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# JAFEE

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*On the cover: The William H. Danforth Chapel designed by Frank Lloyd Wright for the campus of Florida Southern College. Photo by Kate Whitaker.*

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# Transition Not Transformation to IFRS in England, Scotland and Ireland: Lessons for University Accounting Programs

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## ABSTRACT

Accounting standards play a pivotal role in the efficient operation of a free market economy strengthening capital markets by insuring investors have reliable, comparable and transparent financial information. A major worldwide effort is currently underway to try and improve comparability of financial information while simultaneously increasing access to, and decreasing the cost of, capital to companies through the adoption of a single set of financial standards, International Accounting Financial Standards (IFRS). Little research exists surrounding the actual transition issues encountered by accounting educators in migrating curriculum from their local Generally Accepted Accounting Principles (GAAP) to IFRS. This study examines the IFRS transition experiences of nine university accounting programs in England, Scotland, and Ireland. We found no formal training programs implemented at any of these universities to help the professors prepare for the transition. The professors treated the transition like a typical course preparation and sought out the resources they needed to learn the materials themselves. The transition did not require or result in any major changes to their teaching methodology, with content changes limited to those courses which covered U.K. or Irish GAAP pre-transition (with IFRS standards replacing that content). The amount of material required to integrate IFRS into their curriculum was also minimal due to limited depth and breadth of standards coverage in their existing programs. Two areas of concern were identified by each of the universities studied: the fact that they no longer formally teach pre-transition (legacy) GAAP and that they all could do a better job teaching judgment through the coverage of the IFRS framework. The respondents suggest that the best way to teach students' how to apply IFRS standards may be through the use of case studies, discussion and research based projects. These findings may benefit academics faced with similar transitions and help identify potential improvements to existing curriculum for those who have already gone through the experience. *Keywords: International Financial Reporting Standards, IFRS, transition, education, teaching, judgment*

## Introduction

Accounting standards play a pivotal role in the efficient operation of a free market economy strengthening capital markets by insuring investors have reliable, comparable and transparent financial information. There has been a concerted effort worldwide to improve comparability of financial information while simultaneously increasing access to, and decreasing the cost of, capital to companies through the adoption of a single set of financial standards. Companies in countries with immature or nonexistent accounting standards often have to resort to high cost debt to fund their operations. "High quality accounting standards are essential to the efficient functioning of a market economy because decisions about the allocation of capital rely heavily on credible and understandable financial information. The only way to achieve fair, liquid and efficient

capital markets worldwide is by providing investors with information that is comparable, transparent and reliable" (SEC 2000, 4). The adoption of a single set of accounting standards could help to make the entire world economy more efficient, by improving capital access and decreasing the cost of it at the same time.

In 2002, each of the European Union member countries agreed to replace their individual accounting standards with one uniform set: International Financial Reporting Standards (IFRS). That decision resulted in 25 countries and over 8,000 companies replacing their existing national reporting standards in 2005 with a relatively new and developing set of standards. The decision also significantly increased the application and acceptance of IFRS throughout the world by increasing the number of countries adopting the standard by 25% and, more

importantly, tripling the number of companies required to report using it.

The majority of the literature about IFRS has focused on practice-related issues such as the resulting quality of financial reporting (Muller 2014; Zeghal et al. 2012), cost of capital (Li 2010; Zhao 2010), challenges implementing particular International Accounting Standards (IAS's) (He et al. 2012) and comparability of financial data between companies from region to region (Brochet et al. 2013; Yip and Young 2012). The purpose of the current study is to extend the IFRS research to an important obstacle to successfully implementing IFRS (Bukics et al. 2009), i.e., how universities have transitioned the education of accountants who will implement and audit under IFRS. A transition of this magnitude is no small task and raises serious questions about resources, training, curricular fit (placement), and teaching methodology (judgment). IFRS are considered to be a primarily principles-based set of standards, which require more judgment in their application than a rules-based set of standards. The rules versus principles debate has raised questions about the teaching methodology required to adequately prepare students for applying them (Hodgson et al. 2011; Miller and Becker 2010; Needles 2010; Wells 2011).

The purpose of this study is to contribute to and expand the limited research surrounding how universities transitioned their curriculum to IFRS. Our findings extend beyond the benefit to academics who may transition to IFRS in the future or may face going through a similar transition. They may also be informative to those who have already gone through the experience and help identify potential improvements to existing curriculum. The research is comprised of a case study of the experiences of nine university accounting programs, in England, Scotland, and Ireland. The primary methodology is in-person interviews of accounting professors. The interviews were conducted by the faculty researcher and three senior undergraduate accounting students. The data collected was supplemented with an extensive review of each of the universities' accounting program degree offerings.

We begin by discussing IFRS transition-related literature, followed by a discussion of study methodology. We then discuss our findings and conclude with limitations and suggestions for future research in this area.

## Literature Review

There is limited IFRS transition-specific literature. Much of what is published is not research based, but more speculative or opinion-based in nature. For example, this literature includes articles published in the May 2013 special edition of *Issues in*

*Accounting Education* dedicated to IFRS transition issues in eight countries including the U.K. (England, Scotland, Wales and Northern Ireland), France, Russia, China, South Africa, Australia, Brazil, and Canada. While this edition provides a solid overview of broad issues that academics might encounter in making a transition from local GAAP to IFRS, they are opinion pieces written about the authors' direct experiences teaching at their respective universities (Jackling 2013). In the one article covering the U.K. and Ireland, Stoner and Sangster (2013) specifically address this limitation by stating that their paper is based on their personal experiences and may not be generalizable or representative of the U.K. as a whole. This lack of generalizable research was the impetus for our study.

Our study expands the current literature and appears to be the first of its kind to provide a more detailed look at the specific transition issues encountered at the universities studied. This study avoids potential personal biases and reduces the lack of generalizability inherent in the articles referenced above. The following literature review focuses on the transition-specific topics of resource constraints, training, curricular fit (placement), and teaching methodology (judgment).

## Resource Constraints

The availability of course-related materials is a critical component to the successful coverage of any topic. Accounting faculty need assistance with IFRS-related teaching materials (Riordan and Riordan 2009). The transition from local GAAP to IFRS will require the development of material either by textbook authors, professional organizations, or by the accounting faculty themselves.

Providing faculty with the necessary materials may help promote the growth of the subject in the curriculum. IFRS has been slowly incorporated into new textbook editions (Bandyopadhyay and McGee 2012; Cherubini et al. 2011; James 2011). The speed with which accounting programs can make the switch from their local GAAP to IFRS appears to be impacted in a significant way by the availability of teaching materials (Bonnier et al. 2013; Coetzee and Schmulian 2013; Jackling et al. 2013; Stoner and Sangster 2013). For instance, Stoner and Sangster (2013) reported that in the U.K. many universities did not make the switch to IFRS content until the textbooks were available (with most IFRS texts not available until after the transition date). Bonnier et al. reported that their faculty wrote their own text and supplementary materials to enable them to transition their curriculum at their university in France (Bonnier et al. 2013).

While a problem for the earlier adopters (Bonnier et al. 2013; Coetzee and Schmulian 2013; Jackling et al. 2013; Stoner and

Sangster 2013), the availability of IFRS-based textbooks did not appear to be an impediment in Canada, which transitioned in 2011. The professional accounting bodies in Canada produced many transition resources. In addition, textbooks became available in 2010, just in time for the transition (Hilton and Johnstone 2013).

## **Training**

Teaching any new topic requires more than having textbooks or other teaching materials available. Teaching requires preparation on the part of the educator starting with gaining an understanding of the topic to be covered. While new course preparations are typical in the life of an academic, the replacement of the foundation upon which their curriculum is based is not. This leads to the natural question as to the required depth and breadth of training necessary to enable the successful transition of university accounting programs to IFRS.

The experiences of South Africa, Australia, and the U.K. suggest that faculty did not appear to require much training pre-transition. The required training was found to be similar in nature to preparing to teach a new course (Coetzee and Schmulian 2013; Jackling et al. 2012; Jackling et al. 2013; Stoner and Sangster 2013). Faculty training in the U.K. on IFRS has also been minimal (Stoner and Sangster 2013). The professors took it upon themselves to gain the knowledge they needed to incorporate IFRS into their courses utilizing various approaches like CPE courses, reading publications and research conducted by accounting firms and professional bodies, and acquiring new textbooks incorporating IFRS (Bandyopadhyay and McGee 2012; McGee and Bandyopadhyay 2009; Miller and Becker 2010).

