1 (f)). Although these provisions are advantageous to many married couples, some provisions of the Act penalize married taxpayers, as noted below.

Rate Schedule “Penalty” or “Bonus”

The rate schedules under the 2012 legislation penalize high-income married taxpayers. The schedules have both single

filers and married filers in the 35% bracket when taxable income reaches \$398,350. The rate increases to a new top rate of 39.6% when single taxpayers reach taxable income of \$400,000. Only an additional \$50,000 of income catapults married taxpayers into the 39.6% bracket, when taxable income reaches \$450,000. The rate schedules are indexed for inflation (I.R.C. Sec. 1 (i) (3)).

1) Example of marriage penalty under the new rates (2013 rates)

Compare an unmarried couple who each have taxable income of \$230,000 with a married couple who have taxable income of \$460,000.

Single taxpayers: Each will pay \$60,030 for a total of \$120,060

Married couple: Together will pay \$129,806

The married couple will pay \$9,746 more in income taxes than the unmarried couple.

(2) Example of the marriage bonus under the new Rates (2013 Rates)

Now assume that an unmarried couple has only one partner working and has taxable income of \$460,000, and the married couple has taxable income of \$460,000.

The single taxpayer will pay income tax of \$139,923.

The married couple filing jointly will pay income tax of \$129,806, for a bonus of \$10,117.

Capital Gains/Dividend Rate Changes under the 2012 Legislation

For taxpayers in the 39.6% bracket, the capital gains/dividends tax rate increases from 15% to 20%. Like the rate schedules, the capital gains/dividends tax rate increases to 20% to the extent taxable income exceeds \$400,000 for a single taxpayer and \$450,000 for married filers (I.R.C. Sec. 1(h)).

1) Example of the “penalty” under the 2012 legislation

Compare a married couple filing jointly, with other income of \$450,000 and capital gains of \$40,000 with an unmarried couple who each have other income of \$225,000 and capital gains of \$20,000. The married couple’s capital gain will be taxed at the 20% rate and total \$8,000. The unmarried couple will each pay the tax on the capital gain at the 15% rate and total \$6,000. The marriage penalty is \$2,000.

2) Example of the “bonus” under the 2012 legislation

Now assume that an unmarried couple’s income is all attributed to one partner, who has other income of \$400,000 and capital gains of \$40,000 and a married couple also has other income of \$400,000 and capital gains of \$40,000. The unmarried couple will be taxed at the 20% capital gains rate while the married couple will be taxed at the 15% capital gains rate. Thus the unmarried taxpayer will pay \$8,000 in capital gains tax and the married couple will pay \$6,000 in capital gains tax for the \$2,000 marriage bonus for filing jointly.

Alternative Minimum Tax Exemption and Phase-Out under the 2012 Legislation

The 2013 Alternative Minimum Tax exemption amount for single taxpayers is \$51,900 and \$80,800 for married taxpayers. The exemption phase-out begins at \$115,400 for single taxpayers and \$153,900 for married taxpayers. These amounts are indexed for inflation (I.R.C. Sec. 55 (d)). Thus, married taxpayers will likely have more exposure to the alternative minimum tax given the comparatively lower exemption and phase-out amounts.

Phase-out of Personal Exemptions and Itemized Deductions under 2012 Legislation

The phase-out begins for personal exemptions and itemized deductions at adjusted gross income of \$250,000 for single filers and at \$300,000 for married filers. These amounts are adjusted for inflation. Thus only \$50,000 of additional adjusted gross income for a married couple (versus twice the amount for a single filer) places them into the phase-out (I.R.C. Sec. 68 (b)).

Summary of the Effects of the 2012 Legislation on Married Taxpayers

The 2012 legislation mirrors the observation in the 1997 Congressional Budget Office study that couples in which both spouses work and have similar incomes are more likely to be confronted with the marriage penalty. Couples in which one spouse earns much less than the other, or does not work, often enjoy a marriage bonus.

Remedies Needed To Reduce Marital Status Disparities

First, it might be worth noting that if a married couple contemplates obtaining a divorce for the purpose of filing as single individuals, but they intend to remarry in the next tax year, they must file as married. The divorce would be potentially considered a sham by the IRS. However, if the divorce is valid and intended to be permanent, the IRS may allow the single filing (Thompson et al. 2003).

Also, the matter of marriage tax penalties or bonuses is one that could potentially affect people's choices as to marital status. Cano and Austin (2010) concluded, for instance, that family structure choice (involving the choice one makes in choosing with whom to associate and live for family and living purposes) can be affected by personal income tax considerations. Also choices about labor efforts could potentially be affected by marital tax impact. For example, currently the tax code may result in discouraging a spouse from working, either more or at all. The highest marginal federal income tax bracket of 39.6% plus FICA tax of 7.65% plus state income tax (example: Georgia) of 6% plus additional earned income tax of 0.9% puts the second earner into a marginal tax bracket in excess of 50%! This of course does not even consider the additional potential costs of the second earner working outside the home such as wardrobe expenses, commuting costs, childcare costs, etc.

Reduction of marriage tax penalties or bonuses will obviously affect the amount of tax revenues collected and potentially the distribution of the tax burden among married and single taxpayers. In the 1997 CBO

study, some possible “remedies” were analyzed including widening tax brackets for joint filers, raising the standard deduction for joint filers, two-earner marriage deductions, expanding the EITC, and credits against tax due. The study also considered returning to the pre-1948 system that requires all taxpayers to file individually, or to allow taxpayers a choice to file jointly, as individuals, or as heads of household. As noted in the study, all of these potential remedies typically have advantages and disadvantages, and often involve complexities which are very challenging to understand and solve.

However, one should stop to consider that according to the CBO, only three of the 27 countries in the Organization for Economic Cooperation and Development (OECD) tax couples jointly (including Germany, Ireland and Norway). Most of the other countries tax on an individual basis or on a family basis involving bonuses granted based on the number of adults and children in the family. In Sweden, couples are taxed separately based on their own earnings, which in Becker's (2000) opinion was a “key factor behind the growth in Sweden of married women in the labor force, now the highest rate in Europe” (p. 34).

Conclusion

In a recent article on the marriage tax penalty and public policy, Carpenter et al. (2013) argue that “regardless of a couple's income level, the marriage penalty is detrimental to marriage, and thus, to society” (p. 107). Their paper includes an analysis of the potential harm on two-parent families that marriage tax penalties could potentially result in, due to harmful effects on employment, public health, and crime prevention. Certainly, these concerns are

indicative of not wanting tax policies to result in negative effects that may cause society to decline or deteriorate.

Lin and Tong (2012) note that tax policy makers need to consider the situation involving cohabitating couples who have similar living arrangements as married couples, but who are taxed differently since they cannot use the married filing jointly status. Using a relatively complex set of assumptions related to cohabitating couples who later married, they found that 48 percent would have a marriage penalty and 38 percent would have a marriage bonus. Thus, they found a slightly higher incidence of marriage penalty than marriage bonus, again suggesting the need to consider the effects of both marriage tax penalties and bonuses on society.

The issues related to the treatment of marital status are complex. As noted by Luscombe (2013) in his article about the repeal of the Defense of Marriage Act, “The provisions of the Tax Code that produce a potential marriage penalty for couples with approximately equal incomes also produce a potential marriage bonus for couples with substantially unequal incomes” (p. 46). So, for any remedies that are suggested related to the treatment of married versus single taxpayers, both the effects on people based on their marital status as well as their income levels will need to be carefully considered.

As noted in a recent study by Alstott (2013), “Marriage is no longer what it once was. Since the 1970’s, and accelerating in recent decades, the link between formal marriage and family life has weakened dramatically . . . The growing gap between legal fiction and social reality undermines the ability of the tax-and-transfer system”

(p. 695). Indeed, the equity and efficiency of use of marital status as a basis underlying our tax rate schedules as well as many provisions within our federal (and state) income tax systems, in addition to other areas of tax such as the federal estate and gift taxes, the Medicare taxes, etc., need to be re-examined and reconsidered to help both improve the overall effectiveness of our tax systems and the perceived fairness of them.

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FINANCIAL LITERACY AND THE SOCIODEMOGRAPHICS OF COLLEGE STUDENTS: IMPLICATION FOR BUSINESS EDUCATION

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The lack of financial literacy among the general public is well documented. Financial illiteracy appears to be more prevalent within certain groups of society. Efforts at raising the level of financial literacy through education have shown mixed results. This study centered on financial literacy among college students and the impact of business education on improving knowledge in this area. The results indicate that university students are deficient in their knowledge of practical financial matters. Demographic groups within college students that are poorly informed mirror those of society. Several components of the business curriculum appear to improve financial literacy while others do not. Working toward a business degree and taking courses in finance and economics improve financial literacy among senior business students. However, completion of a course in personal finance does not appear to raise literacy.

Introduction

In the summer of 2007, the most severe global economic downturn since the Great Depression of the 1930s began. Symptoms of the financial crisis which many economists characterize as the “Great Recession” included:

- A US recession that lasted from December 2007 to June 2009 (BLS, 2012).
- High U.S. unemployment rates reaching up to 10% in October 2009 (BLS, 2012).

- A liquidity crisis in the banking system (Lane, 2012).
- A sovereign debt crisis in Europe (Lane, 2012).

Policy makers have cited numerous causes for the recession including weak enforcement of existing legislation, deregulation of the banking industry and excessive risk taking by financial institutions. On the consumer level, consumers were accused of overspending and taking on too much debt, inflating housing prices and accepting non-traditional mortgages that they did not understand. Many economists and politicians have put

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partial blame for the problems on the lack of financial literacy among the general population.