The level of required training was impacted by two things: the similarity in the legacy standards and previous conceptual framework to IFRS at the time of transition (Coetzee and Schmulian 2013; Jackling et al. 2012; Jackling et al. 2013) and the extent to which actual standards are covered at the universities (Stoner and Sangster 2013).

## **Curricular Fit (Placement)**

Fitting new content into an already crowded curriculum is one of the most significant hurdles facing educators (James 2011; Munter and Reckers 2010). Some believe IFRS should be taught as a standalone course or series of courses, while others suggest IFRS should be incorporated into existing classes and used to compare and contrast with current GAAP (McGee and Bandyopadhyay 2009; Weiss 2011). It appears that building IFRS into existing courses is the preferred method (Zhu et al. 2011).

Most coverage is in the intermediate financial accounting courses with some more detailed focus in advanced financial accounting. The term intermediate is not commonly used in the U.K. and Ireland. Per a review of the course documentation at each of the accounting programs studied, there is a general lack of naming consistency of accounting courses other than the terms financial, managerial, audit, and tax. The course or courses where IFRS is typically found is in the second and third financial accounting courses. The names of these courses at the universities studied included Financial Accounting 2 and 3, Accounting Standards and Theory, Financial Accounting & Reporting, and Financial Reporting, with some of these having courses titled “advanced” in front of them as well. For purposes of this study we are using the terms intermediate financial and advanced financial accounting to include the above naming conventions.

Some ambitious programs are introducing the foundations of IFRS in the introductory courses (Bandyopadhyay and McGee 2012; Cherubini et al. 2011; Jones et al. 2009; McGee and Bandyopadhyay 2009; Riordan and Riordan 2009; Weiss 2011). In a survey of the PWC grant recipients, 79% of the respondents integrated IFRS into their current curriculum with 14 of the 15 schools integrating it into one or more parts of the intermediate accounting series (Weiss 2011). Universities in those countries that have transitioned to IFRS all appear to have integrated IFRS into their curriculum, for the most part, by simply replacing the coverage of their previous GAAP (Legacy GAAP) which has been taught in their financial accounting courses in France, South Africa, Australia, Australia and the United Kingdom, respectively (Bonnier et al. 2013; Coetzee and Schmulian 2013; Hor and Juchau 2005; Jackling et al. 2013; Stoner and Sangster 2013).

The one exception noted in the literature regarding the above surrounds the continued teaching of legacy GAAP in the U.K. Legacy GAAP is the set of standards replaced by IFRS which many companies still use in the countries which have elected to move to IFRS. Some professors in the U.K. have continued to teach legacy GAAP in addition to IFRS (Stoner and Sangster 2013). The coverage is inconsistent and can vary by professor and university. The coverage of legacy GAAP was, and still is, an issue in the U.K. due to the continued use of their local GAAP often for statutory reporting and / or by privately held companies not mandated to make the switch (Stoner and Sangster 2013).

## **Teaching Methodology (Judgment)**

Some have raised questions about whether IFRS can be taught the same way as the standards they are replacing. They question whether a primarily principles-based set of standards

can be taught in the same way as one that is more rules-based (Hodgson et al. 2011; Miller and Becker 2010; Needles 2010; Wells 2011). Michael Wells of the IFRS Educational Foundation calls for an adoption of a framework-based teaching approach to promote the students' ability to use judgment (Needles 2010; Wells 2011). The responsibility of accounting faculty is to teach students how the use of judgment is required for consistent application and interpretation of IFRS standards (Hodgson et al. 2011). Jackling et al. (2013) state "the conceptual framework is designed to provide a blueprint for accounting, and aims to specify the concepts that should be applied in preparing financial statements. The framework provides the foundation for the principled-based standards" (p. 269). They further suggest that the rules in the standards complement and operationalize the principles by specifying what an entity must do to satisfy those principles.

Implementing principles-based standards requires judgment and the development of a certain level of comfort with ambiguity. This implies that to teach a principles-based set of standards requires more than rote learning of rules. In relation to the teaching of principles versus rules, since the two standards were similar (Australian GAAP and IFRS) at the time of transition, the opportunity to change the way they were teaching accounting was overlooked by many Australian academics (Jackling et al. 2012). However, as demonstrated by the Australian experience, the failure to address this issue did not prevent the transition from being completed (Jackling et al. 2012; Jackling et al. 2013).

The experiences in Canada and South Africa were similar to that of Australia. Both had gone through a pre-transition convergence process similar to that of Australia. Neither of these countries appear to have required major curricular changes as a result of the transition (Coetzee and Schmulian 2013-South Africa; Hilton and Johnstone 2013- Canada). While in the U.K. there were significant differences between U.K. GAAP and IFRS at the time of transition, major curricular changes did not occur because U.K. GAAP was considered to be similarly, if not more, principled-based than IFRS (Stoner and Sangster 2013). However, in France, which is self-described as prescriptive and rules based, they did fundamentally change their teaching methodology as a result of the transition at the university studied (Bonnier et al. 2013).

While Australia, South Africa, Canada, and the U.K. did not materially change their curriculum or teaching methodology to include or expand the coverage of the conceptual framework, the authors all suggest that it should be covered in more detail. The failure to incorporate the framework into the curriculum may have been a lost opportunity for South Africa (Coetzee and Schmulian 2013), Canada (Hilton and

Johnstone, 2013), Australia (Jackling et al. 2012; Jackling et al. 2013) and the United Kingdom (Stoner and Sangster 2013).

## Methodology

The research was comprised of a qualitative case study of the IFRS transition experiences at nine university accounting programs in England, Scotland, and Ireland. These countries were chosen primarily because of their similarities: all are economically advanced; geographically close to each other; had plenty of time to prepare for the transition to IFRS, with each going through a standards convergence process leading up to the transition; had similar (close to identical) GAAP pre-transition; and have similar educational models. In addition, sufficient time had passed post-transition to allow for the participants to intelligently reflect on their experiences (allowing them needed time to evaluate what worked and what did not). The specific universities studied were the direct result of contacts the faculty researcher had developed within these institutions through a previous study.

Initial contact with potential participants was made via email. Thirty-six professors from 32 different universities who participated in a prior study (a survey) indicated their willingness to participate in another study. Of the thirty-six who were emailed about participating in this study, 12 professors from 12 different universities originally agreed to participate. Interviews were then scheduled with those agreeing to participate. Due to scheduling conflicts and one no show, that number dropped from 12 to 9. Each of those agreeing to participate were asked to find other faculty at their university willing to be interviewed. This request resulted in 6 additional accounting faculty members agreeing to participate, resulting in 14 faculty members from the nine universities shown in Table I being interviewed: one participant from six universities, two participants from two universities and four participants from one university.

As shown in Table I (top of p. 6), the universities studied vary in relative size, ranking, accreditation, and degrees offered, resulting in a variety of perspectives being recorded through the interview process. Each of the programs studied offers a minimum of a three-year accounting degree with the option of both a fourth-year honors and Master of Accountancy option, with the exception of Worcester which offers both an honors and MBA option. Two universities also offer a Ph.D. in accounting and one a DBA. Three of the universities' business programs are separately accredited. The demographics of these universities appear to be consistent with the total population of universities within the U.K. and Ireland.

**Table I**  
**Participating University Demographics**

	<b>Country</b>	<b>No. of Participants</b>	<b>Total No. of Students</b>	<b>Total No. of COB Students</b>	<b>Ranking<sup>1</sup></b>	<b>Accreditation EQUIS and/or AACSB<sup>2</sup></b>	<b>Highest Degree Offered</b>
<b>De Montfort University</b>	England	1	27,000	5,000	80 of 124	Neither	MAcc
<b>Newcastle University</b>	England	1	21,000	2,800	22 of 124	Both	MAcc
<b>University College, Dublin</b>	Ireland	2	30,000	4,300	3 of 36	Both	MAc & Ph.D.
<b>University of Glasgow</b>	Scotland	1	23,000	3,800	23 of 124	AACSB	MAcc
<b>Northampton University</b>	England	1	14,000	3,500	62 of 124	Neither	MAcc
<b>Southampton University</b>	England	1	26,000	1,900	20 of 124	Neither	MAcc
<b>University of Worcester</b>	England	1	10,000	1,300	109 of 124	Neither	MBA & DBA
<b>Nottingham- Trent University</b>	England	2	25,000	2,400	61 of 124	Neither	MAcc
<b>Waterford Institute of Technology</b>	Ireland	4	10,000	2,000	13 of 36	Neither	MAc & Ph.D.

<sup>1</sup>Ranking: The U.K. rankings provided are from the 2014 *Complete University Ranking Guide* (CUG), which ranks the 124 universities in England, Scotland and Northern Ireland. The Irish University Rankings are from the 2014 4International Colleges and University Rating Agency, which ranked each of the 13 universities in Ireland (excluding Northern Ireland, which is a part of the U.K.). The CUG and 4International rankings can be found at <http://www.thecompleteuniversityguide.co.uk/> and <http://www.4icu.org/>, respectively.

<sup>2</sup>Accreditation: The two primary accreditation agencies for colleges of business in the U.K. and Ireland are the European Quality Improvement System (EQUIS) and the Association to Advance Collegiate Schools of Business (AACSB). EQUIS accreditation is held by only 26 universities in the U.K. and 1 in Ireland. AACSB accreditation is held by only 26 universities in the U.K. and 1 in Ireland. Listings of accredited universities for EQUIS and AACSB can be found at <https://www.efmd.org/accreditation-main/equis/accredited-schools> and <http://www.aacsb.edu/accreditation/accredited-members/>, respectively.

The primary methodology was that of a case study through semi-structured in-person interviews of 14 accounting professors in addition to the review of accounting program specific documentation at the nine universities selected. The interviews were conducted by the faculty researcher and three senior undergraduate accounting students, taking place at the participants' university, and averaged 75 minutes in length. The interviews were semi-structured, in that we had a list of the topics we wanted to cover (See Table II for the list of topics), but allowed the participant to drive the direction of the interview and the details of what they wanted to discuss. Every participant agreed to have their identity disclosed and comments directly quoted; however, we decided not to directly quote any of the participants. The participants were given the

option to withdraw from the study at any time and the study was approved by the faculty researcher's university institutional review board. In every instance we were able to cover the topics we wanted to address, while at the same time gather additional information. Each interview was transcribed and subsequently evaluated and coded using a grounded theory approach (Glaser and Strauss 1967), allowing the data to speak for itself. Grounded theory is a systematic analytical methodology commonly applied to interview and observation data in qualitative research studies (Bogdan and Biklen 2003; Marshall & Rossman 1999). The data collected was also compared against a detailed review of the accounting-related degree programs each of these universities offer. The purpose of this review was to gain insight into how the individual programs at each of

the nine universities compared to one another. We also used this information to look for inconsistencies between what the participants stated and the published description of the degree programs. No inconsistencies were found, which helps to support the reliability of the findings reported.

## Results

Of the nine universities studied, all but one had existing accounting programs pre-transition to IFRS. The one that did not (Worcester) developed an accounting program with the intent of teaching IFRS from the start. Worcester did teach some limited amount of accounting pre-transition, but not as part of a separate degree program. It was included as part of what they referenced as a general business degree with an accounting emphasis.

We found many similarities at each of the universities studied regarding the transition to, and/or development/deployment of their IFRS curriculum. They all cover IFRS material in similar areas of the curriculum. They all went about preparing for the transition and integrating the changes in their curriculum in similar fashion. However, no two programs were found to be identical. The similarities and differences we found between the universities will be discussed further (See Table III on p. 8 for a summary of the results by university). The data we collected during the interviews fell into the following topical areas: resource constraints, training requirements, curricular fit (placement) and, teaching methodology (judgment). The rest of the paper addresses those areas followed by concluding comments, limitations, and suggestions for future research.

## Resource Constraints

At the time of the transition, there were few teaching materials available to teach IFRS. However, there were some materials available, and the accounting profession itself made resources available to the academic community for use. We found the source of materials differed by institution, with some professors preparing their own materials and others using textbooks and other published literature. The timing of their transition also differed by institution with Nottingham-Trent completely replacing local GAAP coverage with IFRS in 2003, the earliest transition of the programs studied. However, the lack of teaching materials did not appear to impact any of the programs in a meaningful way or delay their transition to IFRS.

All indicated that the amount of material required to integrate IFRS into their curriculum was minimal due to the level of standards coverage in their programs. Each indicated that the depth of coverage on individual standards did not change post-transition (with the exception of Worcester, which designed their program with IFRS in mind). While we found differences between the universities as to the exact standards covered and the depth of that coverage, the actual coverage of specific standards in each of the programs was considered to be minimal by the participants.

The participants appeared to view the transition as being similar to the work they encounter in preparing to teach any new course. They indicated that faculty took it on themselves to create the needed material when other sources were not available. They also noted that materials are now readily available and should not be an impediment for those who have to make this transition in the future.

**Table II**  
**IFRS Transition Interview Topics List**

1. Preparing for the transition: Discussing the what, when, who, and how related to making decisions regarding IFRS coverage in the curriculum. Discussing things like what was involved in planning for the transition, time frame involved, and where the ultimate decisions were made.	4. Obstacles encountered during the transition: Discussing things like possible delays in implementation or challenges in preparing for the transition. This includes things like availability of teaching materials, fitting the material into the curriculum, and possible push back from faculty.
2. Impact of transition on accounting faculty: Discussing things like who and how individuals were impacted by the transition, the amount of training that was involved, who had to be trained, and if financial resources were available to help with this training.	5. Teaching methodology: Discussing things like how IFRS are taught and how that might differ from the way they had been teaching their legacy GAAP.
3. Impact of transition on curriculum: Discussing things like when, where, and how IFRS was added to the curriculum (i.e., integration vs stand alone; supplemental vs replacement) as well as the timing of the transition.	6. Best practices: Discussing things they might have done differently knowing what they now know. This would include advice they might have for those yet to make the transition as well as discussing their opinion of the quality of IFRS as compared to their legacy GAAP.

**Table III**  
**Comparison of Results by University**

	<b>Resource Constraints &amp; Training</b>	<b>Curricular Fit (Placement) &amp; Standards Coverage</b>	<b>Teaching Methodology (Judgment/Framework Coverage)</b>
<b>De Montfort University</b>	Existing texts supplemented with other material adopted at the prof level. Did not impede transition to IFRS. Self-trained.	IFRS standards coverage replaced U.K. GAAP coverage in financial reporting and accounting standards and theory. U.K. GAAP no longer covered.	Coverage in year 1 and to a minimal degree in year 3 (depending on electives chosen). If student stays for fourth-year master's, then they get more coverage.
<b>Newcastle University</b>	Existing texts were used, but not text reliant. Profs created material necessary to make the switch. Did not impede transition to IFRS. Self-trained.	IFRS standards coverage replaced U.K. GAAP coverage at the intermediate financial accounting level and beyond. Some profs still cover U.K. GAAP and/or discuss differences.	Coverage in years 1–3 (coverage per student varies dependent on electives chosen). If student stays for fourth-year master's, then they get more coverage. Coverage also varies by prof. Acct Theory discussed as good way to cover.
<b>University College, Dublin</b>	Transitioned 2004. Existing texts supplemented with IFRS specific materials at the prof level. Did not impede early transition to IFRS. One prof. changed to intro to avoid teaching IFRS. Self-trained.	IFRS standards coverage replaced U.K. GAAP coverage at the intermediate financial accounting level and beyond. U.K. GAAP is no longer covered.	Coverage in year 1 and to a minimal degree in subsequent years. Not an emphasis on it. Commented that too much is being made out of the "judgment" aspect of the standards. Case studies were noted as good way to teach it. More coverage if students stay for a fourth-year master's.
<b>University of Glasgow</b>	Existing texts supplemented with IFRS specific materials at the prof level. Did not impede transition to IFRS. Self-trained.	IFRS standards coverage replaced U.K. GAAP coverage at the intermediate financial accounting level and beyond. U.K. GAAP is no longer covered.	Covered in first year and not again until fourth year, so most students get very little. Only those who stay for a fourth-year master's get it. Noted case studies as most effective way to teach it and that year 4 is research based which is also a good approach to increasing students' understanding of framework and judgment.
<b>Northampton University</b>	Existing texts supplemented with IFRS specific materials at the prof level. Did not impede transition to IFRS. Self-trained.	IFRS standards coverage replaced U.K. GAAP coverage at the intermediate financial accounting and reporting level and beyond. U.K. GAAP is no longer covered.	Covered in first year and not again until fourth year, so most students get very little. Only those who stay for a fourth-year master's get it. Use case studies to teach it in final year.
<b>Southampton University</b>	Existing texts supplemented with IFRS specific materials at the prof level. Did not impede transition to IFRS. Self-trained. Aware of a colleague from another university who retired to avoid switch.	IFRS standards coverage replaced U.K. GAAP coverage at the intermediate financial accounting level and beyond. Some profs still cover U.K. GAAP &/or discuss differences.	Coverage in year 1 with additional coverage in year 3. Varies by prof. Respondent uses case studies in year 3 modules to teach judgment addressing framework.
<b>University of Worcester</b>	New program, late adopter (2008/09), so texts with IFRS available. Self-trained.	IFRS Covered in second year Intermediate financial accounting module. Designed program around IFRS, U.K. GAAP included in honors degree only.	Minimal coverage of framework in year 1. Respondent suggested they tend to still treat standards as rules based rather than judgment oriented. Not much emphasis past first year.
<b>Nottingham-Trent University</b>	Earliest adoption (2003), created their own teaching materials. Just changed what was necessary, not heavily reliant on texts. Self-trained.	IFRS standards coverage replaced U.K. GAAP coverage at the intermediate financial and corporate reporting level and beyond. Stopped teaching U.K. GAAP in 2004.	Most framework coverage of the nine (years 1 and 3). Describe final year as "Analytical Based"; "Less technical accounting teaching philosophy, more concentration on decision making." Utilize case analysis and discussion to teach.
<b>Waterford Institute of Technology</b>	Existing texts supplemented with IFRS specific materials at the prof level. Did not impede transition to IFRS. Self-trained.	IFRS standards coverage replaced U.K. GAAP coverage at the intermediate financial accounting and reporting level and beyond. Some profs still cover U.K. GAAP and/or discuss differences.	Covered in first year and not again until fourth year, so most students get very little. Only those who stay for a fourth-year master's get it. Use case studies to teach it in final year. Respondents noted they are "very technically oriented".