The responses to the crisis from industry and the government were varied and controversial. Several pieces of legislation were passed to address the causes of the Great Recession including the Wall Street Reform and Consumer Protection Act. Better known as the Dodd-Frank Act, this law gave oversight of checking, credit cards, savings accounts and mortgage lending to the Consumer Financial Protection Bureau (CFPB, 2014). No leverage over the equity markets or insurance industry was given to the Consumer Financial Protection Bureau (CFPB). However, a mandate to study and develop a plan to improve the financial literacy of the general public was given to the CFPB (Hastings, et al, 2013). Administration of the law is developing too slowly according to some critics of the act while Congress has passed or attempted to pass bills to limit specific sections of the bill.

We believe that improving the financial literacy of the consumer is critical to avoiding many of the problems that led to the Great Recession. Much research has been devoted to studying financial literacy among the general public and high school students. While there has been some research done with college students, we see our study to be different in the sense that we have a unique dataset of freshmen and seniors which allows us to study financial literacy scores across groups with different characteristics. For instance, using First Year Experience and Capstone courses allow us to study the difference in financial literacy scores made by the students over time. This is different from many other studies which focus on a particular sample.

Moreover, we also employ statistical testing that allows us to find statistically significant differences in the sample. We believe studying at two sections of the college students will help us to see the differences in the financial literacy among the college students and find the effect of college education on this. We also believe that studying financial literacy among college students is important as the future earnings power they possess and the potential they have for serving as leaders in society by providing solid financial advice to those with whom they come into contact. The purpose of this study is to measure the level of financial literacy among college students at two different levels (freshman and senior) stages of their education. We also determine what demographics might help explain the level of literacy and study the effectiveness of traditional activities undertaken by universities to improve financial literacy among students during their education.

Literature Review

Financial Illiteracy

A wide variety of definitions exists for financial literacy. For instance, Government Accountability Office (GAO) states that the financial literacy as “the ability to make informed judgments and to take effective actions regarding current and future use and management of money” (GAO, 2011). A major contributor to the research in this area is the Jump\$tart Coalition for Personal Financial Literacy (Jump \$tart). The coalition defines financial literacy as “the ability to use knowledge and skills to manage one’s financial resources effectively for lifetime financial security” (Hastings, et al, 2013). Financial illiteracy would be the inability to maintain financial security because of a lack of knowledge and skills.

Financial illiteracy causes problems not only to the individual, but to the economic system on the whole. As the systems for banking, borrowing, investing and insuring become more complex, the inability of the consumer to make appropriate and informed decision threatens the soundness and efficiencies of our market based economy.

Research indicates that the average American cannot be classified as financially literate. Insufficient financial knowledge is prevalent throughout many different groups related to age, race, education level and income. Although there are variations between groups, significant numbers of individuals in all groups lack sufficient knowledge to make financial contracting choices that serve their best self-interests.

Surveys assessing the level of financial literacy are conducted by many organizations at various levels. For example, VISA International conducts such a survey internationally in 28 countries and found countries such as Brazil, Mexico and Australia to have higher financial literacy scores than in USA (Visa, 2012). Perhaps the most widely quoted study of financial literacy is conducted every other year by the Jump\$tart (Mandell, 2008). The study involves a survey (test) containing 31 multiple choice questions related to finance and economics that is administered to nearly 7,000 high school seniors. The test was first given in 1996. The scores have declined or remained flat on several subsequent surveys. The correct response rate in 2008 was the lowest (48.3%) of the six surveys given to that point. Although the correct response rates for high school students improves with income and parents' education, no group had a correct response rate higher than 52.3%. Minority students perform more

poorly than white students, Native Americans had the lowest scores responding correctly only 37.3% of the time.

Other studies support the findings of the Jump\$tart Coalition relating financial literacy to income, race, and parental education, while others have found a correlation between financial literacy and gender finding that women are less financially literate than men (Lusardi, 2008). Financial illiteracy, complex financial contracting choices and increased consumerism may all contribute to the symptoms now observed in the current credit markets that have been described as a crisis. Other studies have found a correlation between financial literacy and behavior. A study by Hilgert, et al showed a positive relationship between literacy and timely bill paying, effective credit card management, budgeting, regular saving, and other activities normally viewed as healthy for one's financial situation (Hilgert, et al, 2003). Others have found correlations between strong literacy and investment savvy (van Rooij, et al, 2011). Financial illiteracy has also been linked to poor borrowing decisions (Lusardi, et al, 2009) and mortgage servicing problems (Geradi, et al 2010). At the macro-economic level, financial literacy has been associated to wealth accumulation and national savings rate (Jappelli and Padula, 2013). Lusardi and Mitchell (2014) even attribute financial literacy as a form of human capital that has wider economic consequences. Hence, financial literacy has implications on various other things at both the individual level and the broader national level.

Proposed solutions to poor financial decision making by participants who lack basic knowledge of personal finance are varied. Most fall in one of these three broad

categories: a) government regulations aimed at forcing consumers to make appropriate financial decision, b) financial literacy through experience, and c) financial literacy through financial education.

Government regulations for desirable consumer behavior: Some propose increasing government regulation of the industry or developing built in safe guards that gently nudge consumers toward an appropriate decision. For example, the government may require that employers enroll new employees in insurance programs and require that purposely opt out. The required action thus becomes taking the less desirable choice from society's point of view. Likewise, policy initiatives aimed at having a certain level of financial literacy before consumers buy certain complex financial products (Kozup and Hogarth, 2008).

Financial literacy through experience: Other solutions would rely on the market place to raise the level of financial literacy by having the consumer learn from experience. This school of thought believes that engagement in the process is a superior teacher. There are studies that have shown users of credit cards learn from their past experience and alter their usage of credit cards (Agarwal, et al 2008).

Financial literacy through education: Another set of solutions center around education of the individual. These solutions include educational "fun" activities for young children, required high school courses in personal finance for young adults, and no or low cost programs offered by employers or through community service organizations for adults. For example, there are efforts aimed at creating national standards for financial literacy among high school

students (Maier, et al 2014). Games and simulations have also been used in the past to enhance financial literacy among students. Harter and Harter (2010) found stock market games to improve financial literacy scores among students. Another traditional approach to raising awareness and influencing behavior for young adults has been through the university experience. This study particularly looks at this option.

The Education Solution

As business professors, the authors propose that education might be an efficient and effective long term method for improving financial literacy at all ages and backgrounds. However, several studies have failed to connect efforts at educating people and improved financial literacy or positive changes in financial decision making. For example, Mandell found no correlation between taking a high school financial education course and high student performance on the Jump\$tart test (Mandell 2008). A more rigorous methodology was used by Carpena and others (Carpena, et al 2011) in India. They found that financial education did not help with quantitative financial decision making, but did help improve attitudes and awareness. Willis took a critical view of the often cited studies in the financial literature that correlated education with improved financial literacy and concluded that the empirical evidence to date was very weak (Willis, 2009). She points out the limitations of the research and suggests that public policy should foster education programs that are proven to improve behavior not merely financial literacy. She concludes that simplification of the marketplace and intervention by licensed free advisors would be more effective in improving consumer decision making than emphasizing education.

Moreover, a recent meta-analysis of published research on the relationship between financial literacy, financial education, and financial behaviors found that interventions to enhance financial literacy explain only very small variance (0.1%) in the financial behaviors examined (Fernandes, et al 2014).

Other researchers have found links between education exposure and financial literacy. For example, Lusardi and Mitchell (2007) found a high correlation between studying economics in high school and college and financial literacy. In 2007, Martin wrote an extensive literature review on the effectiveness of financial education (Martin, 2007). He believes that although the research on the benefits of financial education is thin, evidence exists that education improves retirement planning, personal savings, home ownership, and borrowing. The most effective methods of financial education are designed for the specific needs of the student and delivered face-to-face.

Other studies have found a correlation between a variety of financial literacy education programs and preferred behavior. Bernheim and Garrett (1996) and Clark and Schieber (1998) found that employer sponsored information improved participation in 401(k) plans. Bernheim and Garrett (2003) also found a link between states required financial education and improved savings and wealth measures five years after exposure.

In summary, the literature suggests that financial illiteracy is widespread throughout the United States. Although results are mixed, evidence exists that financial literacy and effective financial behavior are related. Also, it appears that some financial education programs are

effective at improving financial literacy and decision making while some techniques are not. The purpose of this study is to determine whether college students are financially literate and which demographics may explain differences in the level of financial knowledge within the group. Finally, we hope to determine the effectiveness of several traditional financial education programs at the university level in improving the financial literacy of college students.

Methodology

Data Collection

Our study aims to find some of the factors that are associated with the financial literacy levels of college students. Financial literacy was assessed using an instrument developed by the Jump\$Start Coalition for Personal Financial Literacy. This instrument has 31 questions to ascertain the financial literacy levels of the students. This study utilized the questions without modification. Respondents' background information was also collected using 12 additional questions. These questions were adapted from the original Jump\$Start's instrument to meet the differences in the profile of our sample (college students vs. high school students).

The survey instrument was administered at a mid-western university. Students in the First Year Experience (FYE) courses (primarily freshman students) and the capstone business course (primarily senior business students) participated in the survey (83 from FYE and 77 from the capstone course). In total 160 students responded to the survey. Financial literacy scores were arrived at using the key that accompanied the instrument. The Jump \$start Coalition considers a score of 60% passing and 75% to be a "C" grade.

Data Analysis

Collected data was analyzed using one-way Analysis of Variance Analysis (ANOVA) techniques. ANOVA is suited for examining the differences in the mean between different groups of respondents. SPSS software was used to conduct the ANOVA analysis. We performed a one-way ANOVA analysis to test if the average financial literacy scores, as measured by the percentage of right answers, are the same across different groups within each factor of interest. The alternative hypothesis is that the average scores are not all the same. The p-value of the test is also provided, which shed light on how significant the result is. The p-value of the statistical test indicates the significance against the null hypothesis, so the smaller the p-value, the stronger is the statistical evidence against having the same mean across different groups. As such, in this paper, we adopt the notion that a smaller p-value indicates a stronger predictor of the examination score.

Results

Demographic Impact

The overall mean score for the students in the sample was 65.79%. The freshman course mean was 60.98% and the senior course mean 70.97%. Both the means scores in the groups exceeded the passing score of 60%, but both fell short of the "C" grade of 75% as set by the test designers. The scores of freshman groups compare favorably with the scores that Mandell reported in his 2008 study of college students using the same test instrument (mean score 59.37% correct). However, Mandell indicated a mean score of only 64.8% for the seniors in his study in

comparison to 70.97% in our study. Our study includes only seniors expecting to earn degrees in business.

Table 1 presents the results of how the financial literacy scores are associated with demographic backgrounds of the exam takers. Factors examined included: gender, race, number of credit cards the students have (including store credit cards), the expected debt in student loans, the college of the students' major, parents' total income, parents' education level, and whether students have checking accounts or not. Prior research provides some support for most of these items impacting financial literacy.

Our study found that males performed slightly better than females. However, the p-value, from our study, fails to indicate a significant difference in the test scores. Previous studies by Mandell found that high school males performed better on the exam than females, but that college females earned slightly higher scores. However, that study did not use tests for statistical differences. More research in this area can shed light on the gender differences in financial literacy.

Prior studies have also shown that white students perform better than non-whites. Since the distribution of race, in our study, was predominantly white or Caucasian, we grouped the rest of races together for this analysis. Results indicate that White or Caucasian participants scored significantly better than other group (67.77% vs. 58.96%) with a p-value of .001. This finding is consistent with past research that reports significant differences in financial literacy by race that hold true across age groups (Lusardi and Mitchell 2009).

Table 1: Test Scores and Demographic Information

Description	Categories	Mean	SD	N	p-value
Gender	Female	64.41	12.943	61	0.323
	Male	66.63	14.265	99	
Race	Non – Caucasian	58.96	15.142	36	0.001
	Caucasian	67.77	12.749	124	
Credit Card	No credit card	63.75	13.282	84	0.049
	At least one credit card	68.04	14.048	76	
Expected Debt All students	\$20,000 or more	69.14	13.338	53	0.001
	\$10,000 to \$19,999	63.00	14.431	34	
	\$5,000 to \$9,999	55.52	9.411	19	
	Less than \$5,000	61.94	19.102	10	
	Nothing	69.21	11.463	44	
Expected Debt for Seniors	\$20,000 or more	75.75	9.547	29	0.004
	\$10,000 to \$19,999	70.28	14.212	14	
	\$5,000 to \$9,999	58.07	7.681	7	
	Less than \$5,000	74.19	5.589	3	
	Nothing	68.95	11.127	24	
College	Arts and Sciences	58.50	15.335	22	0.011
	Business	68.23	12.714	105	
	Education	63.31	14.002	8	
	Other	62.71	14.399	25	
Parent's Income	Less than \$20,000	59.80	13.851	13	0.251
	\$20,000 to \$39,999	61.29	19.519	14	
	\$40,000 to \$79,999	66.69	14.415	40	
	\$80,000 or more	67.88	12.171	73	
	Don't know	62.90	12.867	18	
	Not reported	67.74	9.122	2	
Parent's Education	College graduate or more than college	66.43	13.068	86	0.142
	Some College	66.61	14.826	37	
	Completed high school	66.47	14.166	28	
	Neither completed high school	53.55	13.021	5	
	Don't know	54.84	10.857	4	
Checking Account	No	50.54	10.536	6	0.005
	Yes	66.38	13.570	154	

Mandell (2008) found that the number of credit cards used by college students correlated with test scores. Scores improved for students as the number of cards increased up to four. Scores of those with five cards or more dropped and this is a concern as past studies have shown that the number of credit cards to significantly influence indebtedness (Lyons 2004). Similarly, our study indicated that students with credit cards performed significantly better than those who had no credit cards.

Our study shows that the amount of expected debt is significantly associated with the financial literacy score. Students who expect to have no debt or more than \$20,000 scored higher than the group with expected debt between \$5,000 and \$10,000. Since this is not the actual debt but is the expected debt, we further confined our study to seniors who might have a better idea about their expected debt. Results again show that the amount in student debt is significantly associated with the financial literacy score; also, students who expect to have more than \$20,000 scored higher (75.75% with 29 students in this group) than the other groups. It is noted that the average score (74.19%) in the group with less than \$5,000 debt is also high, but there is only 3 students in this group. Mandell (2008) had similar results. Students expecting no debt or high levels of debt performed better than the midlevel groups.

Our results indicate that “the college” of the student to be significantly associated with the financial literacy scores. Business students significantly scored higher than Arts and Sciences students. Further analysis for freshman only (FYE students) revealed that there is no significant difference in scores between students of different

colleges. It seems to suggest that business education does improve the scores. We will come back to this point when we assess the education impact later in the paper. Test scores improved as parental income and education increased. However, the analysis failed to show statistical difference between the income and educational levels of the students’ parents. Students with a checking account performed significantly better than those who did not have checking accounts in our study. However, it is noted that only a very small percentage in our sample did not have checking accounts, so the results should be interpreted with caution.

In summary, our results show that race, number of credit cards, expected debt in student loan, student’s college, and checking account usage have significant effect on literacy scores. The p-value of the one-way ANOVA test of the same means across different groups for each one of these factors is less than 5%. On the other hand, our results show that parent’s income and parent’s education level have no significant effect on literacy scores.

P-value can be used to rank variables as to their relative ability to distinguish the mean scores across different groups. Using the reported p-values for the demographic variables used in the study, the following order of significance are noted (the list includes only statistically significant variables):

1. Race (.001)
2. Expect debt overall (.001)
3. Expect debt for senior (.004)
4. Checking account usage (.005)
5. College of the major (.011)
6. Credit card usage (.049)

University Experience Impact

Previous research indicates that efforts to educate consumers in personal finance have had some success in improving financial literacy. However, other studies have failed to show that other techniques have improved consumer literacy or decision making. We attempted to measure the impact of several university activities that may improve financial literacy. Table 2 summarizes our results.

Results of our analysis show that students in capstone business course (seniors) did significantly better than the FYE (predominantly freshman) students (70.97% vs. 60.98%). This supports our contention that general exposure to business education may have an effect on scores. The ten point improvement is significantly different. This study is also in line with the past findings that college seniors have better financial literacy than college juniors (Chen and Volpe 2002). The study also showed a significant improvement between business freshmen and business seniors at a statistically significant level.

Table 2: Test Scores and Educational Exposure

Description	Categories	Mean	SD	N	p-value
Business Exposure (whole sample)	Seniors	70.97	11.701	77	0.000
	Freshman	60.98	13.876	83	
Business Exposure (sub-sample)	Business Seniors	70.97	11.701	77	0.000
	Business Freshman	60.71	12.541	28	
Number of Finance/Economics Courses	One	70.19	10.669	33	0.033
	Two	72.98	10.327	16	
	Three	72.40	7.753	9	
	Four	80.65	12.495	7	
	Five	63.71	14.629	12	
Personal Finance	None	72.79	10.564	39	0.168
	Yes	69.10	12.631	38	
Major	Accounting	77.17	12.456	13	0.246
	Economics/Finance	72.04	8.057	15	
	Management/Human Resources	68.12	12.277	17	
	Marketing/Supply Chain Management	69.11	11.329	26	
	Other	70.97	15.935	6	

Results show and also suggest that scores tend to increase with more finance and economics courses taken (except that students taking five courses have a lower average score). The improvement is also statistically significant. We further analyzed the FYE sample to see whether there is improvement in financial literacy scores associated with number of finance and economics courses taken by the students at their high school. Here too we found statistically a significant difference ($p < .001$). Moreover, we also see the business senior students to have taken significantly more finance and economics courses compared to freshman students ($p < .001$). Hence, there appears to be an effect of college education in improving financial literacy scores among the business senior students. However, we do acknowledge this point that there could be other confounding factors, survivor bias (as academically and financially students may drop out of college), but these issues may not be easy to control.

We suspected that taking a personal finance course would improve test scores. Although not statistically significant, we found that students who did not take a personal finance course performed better on the financial literacy test. The nature and/or content (theoretical vs. practical) of the personal finance course offered at the university may have to do with the lack of relationship with financial literacy scores. Further research in this area could shed more light into the usefulness of personal finance course in improving the financial literacy of students.

Comparing the majors within our sample, we found that there are no significant differences among business majors on the scores. It is noted that

accounting and economics/finance majors have a higher mean score of 77.17% and 72.04% respectively than other groups. The differences were not statistically significant. Using the p-values to measure the stronger predictors, we found that exposure to the business curriculum had the most impact on the test scores. Moderate exposure to economics and finance courses were also strong predictors of test scores.

In summary, our results show that business exposure and number of finance/economics courses taken has significant effect on literacy scores. The p-value of the one-way ANOVA test of the same means across different groups for each one of these factors is less than 5%. On the other hand, our results show that personal finance course and specific business majors have no significant effect on literacy scores.

Conclusion

In a free market system informed consumers who can utilize knowledge of the financial environment is critical to a strong, efficient economy. A strong link exists between financial literacy and appropriate marketplace behavior. Unfortunately, recent measures of financial literature show unacceptable levels of knowledge in most demographic groups such as age, race, income and education. Our study seems to confirm previous research that indicates a lack of financial literacy among university students. Although the average score for both freshmen and senior business students was passing, neither group reached the "C" benchmark. Improvement in financial literacy is needed for graduating business students who should be well prepared for dealing with personal financial issues. This is especially true with the increasing complexity of the financial marketplace.