## **Training**

Required training for the professors at the universities we studied was relatively minor. Our participants indicated that most professors self-trained to learn what they needed in order to make any required adjustments to the courses they taught. While the examples given on how individuals prepared to teach IFRS varied by participant, the message conveyed about the work involved was consistent.

There were no formalized IFRS faculty training programs at any of the institutions studied. Institutional support for the transition was not given (nor deemed necessary); it was left to each professor to seek out what they needed for their individual courses. Faculty training does not appear to have been an impediment to the transition to IFRS at these institutions.

While the actual training requirements were minimal, two participants gave examples of professors who did not want to take on the perceived work involved in making the change, who either decided to retire or to change their teaching concentration to avoid having to learn the new standards. Given that the actual impact of the transition on the curriculum was minimal, that probably explains why so few experienced real exodus or avoidance.

## **Curricular Fit (Placement)**

All of our participants indicated that the actual transition from U.K. and Irish GAAP was relatively easy and uneventful. Not much difference was seen in coverage of material before and after the transition. Some of this was due to the fact that U.K. and Irish GAAP went through a convergence process to bring their local GAAP closer to IFRS prior to the transition. However, for the U.K. and Ireland, IFRS included completely new standards such as the fair value standard that did not exist under the old standards. The participants noted that these did not have meaningful curricular impact because the depth of coverage at a standard level is limited in nature and, for the most part, did not make it into the curriculum at all.

Overall, the typical way in which IFRS impacted the curriculum was in the second year of their programs, and beyond, in the intermediate financial accounting and advanced financial accounting level of coursework, where they replaced local GAAP with the new standards. While we found that the exact course offerings and content within them varied by university, all participants noted that the only faculty impacted were those who taught the intermediate and advanced financial level courses where local GAAP had previously been covered. Not one university added a separate course on IFRS. They

all integrated IFRS into their existing curriculum (Worcester developed coursework which included it).

However, each of the participants noted a problem with simply replacing legacy GAAP with IFRS: most employers still use legacy GAAP, not IFRS. While in 2005 the U.K. and Ireland as a part of the EU started requiring publicly traded companies to report under IFRS for auditing purposes and disclosure to the investment community, no such mandate was made for privately held companies. In addition, U.K. and Irish GAAP were kept for statutory reporting purposes as well. All of the participants appeared to believe that universities in the U.K. and Ireland should still cover legacy GAAP to some degree.

Four of universities were found to still cover U.K. GAAP in some of their programs' accounting courses at the discretion of the professor. The remaining five were found to no longer cover it at all in their programs. All participants indicated that continued coverage of U.K. GAAP is no longer done in a consistent or meaningful way at their respective universities.

All of our participants indicated they thought their programs should still cover legacy GAAP with one participant specifically stating they were doing a disservice to their students and their future employers by not including it. While U.K. and Irish GAAP have continued to get closer to IFRS since the transition, there are still differences. The participants talked about adding some local GAAP back into the curriculum since the vast majority of businesses in the U.K. and Ireland still report under U.K. and Irish GAAP respectively. While our respondents saw this as a problem, none of the programs studied had yet made the decision to add it back into the curriculum. It is presumed that the U.K. and Ireland will be moving to IFRS for Small and Medium Enterprises (SME's) (IFRS with fewer disclosures) in a few years. That may be the reason that action to correct the problem has not been taken.

## **Teaching Methodology (Judgment)**

The typical description of IFRS is that it is principles-based (Thomas 2009). This has led to questions as to whether principles-based standards can be taught in the same way as rules-based standards. As previously mentioned, the suggested method of teaching IFRS has been termed framework-based teaching (Wells 2011).

The framework-based model suggests integration of the IFRS conceptual framework throughout the accounting curriculum, starting with the first introductory courses. We did not find that to be the case at the universities studied. We found that more time may need to be spent on the accounting framework. While some of the respondents indicated that more framework coverage was done earlier in their programs than other

respondents, all respondents indicated that their programs did incorporate some minimal amount in the introductory accounting courses. In addition, all indicated that integrating the framework throughout the curriculum would be the best way to teach the students how to interpret and apply the standards—the best way to teach judgment.

While all respondents spoke to the importance of covering the framework to solidify the students' ability to apply IFRS standards, the overall message was that they did not do it as much as they should. As shown in Table III, several of the respondents suggested that integrating the framework through the use of case studies, discussion and/or research projects specifically geared toward standards application as the best approach for teaching judgment. Those suggestions support the framework based model suggested by Wells (2011). Unfortunately, for most of the programs, that type of coverage did not occur until the final or fourth year of study. Therefore, students who do not stay on for the fourth-year honors or master's program enter the workforce without that additional training.

In summary, we found that the level of coverage of the framework can vary by professor within the same institution, and none were completely following the prescribed framework-based methodology for teaching judgment.

## Conclusions and Areas for Future Research

The purpose of this study was to contribute to and expand the limited amount of literature surrounding how universities transitioned their curriculum to IFRS. We hope that our findings will be useful to academics faced with the challenge of integrating IFRS into their accounting curriculum in the future and interesting to those who have already made the change. While the research findings are based on the experiences of only nine universities, we believe that their experiences are a reflection of the larger body of universities in the U.K. and Ireland. We come to that conclusion based on the similarity of our findings between the universities studied and with the findings of the limited existing transition-specific literature in the field.

The nine universities studied all found the transition of their accounting programs from U.K./Irish GAAP to IFRS to be relatively painless. The lack of teaching materials did not prevent them from making the transition. There were no formal training programs implemented at any of these universities to help the professors prepare for the transition. The professors treated the transition like a typical course preparation and sought out the resources they needed to learn the materials themselves. The transition did not require or result in any major changes to their teaching methodology. The content

changes were limited to those courses which covered U.K. or Irish GAAP pre-transition, with IFRS standards replacing that content. While fear of change may have resulted in a few professors either changing the areas they taught in or retiring earlier than planned, for the most part the actual transition was uneventful.

Two areas of concern were identified by each of the universities studied: the fact that they no longer formally teach legacy GAAP and that they all could do a better job teaching judgment through the coverage of the IFRS framework.

## Legacy GAAP

Our findings suggest that there is a need for continued coverage of legacy GAAP within the U.K. and Ireland by universities as the majority of the companies in those countries are still reporting under the old standards. Each of the programs we studied supplanted their legacy GAAP coverage with IFRS. This appears to have enabled them to transition using the same resources, simply substituting one set of standards for another. For those yet to make the transition, continued coverage of their legacy GAAP would appear to be worth considering.

## Teaching Judgment

The transition-specific literature spoke of a missed opportunity for many accounting programs in regard to the adoption of a framework-based teaching approach to IFRS (Jackling et al. 2012). The framework-based approach is considered to be the preferred methodology to integrate the teaching of judgment throughout the curriculum (Wells 2011). Wells (2011) suggests that integration start with the introduction of the framework early in the degree program (at the introductory course level) and then be revisited and built upon throughout the program.

Our findings suggest that, similar to Jackling's findings regarding Australia, both the U.K. and Ireland missed an opportunity to integrate the coverage of the framework when they transitioned to IFRS. Our findings suggest that serious consideration should be given to the integration of the framework-based teaching model into the curriculum of both those accounting programs which have yet to transition to IFRS, and those which already have.