One solution is to add educational opportunities to the university experience in the area of personal finance. Selecting a finance or accounting major apparently improves financial literacy. The selection of economics and finance courses also appears to help. However, completing a course in personal finance apparently does not improve financial literacy which seems to contradict the findings relating to economics and finance coursework. Caution should be taken in interpreting the results since the sample is limited to one university that offers only one personal finance course.

The results of this study suggest the need for further research. Obviously the sample needs to be expanded to include a more representative group of college students. Future studies can determine whether the financial literacy scores improve among non-business students through college education. Other types of exposure to personal finance available at universities need to be investigated such as experimental activities such as a stock market game, guest lectures, and freshman experience classes that include financial planning. Perhaps most importantly, the link between financial literacy education and desired behavior needs to be investigated.

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DO SUPPLEMENTAL ONLINE REVIEW QUESTIONS IMPACT EXAM SCORES IN AN INTRODUCTION TO FINANCIAL ACCOUNTING COURSE?

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It is important to businesses that the students they hire not only have technical skills, but that they understand how to analyze, interpret, and use business information and concepts. A study of students taking an Introduction to Financial Accounting class was performed to investigate the impact of supplemental online review questions on ability to analyze and interpret financial statements. Students used an eBook and submitted assignments on a computerized homework manager system for grading and immediate feedback. Homework was focused on the technical details of task performance. The ungraded optional supplemental online review questions were focused on analysis and interpretation. Results indicate that, controlling for academic ability, students choosing to attempt these review questions, in addition to the assigned homework, scored higher on assessment exams.

Introduction

It is important to businesses that the students they hire not only have technical skills, but that they understand how to analyze, interpret, and use business information and concepts. As a result, and due to logistical constraints in exam administration, assessment exams in business courses often focus on analysis and interpretation while homework focuses on mechanical and technical details of task execution. Indeed, in disciplines such as accounting, it is often necessary to first teach students these task details in order for

them to gain a sufficient understanding of the accounting information generation and presentation process to be able to analyze and interpret the ultimate output – financial statements. This disparity between the type of task presented to the students in their homework and the type of task they are required to perform on an exam may lead to reduced performance on assessment exams. This study examines the impact of presenting students with the option to perform additional out-of-class review questions that are focused on analysis and interpretation on their eventual assessment exam scores.

There have been numerous studies in education disciplines, other than accounting, to determine if student practice outside the classroom leads to better performance on course assessment exams. In this study we aim to provide further insight into a particular form of practice opportunity provided to accounting students and how those opportunities impacted assessment exam scores. Over a three-year period students in an Introduction to Financial Accounting course were given, in addition to the same task orientated homework, the opportunity to complete two types of optional review questions prior to assessment exams. In the first three semesters, students had access to 5-10 multiple-choice questions in a workbook. These questions were in the same multiple-choice format as the questions on the exam and the focus was on analysis and interpretation. In the final three semesters, students had access to the same 5-10 multiple-choice questions in the workbook and they also had available, for each chapter, an optional supplemental assignment in the online homework manager that had no point value that counted toward the grade in the course. These supplemental assignments consisted of 20-35 multiple-choice questions that focused on understanding, analysis and interpretation. Results indicate that students choosing to attempt the supplemental online assignments outside the classroom for no points ultimately scored higher on the assessment exams. This supports the hypothesis that performing additional review exercises of the same format and task type as exam questions improves student performance on assessment exams and suggests that such exercises should be incorporated into course curriculum for course credit. The remainder of this paper is organized as follows: a short review of literature, the study population,

mechanics of the course, analysis of the data, and finally, limitations and implications for future course design.

Literature Review

Numerous studies have been performed looking at the effect of students doing assignments outside the classroom. In 2006 a synthesis of research studies on homework between the years 1987 and 2003 reported that although all of the studies had design flaws, there was consistency in the “evidence for a positive influence of homework on achievement.” (Harris Cooper, Spring 2006). Additional studies after 2003 have been reported at the elementary, high school and college level. In a study reported in 2007, it was determined that in public and charter schools the assignment of “additional homework is estimated to have a much larger impact per dollar invested than either increasing teachers’ wages or decreasing class size” on performance on assessments. (McMullen, 2010) A study looking at performance in science and math courses in high schools found that there was “...a positive significant relationship between homework and performance on standardized exams” (Maltese, Tai, & Fan, Fall 2012)

Studies of college-level classes include an experiment conducted in a principles of micro-economics course where it was reported that “homework plays an important role in student learning, especially so for students who initially perform poorly in the course.” (Rupp, 2013) A study conducted in a college introductory biology course gave students two opportunities to do extra work outside the classroom every semester for three years. Students who took advantage of this opportunity were found to have been “more likely to attend class,

attend optional help sessions, and earn higher grades even when the points earned ...were excluded from the calculations of grades.” (Moore, 2005, pp. 12-15) A study in a Freshman Algebra Course found that if homework is properly assigned and evaluated it will improve achievement. “...The mathematics achievement of students receiving homework assignments was significantly greater...” (Cartledge & Sasser, 1982) A longitudinal study looking at online homework as a method to improve learning found that students doing homework online did statistically better on exams than students doing written homework in college engineering classes. (Arora, Rho, & Masson, 2013) These studies reflected similar concerns as found in the Harris Cooper synthesis of studies in this area – that it is very difficult to conduct a study of student achievement which does not have design flaws as in this area it is very difficult to control the total environment of the studies. (Harris Cooper, Spring 2006)

We would expect to find similar results in the accounting discipline; however, we also wished to address the additional dynamic of the type of questions used in the assessment process. In accounting education, most homework questions are focused on mechanical and technical details of task execution. On a homework assignment, the student has ample time to work a problem and as such, the homework problem can be more involved and cover a greater portion of the task execution – in our case, the preparation of financial statements. On an exam, the questions are focused on concept comprehension and if the student understands how to interpret and use the financial statements. While the concepts and tasks involved remain the same – i.e. the preparation and understanding of financial

statements – the approach used for problem solving may vary based on the difference in type and format of question. Humans construct different types of mental models in order to solve different types of problems (Newell & Simon, 1972) and when the model they are using is incongruent with the problem type at hand, they encounter difficulty (e.g. additional time and cognitive effort) in solving the problem (Simon & Hayes, 1976). Homework questions requiring students to perform financial statement generation tasks would thus engender a different mental model than questions focusing on analysis and interpretation such as those found on the course examinations.

To examine this concept in our study, we created an additional type of out-of-class review assignment that consisted of questions of the same type and in the same format as those given on the exam. We initially provided a small set of these questions in printed form. We subsequently provided an online version with a greater number of questions, automatic grading to provide feedback and the ability to track if the student completed the assignment. We test the hypothesis that students who have the opportunity to practice questions of a similar type and format to the exam questions will have an enhanced ability to solve exam questions quickly and correctly, leading to higher exam scores:

H1: Students who attempt to complete additional supplemental online review questions of the same type and format as exam questions will subsequently score higher on exams.

Participants

During the spring and fall semesters of 2011, 2012 and 2013 a total of approximately 1,450 students at a Midwestern University took an undergraduate Financial Accounting class taught in a mass lecture class format. The class was a three-credit hour, one-semester class. Students attended the mass lecture class for 150 minutes each week with no lab classes available. The class had 23 class periods devoted to class lectures and class participation via a student response (“clicker”) system. Students taking the class were classified as freshmen, sophomores, juniors and seniors. The students taking the class represented several majors at the university and class was not limited to business or accounting majors.

The Course Mechanics

In this class, twelve chapters in an Introduction to Financial Accounting text were covered during the semesters. Students were responsible for turning in homework problems, practice quizzes and quizzes for each chapter via an online homework manager system and they received points counting toward their final grade in the class for these assignments. The homework consisted of problems covering multiple learning objectives. The practice quizzes and quizzes were brief exercises and exercises representing specific learning objectives. All homework, quiz and practice quiz assignments were algorithmic¹ and students were given 5 chances to submit the homework and practice quizzes. After the 4th submission the solution was given and the student had

one more opportunity to work the assignment and submit the assignment for final grading. There was only one opportunity to submit the quiz assignments. Over the course of the six semesters of the study period, the edition of the text was changed once. However, the problems, brief exercises and exercises assigned were held constant with the only differences being new dates and names in the assignments. Each semester four versions of a multiple-choice exam were given after a set of three chapters. The multiple-choice exams were held constant each semester with the names and numbers in the multiple-choice questions on the exams being the only change.

A printed text was not required for the class. Only an online homework manager system, which included an electronic text (eBook) was required for the class. To supplement the eBook, students were encouraged to purchase a workbook developed by the faculty teaching the class and printed and sold by the University’s Beta Alpha Psi chapter.² It was suggested that the workbook be brought to class each class period to be used by the students to participate in class. The workbook was organized by chapter and each chapter included a section on terminology specific to the chapter, fill-in problems and exercises to be reviewed in class, 5 to 10 multiple-choice questions and a paragraph on each multiple-choice question showing how to work/solve the question. There was also room for notes in the workbook.

The homework, practice quizzes and quizzes in this course during the study were typical “how to” problems that focused on

1. The online homework management system generates unique numeric values for each student while maintaining the solution logic.

2. Accounting honors student organization.

the preparation of financial statements. Students prepared journal entries, adjusting journal entries, bank reconciliations, etc.

During the class period the professor would both review the “how to” steps and discuss the “why” of each topic – how this material impacts the financial statements and the users of financial statements. The multiple-choice questions used on exams were written to determine if the students understood the information covered in the chapter from the financial statement user perspective. The 5 to 10 multiple-choice questions in the workbook were used to illustrate the difference in homework assignments and assessments over the material covered in the chapter. For example, the homework assignment would have the student prepare adjusting entries, a balance sheet, income statement and statement of retained earnings. On the exam the student would not be asked to prepare a statement, but would instead be asked to locate and interpret information contained on the statements. A student might be asked: “would net income be over or understated on the accrual basis if the prepaid insurance account was not adjusted for the period's insurance expense?”

For the first 3 semesters of this study – Spring 2011, Fall 2011 and Spring 2012, students were only provided with these 5 to 10 questions in the workbook. For the last 3 semesters of this study – Fall 2012, Spring 2013 and Fall 2013, students were provided with between 20 and 35 supplemental multiple-choice questions per chapter in an assignment in their online homework manager. The assignment was called the Individual Chapter Review (ICR) assignment. There were no points given for

completion of this assignment and while the students could go through the assignment as many times as they wished, they could not print the assignment.

At the beginning of each semester, students were told that the material in the class accumulated. They were told that in accounting it is important to successfully master the material in chapter 1 prior to going to chapter 2 material, etc. They were given a handout that suggested a plan of study to follow to do well in the class. This plan stressed the importance of making sure they had mastered the material in the three chapters on an exam prior to taking an assessment exam in the class. It was suggest that for each chapter they should 1) read the chapter in their eBook, 2) come to class and participate in class, 3) go through the multiple-choice questions in their workbook, 4) work their homework assignment online, 5) take the practice quiz online, and 6) take the quiz online. During the last 3 semesters of this study one more suggested step was added to this material: complete the ICR assignment to ensure you have mastered the chapter material prior to moving on to the next chapter. While points were given toward the final class grade for each chapter’s homework, practice quiz, quizzes, and class participation, no points were given for reading the chapter or going over the multiple-choice questions in the workbook or provided in the ICR assignment. Thus, students had the option of doing or not doing the ICRs, with no points counting toward the grade in the class. Exam questions, while similar to the questions in the workbook and the ICR questions, did not include the same questions as those given in the workbook or in the ICR questions.

Analysis and Discussion

Course records were maintained that included scores on exams and how many ICR questions each student attempted. The first two exams given in the class were chosen for analysis since they cover the core terminology and concepts for the course and thus are highly representative of the type of material covered in the rest of the course. The first two exams were also selected in order to mitigate potential confounding of our analysis due to student attrition later in the course (i.e. students dropping the course). 1,449 student records were filtered to 1,391 observations with valid data for either Exam 1 or Exam 2. Linear regression was utilized to analyze the data. Plots of fitted values versus residuals were examined for evidence of violations of linearity and homoscedasticity and none was detected. Normal Q-Q plots were generated and did not demonstrate any evidence for a lack of normal distribution in the data. The regression model was specified as follows:

$$\begin{aligned} \text{Exam_X Score} = & \beta_0 + \beta_1 * \\ & \text{Analysis_GPA} + \beta_2 * \\ & \text{ICR_Group} + \beta_3 * \\ & \text{ICR_Exam_X} \end{aligned}$$

All six semesters were included in the data set and the model was run twice, once for the first exam in the class (Exam_1) and once for the second exam in the class (Exam_2). Analysis_GPA is the end of semester³ GPA adjusted for transfer credit and serves as a proxy to control for general academic ability. ICR_Group is a dummy variable intended to isolate variance between the semesters that had ICR questions available and those that did not. Since we did not have the ability to perform

a true experiment with random assignment, this dummy variable is included in an attempt to control for factors other than the construct of interest (i.e. the number of ICR questions attempted). ICR_Group was set to 0 if the observation is from the first three semesters where ICR questions were not available and set to 1 if the observation is from the last three semesters where ICR questions were available. Finally, ICR_Exam_X is a normalized continuous variable representing what proportion of the ICR questions a student attempted from the chapters covered on the respective exams. This model specification leaves us open to potential collinearity issues on the final two variables since ICR questions were only available during the last three semesters when ICR_Group is set to 1, however, an examination of the variance inflation factors indicates that this was not an issue – all were less than 2 (O'Brien, 2007).

Exam 1: There were 1,339 observations with complete data for Exam 1. The results of the linear regression analysis are shown in Table 1.

The model was significant and explains approximately 17% of the variance in Exam 1 scores. This indicates that while there are other variables that impact test scores; our model is useful for analysis of the constructs at hand. The GPA coefficient is significant and positive, confirming that GPA is related to exam score – this is congruent with GPA serving as an acceptable proxy for general academic ability. The ICR_Group coefficient is also significant and is negative, indicating that during the final three semesters of the study, students overall scored worse on Exam 1 due to factors other than their individual academic ability and the number of ICR

3. End of semester GPA was chosen due to the way our university tracks and adjusts for transfer students.

questions they attempted. The ICR_Exam_01 coefficient is positive and significant at $p < 0.05$ indicating that students who attempted additional ICR questions scored higher on Exam 1 when controlling for academic ability (as proxied by GPA) and providing support for H1.

Exam 2: There were 1,307 observations with complete data for Exam 2. The results of the linear regression analysis are shown in Table 2.

The model is significant and explains approximately 25% of the variance in exam scores. Again, this indicates that while there

are other variables that impact test scores; our model is useful for analysis of the constructs at hand. The GPA coefficient is once again significant. The ICR_Exam_02 coefficient is positive and significant at $p < 0.001$ indicating that students who attempted additional ICR questions scored higher on Exam 2 when controlling for academic ability (as proxied by GPA) and providing additional strong support for H1. The increase in the magnitude of the coefficient for the number of ICR questions attempted from Exam 1 to Exam 2 could be due to the attrition of students who did poorly on Exam 1.

Table 1
Exam 1 Regression Analysis

Coefficients	Estimate	Std. Error	t value	Pr(> t)	
Intercept	79.243453	3.052846	25.957	<2e-16	***
Analysis GPA	16.273052	1.018486	15.978	<2e-16	***
ICR_Group	-3.243677	1.144264	-2.835	0.00466	**
ICR_Exam_01	0.014046	0.005828	2.410	0.01609	*
Multiple R-squared: 0.1707 Adjusted R-squared: 0.1688 F-statistic: 91.57 on 3 and 1335 DF, p-value: < 2.2e-16					

Table 2
Exam 2 Regression Analysis

Coefficients	Estimate	Std. Error	t value	Pr(> t)	
Intercept	36.63987	3.34592	10.951	<2e-16	***
Analysis GPA	21.47698	1.11405	19.278	<2e-16	***
ICR_Group	1.73029	1.28259	1.349	0.177553	
ICR_Exam_02	0.02047	0.00618	3.312	0.000952	***
Multiple R-squared: 0.2478 Adjusted R-squared: 0.246 F-statistic: 143 on 3 and 1303 DF, p-value: < 2.2e-16					

Implications and Study Limitations

In this study we looked at the results of providing supplemental questions as a review assignment in a financial accounting course. The objective of the course is to expose and prepare students to analyze, interpret and use concepts to understand and interpret financial statements in their future careers. To accomplish this objective, instruction and homework assignments in the course focused on the task and process of preparing financial statements since it is our belief that it is necessary to understand how and what goes into the preparation of financial statements in order to successfully interpret them in real world situations. Exam questions, however, did not focus on the task and process of preparation but rather on whether students could understand the concepts covered, analyze and interpret these concepts and their effects on financial statements. Even though class lecture and discussion overtly attempts to link statement preparation with interpretation, it is possible that students have difficulty in making the connection. By providing additional review questions with a focus on interpretation and understanding in a similar format to those found on the exam it was hoped that students would be better able to make this connection and internalize concepts related to the use of financial statements in their careers. The results we present here support this desired outcome. This indicates that faculty should consider assigning course points to such supplemental review questions in order to induce more students to complete them.

As noted in the literature review, research in the area of assessment is challenging due to the difficulty in creating true controlled experiments using students enrolled in courses. Our study is subject to

similar limitations. We did not assign students randomly to treatment groups, and thus can only report correlational results, not causal inferences. We also cannot rule out exogenous factors influencing our results – even though the assignments and exam questions were held constant, the study took place over 6 semesters; therefore, it is possible other items besides the ICR questions influenced exam scores over the 3-year period. This is mitigated somewhat by our inclusion of a dummy variable for the semesters that had ICR questions available and those that did not in an attempt to control for factors other than the construct of interest.

Conclusion

A study of students taking an Introduction to Financial Accounting class was performed to investigate the impact of supplemental online review questions on assessment exam scores. The course objectives focused on preparing students to understand and interpret financial statements in real world situations. To accomplish this objective, instruction and homework focuses on the mechanics of financial statement preparation and connections are drawn to the interpretation and understanding of the financial data. In an attempt to improve student's ability to apply the concepts from preparation to financial statement use and interpretation, additional review questions focused on analysis and interpretation were added via an online homework manager. These questions were more closely aligned with the assessment exam questions in style and format. It was hypothesized that the increased similarity of the review question problem solving task type to the exam question task type would lead to an improvement in exam scores due to the students using a more similar mental model

in their problem solving. Results indicate that students choosing to attempt to complete the supplemental review questions scored higher on the assessment exams. This indicates that faculty should consider assigning course points to such supplemental review questions in order to induce more students to complete them. Future work investigating the underlying mechanisms of this effect – such as online vs. written, required vs. optional, and the differential impact of demographic variables – would be beneficial. In addition, this study's findings are consistent with what researchers have found at the high school-level and in college-level science, economics, mathematics, and engineering courses – students who do assignments outside the class perform better on class assessments.