## Limitations

The primary source of data gathered for the nine universities studied was through the interviewing of one professor from six of the programs, two from two of the programs and four from one program. While the data collected was compared against published program documentation, it is possible that the data

gathered is not complete. In addition, the study consisted of a detailed look at only nine universities out of a total of 137 in the U.K. and Ireland. The findings may not be representative or generalizable to the whole population.

## Future Research

This research focused on nine universities from England, Scotland and Ireland. The research could be extended to more universities in these countries and universities in other countries such as Canada, South Africa, or Australia. Another suggestion is to develop a survey instrument focused on the findings in this study could be developed. The survey could

be sent to accounting department chairs of a much larger number of universities.

Our findings suggest potential issues with the loss of coverage to legacy GAAP and with the teaching methodology for judgment; both of these areas appear to be worth further study. The findings of studies like these extend beyond the benefit to academics faced with going through a similar transition. They can be informative to those who have already gone through the experience and help identify potential improvements to existing curriculum.

## References

- Bandyopadhyay, J., and P. McGee. 2012. A progress report: IFRS-U.S. GAAP convergence and its curriculum impact. *ACR*, 20(1&2), 78–89.
- Bogdan, R., and S. Biklen. 2003. *Qualitative Research for Education: An Introduction to Theories and Methods*. Allyn and Bacon, Boston
- Bonnier, C., F. Demerens, C. Hossfeld, and A. Le Manh. 2013. A French experience of an IFRS transition. *Issues in Accounting Education*, 28(2), 221–234.
- Brochet, F., A. D. Jagolinzer, and E. J. Riedl. 2013. Mandatory IFRS adoption and financial statement comparability. *Contemporary Accounting Research*, 30(4), 1373–1400.
- Bukics, R. M., A. Masler, and S. Speer. 2009. IFRS Ripples throughout the profession. *The CPA Journal*, 80(2), 30–34.
- Cherubini, J., K. Rich, H. Zhu, and A. Michenz. 2011. IFRS in the general business curriculum: Why should we care? *The CPA Journal*, 81(2), 13–15.
- Coetzee, S., and A. Schmulian. 2013. The effect of IFRS adoption on financial reporting pedagogy in South Africa, *Issues in Accounting Education*, 28(2), 243–251.
- Glaser, B. G., and A. L. Strauss, A. 1967. *The Discovery of Grounded Theory*. Aldine de Gruyter, Hawthorne, NY.
- He, X, T.J. Wong, and D. Young. 2012. Challenges for Implementation of fair value accounting in emerging markets: Evidence from China. *Contemporary Accounting Research*, 29(2), 538–562.
- Hilton, S., and N. Johnstone. 2013. The IFRS transition and accounting education: A Canadian perspective post-transition. *Issues in Accounting Education*, 28(2), 253–261.
- Hodgson, C., B. Hughes, and D. Street. 2011. Framework-based teaching of IFRS judgments. *Accounting Education: An International Journal*, 20(4), 415–439.
- Hor, J., and R. Juchau. 2005. International accounting education: An Australian perspective. *International Journal of Learning*, 12(5), 355–370.
- Jackling B. 2013. Global adoption of international financial reporting standards: Implications for accounting education. *Issues in Accounting Education*, 28,(2), 209–220.
- Jackling, B., P. de Lange, and R. Natoli. 2013. Transitioning to IFRS in Australian classrooms: Impact on teaching approaches. *Issues in Accounting Education*, 28(2), 263–275.
- Jackling, B., B. Howieson, and R. Natoli. 2012. Some implications of IFRS adoption for accounting education. *Australian Accounting Review*, 22(4), 331–340.
- James, M. 2011. Integrating International Financial Reporting Standards into the accounting curriculum: Strategies, benefits, and challenges. *Academy of Educational Leadership Journal*, 15, 127–124.
- Jones, C., R. Vedd, and S. Yoon. 2009. Employer expectations of accounting undergraduates: Entry-level knowledge and skills in global financial reporting. *American Journal of Business Education*, (November), 85–101.
- Li, S. 2010. Does mandatory adoption of international financial reporting standards in the European Union reduce the cost of equity capital? *The Accounting Review*, 85(2), 607–636.
- Marshall, C., and G. Rossman. 1999. *Designing Qualitative Research*. SAGE Publications, Thousand Oaks.

- McGee, P., and J. Bandyopadhyay. 2009. A contribution to practice: Exploring the curriculum impact of IFRS-U.S. GAAP Convergence. *Competition Forum*, 7(2), 496–504.
- Miller, W., and D. Becker. 2010. Why are accounting professors hesitant to implement IFRS? *The CPA Journal*, (August), 63–67.
- Muller, V. O. 2014. The impact of IFRS adoption on consolidated financial reporting. *Procedia-Social and Behavioral Sciences*, 109, 976–982.
- Munter, P., and P. Reckers. 2010. Uncertainties and budget shortfalls hamper curriculum progress on IFRS. *Issues in Accounting Education*, 25(2), 189–198.
- Needles, B. Jr. 2010. Accounting education: The impact of globalization. *Accounting Education: an International Journal*, 19(6), 601–605.
- Riordan, D., and M. Riordan. 2009. Inflation and financial statement analysis in the international accounting classroom. *Journal of Teaching in International Business*, 20, 174–187.
- SEC, 2000. SEC concept release: International accounting standards, February 18, 2000. Retrieved 9/18/2015 from: <https://www.sec.gov/rules/concept/34-42430.htm>
- Stoner, G., and A. Sangster. 2013. Teaching IFRS in the U.K.: Contrasting experiences from both sides of the university divide. *Issues in Accounting Education*, 28(2), 291–307.
- Thomas, J. 2009. Convergence: Business and business schools prepare for IFRS. *Issues in Accounting Education*, 24(3), 369–376.
- Weiss, J. 2011. Implementing IFRS curriculum into accounting programs. *The CPA Journal*, (April), 62–63.
- Wells, M. 2011. Framework-based approach to teaching principle-based accounting standards. *Accounting Education*, 20(4), 303–316.
- Yip, R. W. Y., and D. Young. 2012. Does mandatory IFRS adoption improve information comparability? *The Accounting Review*, 87(5), 1767–1789.
- Zeghal, D., S. M. Chtourou, and Y. M. Fourati. 2012. The effect of mandatory adoption of IFRS on earnings quality: Evidence from the European Union. *Journal of International Accounting Research*, 11(2), 1–25.
- Zhao, R. 2010. Mandating IFRS: Its impact on the cost of equity capital in Europe. *Journal of International Accounting Research*, 9(1), 58–59.
- Zhu, H., K. Rich, A. Michenzi, and J. Cherubini. 2011. User-oriented IFRS education in introductory accounting at U.S. academic institutions: Current status and influencing factors. *Issues in Accounting Education*, 26(4), 725–750.

# Software Piracy Revisited using the Extended Theory of Planned Behavior<sup>1</sup>

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## ABSTRACT

This paper contributes to the software piracy literature by using a new theoretical model. Prior studies tested software piracy using the Theory of Reasoned Action (TRA). In contrast, this paper uses the Extended Theory of Planned Behavior (ETPB), a broader theoretical framework. Theoretically, the TRA suffers indeterminacies and insufficiencies, forcing Ajzen (1985) to develop the Theory of Planned Behavior (TPB). Later, Dodor (2007) proposed the ETPB.

Based on our data, we found no abnormal software piracy behavior specific to our sample. On the contrary, we did find proportions of likely software pirates similar to those found by Woolley and Eining (2006). Further, the postulated ETPB explained significant incremental variances in software piracy intentions compared to the alternative models. Some implications and relevance of the study for free enterprise are discussed. *Keywords: Software piracy; Extended Theory of Planned Behavior; ethics; accounting*

## Introduction

Software piracy constitutes a major ethical economic and societal issue that affects negatively the free enterprise system. Christensen and Eining (1991) conducted a pioneering survey on the issue by using the Theory of Reasoned Action (TRA). They found that the propensity to pirate software among their sampled students was directly related to attitudes and to perceptions of referent groups (commonly referred to as “subjective norms”). Subsequently, Woolley and Eining (2006) conducted another survey using again the TRA. Interestingly, they included in that study a follow-up survey to investigate students’ software piracy behaviors and compared the results with those found earlier by Christensen and Eining (1991). Overall, the new findings suggested that although the sampled students’ understanding and knowledge of copyright laws have increased between the two studies, the gain in knowledge and awareness of copyright laws did not spillover into a significant reduction in the proportions of software pirates. In fact, the proportions of software pirates found by Woolley and Eining (2006, 59, Table 6) were even higher than those found initially by Christensen and Eining (1991, 75, Table 2), suggesting that the software piracy problem might have worsened over time. Hence, the need for further studies on the issue.

Christensen and Eining (1991) and Woolley and Eining (2006) deserve credits for their pioneering empirical investigations. However, they used a limited theoretical framework: the TRA. According to several prior studies (Bagozzi 1992; Sapp and

Jensen 1997; Leone et al. 1999), the TRA suffers clear limitations. Bagozzi (1992), in his paper, The self-regulation of attitudes, intentions, and behavior, argued, “Attitudes and subjective norms are not sufficient determinants of intentions...” Later, Sapp and Jensen (1997) raised and discussed issues of indeterminacies in the TRA in their paper, “A comparison of alternative procedures for resolving indeterminacies in the Theory of Reasoned Action.” Similarly, Leone et al. (1999) criticized the TRA for insufficiencies in their paper, “A comparison of three models of attitude-behavior relationships in studying behavior domain.” It should also be emphasized that the limitations of the TRA had forced Ajzen (1985 and 1991), one of its two co-authors, to develop an alternative framework: the Theory of Planned Behavior (TPB).

Based on the empirical analyses in the current study, we did not find any significant evidence to indicate that the software piracy propensity among our sampled students is significantly higher than the one reported in Woolley and Eining (2006). On the contrary, our analyses provide clear evidence that the proportions are similar to those found by Woolley and Eining (2006). Further, our results are consistent with Woolley and Eining (2006) in that although most of our sampled students appeared knowledgeable of software piracy issues and laws, that knowledge did not fully translate into the contractual technicality in the software area. Specifically, the sampled students might not be able to fully comprehend the legal complexity related to software. Christensen and Eining (1991, 69) explained that software companies typically license software

<sup>1</sup>We are very grateful to the Information Systems Session of the 2014 Southern AAA Meeting in Dallas for their suggestions on an early version of this paper.

rather than sell it. Indeed, under licensing contracts, although software buyers are granted the right to use the software, they do not have the ownership of the product: that ownership still remains with the software company. Thus, increased knowledge of copyright law may not necessary translate into reduced software piracy, partly because behavior is more personality driven than knowledge driven: smart people can also behave unethically.

Issues of software piracy among business students in general and accounting students in particular are relevant in a free enterprise system for at least three reasons. First, public accounting firms, which largely employ accounting and business graduates, take ethical issues very seriously, particularly in the aftermath of the demise of Arthur Andersen and the enactment of the Sarbanes-Oxley Act. These firms want graduates that will be ethical and follow regulations and laws. Indeed, both the AICPA and the IMA codes of professional conduct require accountants to comply with relevant laws and refrain from any behavior that would discredit the accounting profession. Second, auditors (both internal and external) need to be sensitive to issues that would be perceived as inducing a lack of integrity or independence as well as potential legal threats or liabilities (Clevenger et al. 1988; Straub and Collins 1990). Third, accountants rely more and more on computers and computer software to perform and deliver their services. Those performing management advisory services to clients are also likely to deal with cases involving software piracy as advisers to clients or as expert witnesses. They, therefore, need to know about not only the legal, but also the ethical implications of such cases.

The remainder of the paper is organized as follows. The next section presents the theoretical framework and the study's hypotheses. The subsequent section covers the study's methodology, followed by the analyses and the results. The results are discussed before concluding.

## Literature Review

Since the 1970s, several behavior-based theories have been used in information systems research. Among them are the Theory of Reasoned Action (Fishbein and Ajzen 1975; Ajzen and Fishbein, 1980) and its subsequent adjustments, the Theory of Planned Behavior (Ajzen 1985 and 1991) and the Extended Theory of Planned Behavior (Dodor 2007). Christensen and Eining (1991) and more recently Woolley and Eining (2006) used the Theory of Reasoned Action (TRA) to study software piracy among accounting students. However, a major flaw in the TRA is its "volitional control assumption." The TRA postulates that behavioral intention is a function of only "attitude toward behavior" and "subjective norms about behavior"; thereby,

excluding other important independent factors, particularly external independent factors. This neglect has led to issues of "indeterminacies" (Sapp and Jensen 1997) and "insufficiencies" (Bagozzi 1992; Leone et al. 1999). As a result, Ajzen (1985 and 1991) developed an alternative theory, the Theory of Planned Behavior (TPB), in an attempt to address these limitations of the TRA. Subsequently, Cronan and Al-Rafee (2008, 532) have used a modified TPB to investigate "Factors that influence the intention to pirate software and media."

Despite its many merits, the TPB too has some limitations. For instance, it does not address issues of multi-collinearity (Fredricks and Dosset 1983) between attitudes and subjective norms. This has led to misleading interpretations in some prior studies (Shaftel and Shaftel 2005). Faced with a high correlation between "attitudes" and "subjective norms," Shaftel and Shaftel (2005, 259) proposed a modified TPB, in which variable "attitude" becomes a mediating construct between "subjective norms" and "behavioral intention." However, postulating either "attitude" or "subjective norms" as a mediating construct would lead to methodological inconsistencies in future studies. The suggestion of Shaftel and Shaftel (2005, 259) that "attitude" be a mediating construct is based on the limited fact in their own study showing "attitude" with a stronger association with "behavioral intention" than did "subjective norms." The problem is that opposite evidence, where "subjective norms" yielded a stronger association with "behavioral intention" than did "attitude" has also be reported in Bentler and Speckart (1979), Bhattacharjee (2000), and Dodor (2007).

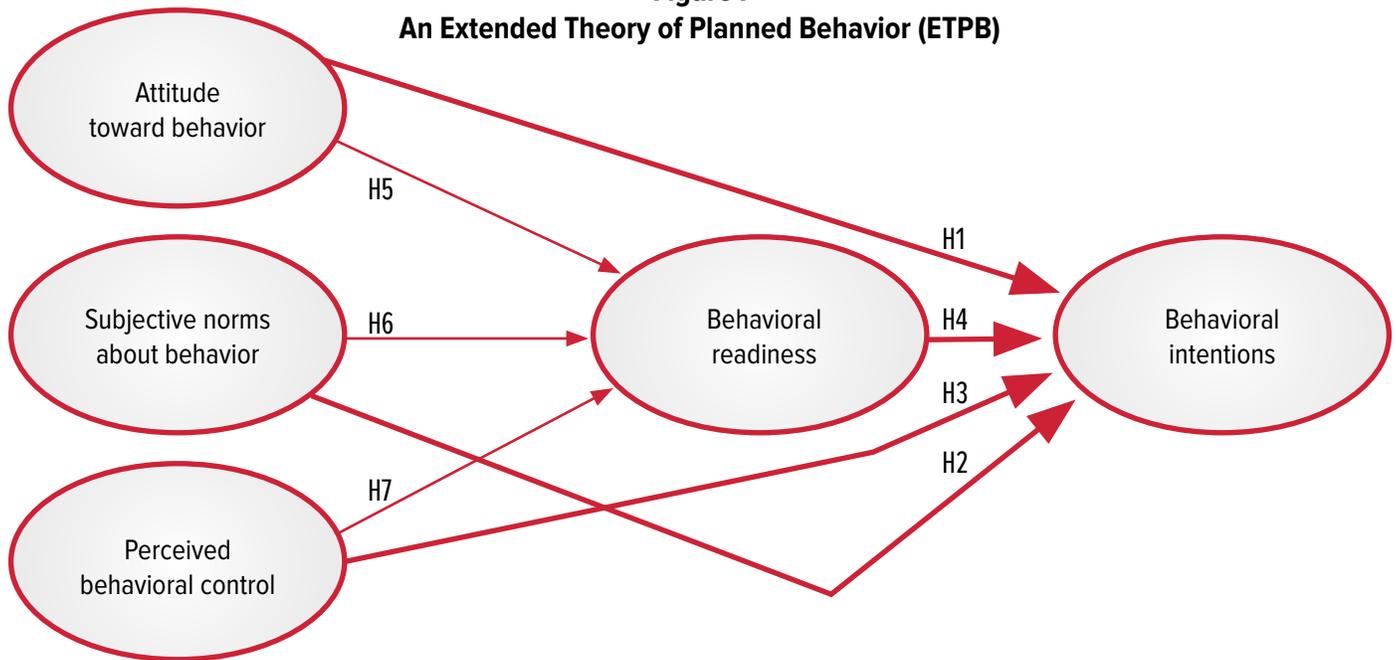
Thus, because there is no indisputable basis for postulating either "attitude" or "subjective norms" as a mediating construct, Dodor (2007) has offered a conciliatory solution by introducing a new construct "behavioral readiness" as a mediating construct between "behavioral intention" and its three indicator-variables (attitude, subjective norms, and perceived behavioral control). The resulting Extended Theory of Planned Behavior (ETPB) is presented in Figure I.