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STUDENTS HELPING STUDENTS: THE GENDERED NATURE OF AN ACCOUNTING DISCUSSION BOARD

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A confluence of circumstances have led an ever-expanding set of schools to feature various versions of distance education. This “future of higher education” has been embraced without consideration of important differences between this mediated environment and more familiar face-to-face ones. This paper studies the gendered patterning of communication on a discussion board used as part of an introductory cost accounting course at a large public university in the southeastern U.S.A. The results show that females are much more enthusiastic participants. Furthermore, female students are much more likely to request assistance, and more likely to pepper their free-form commentary with an emotional subtext. Implications for further research are drawn.

Introduction

Children at a very early age distinguish males and females and place this divide near the center of their early normative understandings about society’s operation. This powerful patterning of the world of personal interactions testifies to the importance of gender in worlds of work and education.

Technology has made it possible for people to interact without face-to-face contact. Intermediation over the internet should reduce, *ceteris paribus*, the salience of gender as a factor in interaction. As many shared tasks that used to require more personal relationships are accomplished remotely, the ways that gender continues to shape the construction of social identities needs to be reexamined.

The abandonment of the “empty vessel” approach to post-secondary education, in which the faculty person pours knowledge into passive students, requires

the emergence of an alternative theory. One viable perspective is that students, possessing varying competencies before entering a class, should be encouraged to teach each other. Sometimes referred to as “collaborative learning,” this model de-centers the instructor except as a facilitator of the quest toward solutions of value. This may be done in a highly efficient and effective way through computer technology.

Learners, even those distanced by choice or necessity, do not abandon their gendered identity. Male and female students may have characteristically different ways of contributing to each other’s education, as well as pursuing the most personal aspirations of getting credit for their own efforts and abilities. These differences merit a fuller understanding.

This paper explores gender differences within the conversation created by the task of understanding Excel-based assignments in an introductory cost accounting class, and captured on a

discussion board space of a class website. Five subsequent sections are used to organize this paper. The first reviews a brief cross-section of the gender differences literature. This is followed by the specification of research hypotheses. A third section describes how the data was captured and measured. The last two sections detail the findings and provide a discussion of them. The last section also offers some concluding comments.

Literature Review

This paper subscribes to no particular theory pertaining to the origin or maintenance of gender differences. These questions have elicited a wide range of answers from the sociobiological to the anthropological origins of patriarchy, and tend to be highly controversial (see Ehrlich et al. 2014). This paper does assume that language is a highly important element of gender differences, whatever their origin and their normative connotation.

The vocational contribution of higher education makes it very appropriate for an educational research project to first look to the world of work to appreciate the consequential dimensionality of gender differences. The genders may differ in psychological composition, either in reality or in perception. Along these lines, women are believed to be less decisive (Tannen, 1994) or less self-confident (Dwyer et al. 2001). These attributes are commonly associated with success in the workplace, even if as a self-fulfilling prophecy.

Other studies of gender differences at work highlight the importance of relationships. Studies of peer formations suggest that the upward mobility of women is limited by their lack of ties to powerful

males at the apex of their company (e.g., Gaffney et al. 1996). Males enjoy an advantage that has come to define normal expectations. Thus, the failure of women to penetrate this male domain is understood as a breaking of a “glass ceiling.” As Kanter (1977) puts it, in such a world men effectively have practiced “homosexual reproduction.”

Gilligan (1982) expands upon the interactional variation of the genders. Critiquing conventional ethical theory, she suggests that females are less likely to subscribe to a formal logic of fairness in competition. Instead, females employ an ethic of care that prioritizes the maintenance of relationships. This would imply some difficulty in aggressively pursuing purely personal career agendas such as are offered in “win-lose” corporate settings.

Less developed is the notion that men and women cognitively process information in different ways. Chung (2000) argues that the genders ascribe different semantic meaning to apparently neutral accounting constructs. This tendency aggravates the highly controversial finding that women lag men in the ability to quantitatively manipulate constructs of this sort. A better understood idea is that language is not gender indifferent. Even if both concepts and their processing were the same for men and women, the voluntary communication of ideas about this work would be strongly patterned. Similar professional training does not seem to lessen language differences across the genders (Case, 1995). Workplace gender differences may be exacerbated through occupational socialization, but for the most part are imported from educational experiences. Therefore, the behavior of students must be examined to pinpoint gender differences.

Gender is a relatively recent topic for the accounting education literature, perhaps because the development of gender balance among students is a relatively recent phenomenon (see Nelson et al. 2002). Normal examinations of achievement, via measures such as course grades and grade point averages suggest that female students outperform males (Tyson, 1989; Smigler and Zimmerman, 1998). However closer examinations shows such results to be context dependent. Female performance superiority is stronger at some schools than others (Buckless et al. 1991) and a product of the predominance of effort based grading elements (Ravenscroft and Buckless, 1992). To the extent researchers have relied upon self-reports of academic performance, they may also have been victimized by a higher rate of exaggeration by males (Rosacker et al. 1997). Then again, female students may not be rewarded for greater effort in their studies (Fogarty and Goldwater, 2010).

To the extent that performance is constructed through focused interaction, more than grades must be examined. Despite the fact that a rich set of cues and descriptions are used by females in learning (Nouri and Clinton, 2002), they are rendered more invisible in the traditional classroom. Men receive more attention from accounting instructors (Brazelton, 1998) especially when the instructor is male (Savage and Howey, 1995). A higher percentage of females not only report never being asked to participate, but also consider their silence as a personal failure (Howey and Savage, 1996).

Christenson et al. (2000) suggests that self-awareness is an important component of success. They find women to have more realistic insight into their performance. Other studies identify broader

gender differences in the weighing of factors related to academic and professional success. Women tend to think that technical skills and aptitudes are more important than males do (Lewis and Parker, 1996). Women students must also play against gender stereotypes in projecting independence and assertiveness as more critical for success as an accountant (Coglitore and Raffield, 1996).

In sum, gender differences are pervasive and consistent across the contexts of education and occupation. Although innate differences no doubt contribute, these effects are clearly reproduced in face-to-face interaction. Because they are consequential, more research is necessary about their manifestation and portability to computerized platforms.

Hypotheses

This research offers five hypotheses that can be grounded in the voluminous literature on gender differences. The application of established questions to new areas created by emergent technologies attempts to determine how context specific our knowledge might have been.

The baseline issue in this research is the extent to which the voluntary participation of students is patterned by gender. Females might be expected to be more active participants because they tend to be better students (Carpenter et al. 1993). More diligent students might be expected to pursue more explanations from others and to practice the coherence of their knowledge by offering it to others. Better students would also be more likely to pursue even a modest degree of grade credit attached to participation. Females might also be more frequent participants because they tend to

have more highly developed support networks compared to men (Gaffney et al. 1996) and prefer to invoke its advantages.

Other factors align to question the expectation that females will participate more than males. Voluntary participation is predicated upon a residual degree of self-confidence to “put oneself out there.” Previous studies show men exhibit more of this confidence, even if it is misplaced (e.g., Carpenter et al. 1993). Consistent with that result, the literature also suggests that women possess higher degrees of communication anxiety. Men tend to be given leadership roles based on their higher contribution to tasks involving intense communication (Petzel et al. 1991). More frequent male contributions, however, might be restricted to small group, face-to-face contexts.

H₁: Women will participate more frequently on a discussion board in an accounting class.

For many discussion boards, participation is merely a display of engagement to the instruction. However, in other contexts participation may be an overly aggregated variable. When students are encouraged to collaborate on a shared-attribute problem, participation can be cleanly divided into questions and answers. Participation across these objectives – seeking assistance and offering assistance – needs to be distinguished. Whereas the total participation involved in the first hypothesis pertains to the willingness of a student to engage in a dialogue with other students, more precise issues that reach the type of participation must be raised.

Whereas the expectation about which gender would engage in more total participation could have been seen from two sides, stronger current reasons exist to expect that women will be more inclined to pose questions on a discussion board. Building on some of the literature cited in support of the previous hypothesis, a more frequent solicitation of assistance may reflect the mostly unwarranted higher performance anxiety suffered by women. This circumstance may be compounded by the higher degrees of environmental stress that females report (Chusmir, 1982). Whereas men tend to give women too little credit, women may be excessively differential to the expression of male authority (Tannen, 1994). Being dependent upon others may create more dissonance for males than for females (Coglitore and Raffield, 1996). Women may have to pursue answers as a way to overcome the self-doubt that impedes the development of their independent voice (Gilligan, 1982).

H₂: Women are more likely to post questions to a discussion board in an accounting class.

The previous hypothesis considered only one type of posting. A possible gender patterning of answers may also exist. Since one gender could dominate both types of participation, no particular result is preordained by the testing of the last hypotheses.

Studies suggest that men attempt to manage uncertainty by proactive attempts to fashion an identity in social relations (Collinson and Hearn, 1996). Such a pursuit of control necessitates that answers will be provided and that closure can be reached.

This tendency by males may manifest itself as a refusal to compromise, and may serve as a means to protect a surprisingly vulnerable self-concept (Hollway, 1996). Such levels of assertiveness may function as an intrinsic reward for men in that it resonates well with the masculine stereotype. Then again, a male domination of the proposed solution space runs counter to the expectation that men are less inclined to participate in any form.

H₃: Men are more likely to post answers to a discussion board in an accounting class.

Postings to a discussion board, necessarily occurring through a computer medium, appears as a very dry, ineffective dialogue. This quality may be exacerbated by the subject matter which does not seem to allow much room for personality or humanity to be injected. Inserting reminders of one's individuality or humanity may either facilitate or impede the instrumental success of the interaction, but is likely to lead to higher degrees of communicative satisfaction.