## Specification of ETPB Constructs

The ETPB consists of the following five constructs: (1) behavioral intention, (2) behavioral readiness, (3) attitude toward behavior, (4) perceived subjective norms about behavior, and (5) perceived behavioral control over behavior.

**1. Behavioral Intention:** This construct reflects the state of mind, plan and commitment of an actor to perform or not to perform a given behavior. Behavioral intention is a central construct in all behavior-based frameworks, as actual behavior generally comes as an enactment of a preconceived intention. This makes predicting behavioral intention very important.

**Figure I**  
**An Extended Theory of Planned Behavior (ETPB)**



**2. Behavioral Readiness:** Smits and Ezzat (2003, 9) indicated that the notion of “readiness” is a commonly understood concept. Indeed, we talk commonly of “sports teams’ readiness for competitive matches,” “students’ readiness for examinations,” “an army’s readiness for a battle,” or of “an organization’s readiness for competition.” Specifically, “readiness” has been defined as “...the mental or physical preparation for some experience or action.” Thus, the construct “behavioral readiness” relates to the level of “preparedness” of an actor to “respond or react” to a given situation, phenomenon or behavior. In this study, we use “behavioral readiness” to refer to a pre-behavior state of an actor’s preparedness, in terms of not only perceived strengths and opportunities that can motivate the actor’s behavioral intention toward action but also in terms of perceived weaknesses and impediments that may deter the same behavioral intention for action (Dodor 2007).

**3. Attitude towards Behavior:** Attitude towards behavior of an actor refers to the degree to which the actor has a “favorable or unfavorable evaluation or appraisal of the behavior in question” (Ajzen 1991). It represents the actor’s affective orientation toward the behavior. The construct “attitude toward behavior” is strongly grounded in both the TRA (Fishbein and Ajzen 1975; Ajzen and Fishbein 1980) and the TPB (Ajzen 1985 and 1991). It is designed to capture an actor’s overall evaluations (favorable versus unfavorable or positive versus negative) of performing a behavior. The ETPB assumes that an actor’s attitude toward a behavior will determine the actor’s behavioral readiness for the behavior and potentially predict the actor’s behavioral intention about the behavior.

**4. Perceived Subjective Norms about Behavior:** The construct of “subjective norms about behavior” is also derived from both the TRA (Fishbein and Ajzen 1975; Ajzen and Fishbein 1980) and the TPB (Ajzen 1985 and 1991). Ajzen (2002) discussed two components of “subjective norms”: an injunctive component (designed to capture whether social networks or stakeholders want the performance of the behavior) and a descriptive component (supposed to capture whether social networks or stakeholders themselves perform the behavior). However, the Extended Theory of Planned Behavior (ETPB) uses “subjective norms about behavior” to refer only to the injunctive component, e.g. whether important referent stakeholders of an actor will “approve or disapprove” the performance of a behavior. In other words, “subjective norms” is used here to capture “the perceived social pressures to perform or not to perform the behavior” (Ajzen 1991).

**5. Perceived Behavioral Control over Behavior:** Unlike “attitude towards behavior” and “subjective norms about behavior,” “perceived behavioral control over behavior” is derived only from the TPB (Ajzen 1985 and 1991). The concept is used to capture how easy/simple/under control versus difficult/complex/out of control an actor perceives performing a targeted behavior. The Extended Theory of Planned Behavior postulates that “perceived behavioral control over behavior” (positive or negative) will affect a student’s “behavioral readiness” for software piracy, which will then predict the student’s behavioral intention about software piracy.

**Attitude and Behavioral Intention:** The relationship between attitude towards behavior and behavioral intention is well established in both the TRA and the TPB. Ajzen (1991,

190) reported correlation coefficients between the two variables ranging from 0.26 to 0.92 with a mean of 0.54. Jennings, Pany and Reckers (2006, 256) indicated that beliefs and attitudes arise through learning, whereby a person acquires a reaction to an action over a period. Once acquired however, the attitude is triggered automatically when one is exposed to the action or thinks about it (Bagozzi et al. 2003). Attitudes toward behavior can be favorable or unfavorable at a given point in time. For instance, Reckers et al. (2006) documented a significant change in judges, law and MBA students' attitudes and beliefs.

As Ajzen (1991) indicated, in general, the more favorable an attitude is towards a behavior; the stronger should be an actor's behavioral intention to perform that behavior. Conversely, the more unfavorable an attitude is towards the behavior, the weaker should be the actor's behavioral intention to perform the behavior. Thus, for software piracy, we can expect that the more favorable a student's attitude is towards software piracy, the stronger should be the student's behavioral intention about pirating software in the future. In contrast, the less favorable a student's attitude is towards software piracy, the weaker should be the student behavioral intention to pirate software in the future. Thus, our first hypothesis is formulated as follows.

**Hypothesis 1:** *An accounting student's attitude towards software piracy will be positively associated with the student's behavioral intention to pirate software in the future.*

**Subjective Norms and Behavioral Intention:** The relationship between subjective norms about behavior and behavioral intentions is also well established in both the TRA and the TPB. The correlation coefficients reported in Ajzen (1991, 190) range from -0.01 to 0.70 with a mean of 0.36. Subjective norms correspond to perceived social pressures on an actor to perform or not to perform a given behavior. The actor's perception that important stakeholders would approve or disapprove a given behavior should normally influence the actor's behavioral intention to perform or not to perform that behavior. Further, the stronger the actor's beliefs are that important stakeholders would approve the performance of the behavior; the more likely and the stronger should be the actor's behavioral intention to perform the behavior. Conversely, the weaker are the actor's beliefs that important stakeholders would approve the performance of the behavior (e.g. the actor strongly believes that important stakeholders would disapprove the performance of the behavior), the less likely and the weaker should be the actor's behavioral intention about performing the behavior. We can therefore suggest that the stronger a student's beliefs that others would tolerate or accept software piracy; the stronger should be the student's behavioral intention to pirate software in the future. Thus, the second hypothesis is formulated as follows.

**Hypothesis 2:** *Perceived subjective norms about software piracy by a student will be positively associated with the student's behavioral intention to pirate software in the future.*

**Perceived Behavioral Control and Behavioral Intention:**

As indicated, "perceived behavior control over behavior" has to do with an actor's perception of the ease/simplicity/controllability versus difficulty/complexity/non-controllability of performing a given behavior of interest. The easier, simpler, and more controllable the actor perceives performing the behavior, the more likely and the stronger should be the actor's behavioral intention to perform the behavior. Conversely, the more difficult, complex, and more uncontrollable the actor perceives performing the behavior, the less likely and the weaker should be the actor's behavioral intention to perform the behavior. Here, we argue that the more difficult, complicated, or risky a student perceives software piracy, the weaker should be the student's behavioral intention to pirate software in the future. The nineteen correlations coefficients reported in Ajzen (1991, 190) range from 0.20 to 0.89 with a mean of 0.52, thereby, we formulate the following directional hypothesis:

**Hypothesis 3:** *Perceived behavioral control by a student over software piracy will be positively associated with the student's behavioral intention to pirate software in the future.*

**Behavioral Readiness and Behavioral Intention:** As defined previously, "behavioral readiness" refers to a pre-behavior state of an actor's preparedness in terms of perceived internal strengths or opportunities as well as weaknesses or impediments that can motivate or deter behavioral intention to perform or not to perform a given behavior. A positive (optimistic) behavioral readiness is generated when perceived internal strengths and opportunities outweigh perceived internal weaknesses and impediments. In contrast, when perceived internal weaknesses and impediments outweigh perceived internal strengths and/or opportunities the net result is a negative (pessimistic) behavioral readiness. The more positive is behavioral readiness, the more likely and stronger should be behavioral intention. Conversely, the more negative is behavioral readiness, the less likely and weaker should be behavioral intention. Negative behavioral readiness corresponds to a deficit of readiness (deficient readiness), while a positive behavioral readiness relates to a surplus of readiness (effective readiness). In this study, if a student's perceived strengths and opportunities as related to software piracy outweigh her/his perceived weaknesses and impediments as related to the same behavior, then we can assume that the student must be ready for software piracy. Consistently, we formulate the fourth hypothesis as below.