The emotional subtext may be a stronger element of communication for women than it is for men. Women appear to be more constantly aware of how interaction changes relationships (Gilligan, 1982). This may lead to more democratic and less unilateral approaches. Women prefer to avoid open conflict (Kolb and Bartunek, 1992) and therefore may exert more effort to "balance" the dialogue. By inserting charm and guile, women may be able to more consistently be perceived as more likeable (Petzel et al. 1991) in ways that are deemed to be socially appropriate. Women may also be more adept in this realm because of their greater reliance on rich contexts and verbal cues (Nouri and Clinton, 2002).

Language has been explored for some time as a medium of gender non-neutrality (e.g. Ehrlich et al. 2014). This lends us to better understanding of the education process, perhaps in interaction with personality constructs (Fallan and Opstad, 2014). A branch of this work has focused on mining sentiments from the relatively short texts written by students (Pang and Lee, 2008). This research has reached considerable methodological sophistication in measuring sentiment strength (see Thelwall et al. 2010). Gender remains a focal point of distinction in this work (e.g. Kapidzic and Hening, 2011). For our limited purposes, we seek only the most obvious and modest gender difference expectations.

H₄: Women are more likely than men to include emotional content when communicating on a web-based discussion board.

The exchanges that occur on discussion boards not only tend to be emotionally deficient due to the prevalence of their manifest topics. They also lack the "large bandwidth" of face-to-face interaction. The multiplicities of meanings that typically are present are not apparent when words on the screen are the sole information that can be accessed.

Gilligan (1982) argues that women are more likely to be rule challengers if such is necessary to preserve relationships. In this view, women fear the absence of a strong connection with others much more than men who appear to be often quite happy with detachment. Thus, women are much more likely to see the anonymity of cyberspace to be a threatening and unnecessary illusion. Women may require a heightened sense of congruence between words and physical actions as a means to

achieve power in relationships (Sheridan, 1995). These tendencies may create an incentive to reframe task-based exchanges.

H₅: Women are more likely than men to express an interest in transferring to a non-computer mediated medium when communicating on a web-based discussion board.

Together the five hypotheses particularize the broad and diffuse gender difference literature to the context of a discussion board. In doing so, the specific expectations maintain a focus upon communicative tendencies that allow the gender stereotypes to be either enacted or contradicted.

Method And Design

Measures

Following the established tradition, the gender variable was a binary construction with females = 0 and males = 1. A tendency for women to do more of some behavior would therefore create a negative correlation with that variable. Although some argue that gender must be combined with personality differences (e.g., Fallan and Opstad, 2014), the immutability of biological differences remains a good starting point for exploratory research questions.

Data was captured by the website that contained the discussion board. This yielded a full chronologically arranged transcript of the contributions by all class members. This is a distinctive improvement over other studies of communication that relied upon more subjective efforts by instructors to reconstruct classroom exchanges or by surveys that asked students

to recall the frequency of their contributions. This is especially problematic for gender studies since memory is differentiated by the subject's sex (Rosacker et al. 1997).

The promise of discussion boards that were mediated through information technology was that they would create a more "level playing field" that would encourage more students to participate. In face-to-face conversations, many students remain quiet because of psychological disposition (i.e., shyness) or reticence attributable to social class. These dimensions should not be salient in computer-based discussion. Along similar lines, the automatic capturing of the communicative data precludes instructor bias in the exertion of control over turn taking and recognition about who said what.

This particular discussion board also possesses the advantage of having an open-ended task interface. If a particular issue or agenda was imposed, its degree of structure may have led to the advantaging of one gender or the other (Mabry, 1985). For example, if a singular problem has been adequately addressed by early responders, those disposed toward longer response intervals will have nothing to add. Here the action is always initiated by students and responded to by students on a voluntary basis. The goal to help other students learn does not have a strict accountability that comes with small group projects, and therefore is a purer measure of gender tendencies.

The variables necessary to test the hypotheses were mostly intuitive frequency counts of that which appeared on the transcripts. Overall contributions were measured in two ways so that both the willingness to engage and the quantity of

engagements could be considered. These were measured, respectively, by the number of separate contributions (called “turns”) and the total number of lines of text that a student supplied, (called “lines”). The latter is a reasonable way to measure overall effort. For Hypothesis 2, questions need to be tagged. This is done by the frequency of the question mark punctuation mark (?) in the data. A spot check of the data for substance verified that this was a reasonable approach since it included only a few items that were not questions. On the other side, real questions that did not include the question mark were rare, albeit not as rare. To rectify this, a second indicator was used. The use of words such as “how” and “why” were tabulated since they also are reliable indicators of questions.

The third hypothesis required a measure of answers provided. For these purposes, lines provided that followed another student’s question (that themselves did not include a question mark) were considered “answers” for purposes of the test of Hypothesis 3. Careful reading was necessary here since it was pertinent to not consider comments that attempted to open new threads.

The expression of emotion is more difficult to capture. For these purposes, this was measured two ways. One involved the frequency of a group of symbols called emoticons. Best illustrated by the “smiley face,” the emoticons are icons whose main function is to express an emotional state such as pleasure or displeasure. Since emoticons are purposefully selected to accent their user’s reactions to situations, they are undeniably efforts to interject emotion. Sometimes, this involves excessive and redundant punctuation. For example, multiple exclamation marks (!!!) suggest

extreme surprise and multiple questions marks (???) extreme puzzlement. This measure also includes various abbreviations meant to express various feeling, such as” lol” (laugh out loud) and “omg “(oh my god). Students that have grown up with Instant Messaging are very familiar with this shorthand that captures the gamut of emotions. Since none of these items are definitive in their content, they were grouped for purposes of measurement. The second measure focused on the conventional English words that students have to accentuate the emotionality of situations. These include “please,” and “thanks/thank you.” They were also combined into a single construct. Neither of these measures reflect the state of art in communication science. However, as a first attempt to penetrate the accounting context, they represent serviceable measures.

The t hypothesis involved the need to capture any attempts made by students to take a conversation offline. This would usually take the form of “Please call me at 555-1212” or “Can we meet for a cup of coffee and you can show me how to do this?” Any effort to communicate in a different medium than the discussion board suggested a preference for a richer conversation. The complexity of the substantive material (Excel programming of accounting displays) may best be taught by actual demonstrations not possible within the discussion board. Although the frequency of this scenario was expected to be low, it could have consequential gender difference relevance.

Setting

The data to test the hypotheses relate to an introductory cost accounting class taught during a recent Spring term by one of

the authors. This course is part of the accounting major, but also required of many non-accounting students at a large public university in the Southeast U.S.A.

Students were encouraged to assist each other with any element or material in the course. This was facilitated by the maintenance of a discussion board area on the course website. Although this was self-designed by the instructor (one of the authors), the discussion board was similar to those available on the major course management platforms such as BlackBoard and eCollege. Students typed their contributions, and by sending them to the server, created a posting that could be seen by the entire class. The instructor rarely participated. Students received points (0 to 3) for the quality of their postings. The points were only for substantive postings and did not reward postings made necessary by a student's failure to attend class.

Discussion boards, despite their immense potential, have proven to be very uninspiring places absent the heavy hand of the instructor in posing questions and in prompting curiosity about collateral matters. With a comprehensive textbook, supplemented by lectures, the course material itself is not capable of sustaining much of a discussion. Even if it did, the accounting substance of the class rarely provides a sufficiently complex or robust problem such that students could routinely collaborate and cooperate.

Approximately 95% of the dialogue among students on this discussion board pertained to the five Excel assignments that constituted 20% of their grade. These assignments were relatively complex

problems adapted from the textbook in the areas of job costing, ABC costing, regression analysis, breakeven analysis and budgeting. The solutions called for decision making often supported by the construction of pivot tables. The formulation of accounting models in Excel made necessary by the problems became the subject matter for very active student dialogue.

A fine line exists between beneficial collaboration and impermissible dishonesty. In order to achieve the former and suppress the latter, each student was provided a customized set of assignments. This was accomplished by providing a unique set of values in each assignment and also a unique orientation. For example: traditional cost allocation could have been based on "units of production," "direct labor hours" or "direct labor dollars." Such variation was accomplished subject to the constraint that solutions still would be substantively meaningful and that the same conceptual lessons would be illustrated. This processing required the use of artificial intelligence programmed to run within Excel. A full description of how this was accomplished goes beyond the limits of this paper, but is available upon request from the authors. The important point is that collaboration between students in such an environment allowed them to share ideas about how to find programming solutions but still required each student to do their own work with their unique numbers, phrases and clauses. In other words, students could not ask each other on the discussion board "What is the answer?", but were forced to inquire along the lines of "How do I approach the problem?"

Results

Descriptive information

The discussion board available to the class during the academic term was used extensively by the 124 students (65 males, 59 females). Neither males nor females received higher course grades ($t=0.357$; $p>.10$). Table 1 shows the distribution of use by the class with a mean number of postings of 15.32, and a mean number of 84.83 lines posted. Apparently, the opportunity to collaborate was taken seriously by the students in this class, despite the marginal grade credit that was available for doing such.

In order to establish that posting was task oriented, rather than a social exercise, the relationship between overall participation and average exam grade was

examined. Course grade was comprised mostly of performance on exams that had no coverage of these Excel assignments. A t -statistic of 0.235, significant at $p<.01$, suggests that the better students were more actively engaged on the discussion board. The correlation also supports the idea that students benefited from their collaboration with other students on the discussion board, perhaps only as a persistent reminder to engage with the material.

Hypotheses tests

Hypothesis 1 proposed that women would participate more than men. Table 2 indicates that a significant difference was found to exist between the two means at the $p<.01$ level of significance, using turns as the operationalization of participation.

Table 1
Descriptive Statistics Pertaining to Gender Differences in Discussion Board Use

Metric	Males	Females	Total/Average
Number of Students	65	59	124
Average Turns Taken	10.4	20.8	15.3
Average Lines Posted	59.2	113.1	84.8

Table 2
Tests of Hypothesis 1: Relationship between Gender and Discussion Board Use

Department Variable	Gender	Mean	Standard Deviation	t-value
Turns (Number of Postings)	<i>Male</i>	10.4	15.7	2.682*
	<i>Female</i>	20.8	26.6	
Lines	<i>Male</i>	59.2	93.0	2.452*
	<i>Female</i>	113.1	148.3	
Lines per turn	<i>Male</i>	3.3	2.7	1.978**
	<i>Female</i>	3.9	2.7	

* $p<.01$ ** $p<.05$

This conclusion is repeated when the alternative lines measure is considered. Table 2 also indicates that a significant difference was found to exist between the two means when the number of lines of postings was considered. This test statistic is significant at the $p < .01$ level of significance. Female students take more turns in the collaborative conversation and deliver more content in total than men. The female advantage exists not only in the willingness to engage on multiple occasions but also in the intensity of the communication, since the composite lines per turn variable is also significant ($p < .05$), albeit at a lower level. Thus, Hypothesis 1 is amply supported.

The second hypothesis pertains to the frequency of questions. This issue also involves more than one test. Women tended to use the question mark more frequently. Table 3 indicates that a significant difference was found to exist between the two means at the $p < .05$ level of significance.

Table 3 also indicates that women also are more likely to launch the typical question words in this setting, such as “why” and “how.” This difference reaches statistical significance at the $p < .01$ level of significance. This evidence also supports Hypothesis 2. Women are more likely to pose questions on the discussion board.

Hypothesis 3 represents the converse of the previous research question. To test this hypothesis about the gender patterning of answers, the frequency of postings directly following a question was examined. On occasion, this required a search beyond the next posting, since conversations overlapped. Usually, the logic of the thread was that an answer was contained in reasonable proximity to the original question. Surprisingly, the results suggest that men were less likely to provide answers to the inquiries of their classmates. Table 4 indicates that the female advantage here achieves a level of significance of 0.025. However, Hypothesis 3 is not supported since the results are in the opposite direction to expectations.

Table 3
Tests of Hypothesis 2: Relationship between Genders
and the Likelihood of Raising Questions

<u>Department Variable</u>	<u>Gender</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>t-value</u>
Question Mark Frequency	<i>Male</i>	4.10	8.0	2.288**
	<i>Female</i>	8.11	11.4	
How/Why Frequency	<i>Male</i>	1.7	4.7	2.570*
	<i>Female</i>	3.5	3.3	

* $p < .01$ ** $p < .05$

Table 4
Tests of Hypothesis 3: Relationship between Genders
and the Likelihood of Providing Answers

<u>Department Variable</u>	<u>Gender</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>t-value</u>
Answer Frequency	<i>Male</i>	5.2	6.5	2.271**
	<i>Female</i>	9.6	14.0	

**p<.05

Table 5
Tests of Hypothesis 4: Relationship between Gender and Emotional Content

<u>Department Variable</u>	<u>Gender</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>t-value</u>
Emoticon Use	<i>Male</i>	1.6	3.3	2.1**
	<i>Female</i>	3.4	6.5	
Emotional Word Use	<i>Male</i>	2.6	3.5	3.3*
	<i>Female</i>	5.9	8.1	

*p<.01 **p<.05

The next research question concerns the injection of elements of emotion into what should be a highly technical, task-oriented dialogue. The first test pertained to the relative frequency of emoticons. The only two that appeared in the data with enough frequency to test were the happy face and the sad face. Women used these individually and together with much greater frequency than men, but due to the higher variability of the female results (also true elsewhere), the difference did not reach statistical significance at p<.01 level. This was also the case for the abbreviation “lol”

and for the use of multiple punctuation designed for emphasis. Although women did not exceed men in the use of “please” on a significant basis, they were more inclined to say “thank you” and to say both expressions in combination. Women also resorted to the exclamation mark more frequently. On balance, the evidence on the gender distribution of emotionality question is supportive of the hypothesis expecting more from women. However, a conservative interpretation would be that, lacking a single conclusive indicator, the results remain somewhat measurement-specific.

The final hypothesis pertained to attempts by students to access richer mediums of communication. The nature of the problems faced by the students sometimes required more of a tutorial approach than can be efficiently conducted through the computer-mediated interface of a discussion board. In total, there were 250 instances of an attempt to move to other non-traditional media. Of this, 165 were initiated by female students. Although the frequency is sufficiently low to necessitate caution in interpretation, its directional consistency with expectations should be noted. However, as detailed in Table 6, there is no significant difference ($p > .10$) between the means. Hypothesis 5 is not supported

Summary

The results suggest that gender matters in behavior around the discussion board. Women are more likely to participate, more likely to pose questions and more likely to answer those questions. In general, the results suggest that female students are much more predisposed toward collaborative learning when such is offered

to them. Male students may be more resistant, perhaps preferring the competitive learning of autonomy that has been more common in the accounting classroom. The results also show that women may be slightly more ready to infuse the full humanity of their emotions into the learning process.

Discussion, Limitations And Conclusions

As higher education normalizes the situation of instruction other than that which can be provided on a face-to-face basis, the technologies that will need to be used should be better understood. This paper suggests that when such a tool as a discussion board is used for collaborative purposes, female students are empowered in a differential way. Although this paper does not directly test the relative merits of collaborative education, it does show that a purposeful movement in this direction tends to be embraced more readily by female students. Conversely, the continuation of a more competitive and more individuated education, even using new automated tools, furthers a male advantage and preference.

Table 6
Tests of Hypothesis 5: Relationship between Gender and Off-line Invitations

<u>Department Variable</u>	<u>Gender</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>t-value</u>
Invitation to use another media	<i>Male</i>	1.44	1.04	1.175
	<i>Female</i>	2.54	1.36	

The results could also be understood in the context of the advocacy of an active education. Students appear to be quite willing to share their varying capabilities and backgrounds with each other, to the extent that it is useful in solving the technical aspects of accounting as it is practiced today. This environment where students help other students breaks the tendencies to rely upon surface learning (Biggs and Rihn, 1984) and illustrates that a deeper learning is not beyond the reach of accounting students (Gow et al. 1994). In that females appear to gain more from the experience, it contradicts the historical association of technology and masculinity (see Hollway, 1996). The results also rationalize the feminization of accounting practice that has occurred over the last score of years (Komori, 2008).

The computer-aided dialogue that this paper has documented shows that the feminine need not appear in contradictions, silences and hard-to-decipher suppressions (see Martin, 1992). Cyberspace offers an opportunity for less marginalization and subtle conflict. The female and the male way of communicating may be slightly different but not as inferior and superior. While gender is always being enacted, the distance created by the discussion board may make students less self-aware of gender factors. In such an environment, peer abilities may have a stronger impact on class achievement (Hanushek et al. 2001). Here, one could also acknowledge the existence of “lurkers” who no doubt have had their unposed questions answered by the conversation held by others.

Stanga and Ladd (1990) suggest that students choose the accounting major in part due to the erroneous belief that communication is not an essential skill.

This paper has put student-initiated questions and answers at the heart of the course in order to challenge such expectations. Unlike other studies that suggested that the instructor needs to be highly effective at bringing forth participation (e.g., Nunn, 1996), the results of this paper suggest a considerable willingness to communicate. This might be attributable to the anonymity of the interface and a new generation’s comfort with this messaging process (see Howe and Strauss, 2000) The gender differences highlighted also call for interventions to encourage more participation from males. Apparently, success for females does not require the adoption of male characteristics.

No one could claim that even the large scale use of discussion boards will mollify the pervasive impact of gender socialization. The everyday use of language helps to perpetuate a status quo in which women tend to accept male views and their reluctance to pose alternatives (Cooper, 1992; Ehrlich et al. 2014). However, an orientation toward skills and substantive content encouraged in a synchronous communication can provide a counterbalance of varying effectiveness.

This study must recognize several limitations. No attempt was made to evaluate personality differences, some of which may be patterned by gender. Most relevant may be written communication apprehension. This may be lessened by the fact that the writings in question were not graded by the instructor. Some studies suggest that students also vary in their computer use apprehension. Initially, experienced more by females than males (Reinen, 1993), computer anxiety has lessened for all students (Moore and Mitchem, 1999) such that its salience today

has to be doubted wherever social class differences are not at issue. The current study used biological differences to define the gender variables although some argue for a more socially construed gender orientation (Bay et al. 2001). Such a choice might more effectively introduce value differences (see Baker, 1976) and work-life balance decisions. Whether or not students were accounting majors could not be determined very reliably at this stage of their matriculation. This research builds upon very established and important questions in the literature. A social system should be thought of in gendered terms. How individuals exposed to, or processed by, those systems project and reconfigure their gender roles is a question of primary interest to those wishing to improve results.

This paper provides gentle advocacy for a more collaborative education that removes the instructor from center stage. Students come to any course with different skills and deficiencies. They should accept the responsibility of helping each other. They should accept the responsibility of helping each other. This opposes the notion that only testing can make content real to students (Mayer-Sommer, 1990). Women do very well in an environment of voluntary help requests and voluntary assistance offered.

Accounting education should also include an emotional subtext. The insertion of such a subtext into a substantive communication, while not the exclusive tendency of females appears to facilitate highly instrumental goals. Much more research should be focused here. This research points toward the probability that only limited empirical verification of broad gender stereotypes will result in the full measure of time.

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