**Hypothesis 4a:** *A student's behavioral readiness for software piracy will be positively associated with the student's behavioral intention to pirate software in the future.*

In addition to the previous hypothesis (Hypothesis 4a), we expect student's behavioral readiness to mediate the relationships between student's behavioral intentions and its antecedents (attitude, subjective norms, and perceived behavioral control). Thereby, we add the following:

**Hypothesis 4b:** *A student's behavioral readiness will mediate the relationship between the student's behavioral intention and the antecedent predictors of behavioral intention (attitude, subjective norms, and perceived behavioral control).*

## Predicting Behavioral Readiness

The previous hypotheses were formulated assuming "behavioral intention" as the only dependent construct in the ETPB (Figure I). However, in Figure I, "behavioral readiness" is also a dependent construct, as related to attitude, subjective norms and perceived behavioral control. Thereby, three additional hypotheses have been formulated to account for the following relationships: attitudes → behavioral readiness (H5), subjective norms → behavioral readiness (H6), and perceived behavioral control → behavioral readiness (H7). The same arguments made previously for hypotheses H1, H2, and H3 on behavioral intention remain relevant for hypotheses on behavioral readiness. These arguments are summarized as follows: the more favorable a person's attitudes towards behavior are (H5), the more positive are subjective norms (H6), and the greater is perceived behavioral control (H7), the greater should be perceived behavioral readiness for software piracy. Therefore, the remaining hypotheses are formulated as below:

**Hypothesis 5:** *A student's attitude towards software piracy will be positively associated with the student's behavioral readiness for software piracy.*

**Hypothesis 6:** *Perceived subjective norms by a student about software piracy will be positively associated with the student's behavioral readiness for software piracy.*

**Hypothesis 7:** *Perceived behavioral control by a student over software piracy will be positively associated with the student's behavioral readiness for software piracy.*

## Methodology

We used a sample of 318 African American business students taking managerial and cost accounting courses over a five-year period (2010 to 2014) at two urban Historically Black Univer-

sities in the Southern part of the United States of America. Demographic distributions show that 111 (or 34.9%) of the sampled students were accounting majors, while 80 (or 25.2%), 11 (3.5%), 30 (9.4%), 26 (8.2%), 18 (5.7%), and 42 (13.2%) were respectively from business administration, economics, finance, management, marketing, and other majors. Although some of the sampled students were non-accounting majors, all of them were enrolled in accounting courses. We used several statistical techniques, including regression and structural equations modeling (LISREL) to analyze the data. Because data were collected over several years, we tested for potential systematic differences across years based on key demographic variables. The analysis of variances (ANOVA) did not reveal any significant differences among waves of data.

## Results

### Measurement Results and Substantive Tests

Table I reports key measurement results. The results show that, except for the two components of the Machiavellianism dimension, the reliability coefficients of the constructs suggest high consistencies among the items used because most constructs are all well above the 0.70 threshold (Nunnally 1978; Hair et al. 1998).

In addition to reliability, discriminant validity was assessed using a more recent guideline suggested by Ahire and Devaraj (2001) as well as an alternative test recommended by Fornell and Larcker (1981). According to Ahire and Devaraj (2001), discriminant validity can be tested by using the Cronbach's Alpha. This coefficient has to be greater than the average inter-correlation. In this study, all the Cronbach's Alpha coefficients, except the two subscales of the Machiavellianism dimension, are greater than the average inter-correlation (AIC). Further, all the average variances extracted (AVE) are greater than the variance shared between each construct and the other constructs (Fornell and Larcker 1981). The lowest AVE is 0.640, greater than 0.570 (the average variance among the constructs).

To test the students' honesty in responding to our questionnaire (SPQ), we included a "Machiavellianism" scale in the questionnaire. Results from the "Machiavellianism Scale" were strongly correlated with those derived from our Software Piracy Index (SPI), suggesting that the students were reasonably honest in their answers and that our data were quite valid and reliable. The validity and reliability of the data also translated into the consistency and quality of our findings. We intentionally reversed some of our measurement scales so that one scale is a check on the other (reversed and not reversed scales): substantive tests of the two types of scales did not provide

any significant evidence to suggest that the students were not honest in their responses.

Finally, we controlled for potential desirability bias. Because the existence of social desirability in survey research has been documented as a threat to the validity of findings, it was important to explicitly test for that threat. We did so by linking software piracy to potential rationalizing beneficial outcomes (for instance, the pirated software was supposed to help the students improve their grades). This approach poses a greater challenge ethically to the students than the direct questions approach utilized in Christensen and Eining (1991) and Woolley and Eining (2006). These authors asked questions specific to

past software piracy behaviors. In contrast, we asked questions about the intentions to pirate software coupled with potential beneficial outcomes like better test scores (pirated software assumed to improve test scores).

The substantive analyses include (1) the analysis of proportions (Table II) and (2) multiple regression analysis (Table III). For the analysis of proportions (Table II), we should indicate the logic underlying the interpretations of the results. We were expecting (because of the way the items were phrased) a low score for behavioral intention (BI) to pirate software, a deficient behavioral readiness (BRE) for software piracy, an unfavorable attitude (ATD) towards software piracy, an un-

**Table I**  
**Measurement Results for Key Constructs**

		Statistics				
		Standardized Loading	Reliability Coefficient	Average Variance Extracted	Average Inter Correlations	
Constructs	<b>1. Behavioral Intention (BI) Software Piracy (SP):</b>	BI1 BI2 BI3	0.949 0.952 0.939	0.942	0.896	0.224
	<b>2. Behavioral Readiness (BRE) for SP:</b>	BRE1 BRE2 BRE3	0.907 0.922 0.854	0.875	0.801	0.182
	<b>3. Attitude (ATD) towards SP:</b>	ATD1 ATD2 ATD3	0.824 0.862 0.846	0.797	0.713	0.225
	<b>4. Subjective Norms (SUN) about SP:</b>	SUN1 SUN2 SUN3	0.890 0.933 0.899	0.893	0.824	0.209
	<b>5. Perceived Behavioral Control (PBC) over SP:</b>	PBC1 PBC2	0.959 0.959	0.912	0.920	0.200
	<b>6. Copyright Laws Awareness (CLA) of SP:</b>	CLA1 CLA2	0.951 0.951	0.893	0.905	0.251
	<b>7. Dishonest Machiavellianism (DMACH):</b>	DMACH1 DMACH2	0.859 0.859	0.636	0.739	0.169
	<b>8. Honest Machiavellianism (HMACH):</b>	HMCAH1 HMACH1	0.836 0.836	0.566	0.699	0.170
	<b>9. Morality of SP (MSP):</b>	MSP1 MSP2 MSP3	0.932 0.946 0.922	0.926	0.872	0.304
	<b>10. Technology Readiness Index (TRI)</b>		Index (see text)	Index (see text)	Index (see text)	0.102

favorable perceived behavioral control (PBC) over software piracy, and a low score for dishonest Machiavelli (DMAC). In contrast, we were expecting a high score for subjective norms (SUN), a high score for copyright laws awareness (CLA), a high score for morality of software piracy (MSP), and a high score for honest Machiavelli (HMAC). The results show to what extent the sampled students disagreed, agreed, or were neutral on all key variables in the study and also gives some preliminary signals of who might be potential pirates and

who might be potential non-pirates in the sample. Using the Software Piracy Index (SPI), we came up with 47.50% as potential pirates, 47.80% as non-pirates, and 4.70% as neutrals. The proportion of likely pirates is similar to the one found by Woolley and Eining (2006).

The results for our regression analyses are reported in Table III, which shows results for five alternative models. As expected, the Extended Theory of Planned Behavior (ETPB), with the greatest adjusted R<sup>2</sup>, explained a greater variance in behavioral

**Table II**  
**Knowledge of Copyright Laws: Comparative Percentages Agreeing with Statements**

		Studies						
		Christensen & Eining (1991)		Woolley & Eining (2006)		Current Study		
		Pirates	Non-Pirates	Pirates	Non-Pirates	Pirates	Non-Pirates	Neither
<b>Survey Items</b>	<b>1. It is illegal to purchase a software program and use it on multiple computers.</b>	29.6%	30.6%	44.1%	54.2%	42.8%	39%	18.2%
	<b>2. It is illegal to install on my home computer software purchased by my school.</b>	49.5%	55.6%	51.1%	54.2%	31.4%	49.7%	18.9%
	<b>3. It is illegal to install on my home computer for personal usage software purchased by my employer.</b>	N/A	N/A	N/A	N/A	25.5%	54.7%	19.8%
	<b>Average Percentages Adjusted percentages</b>	39.55%	43.10%	47.60%	54.20%	33.23% 47.50%	47.80% 47.80%	18.97% 4.70%

1. Using a more robust and systematic metric, labeled Software Piracy Index (SPI), we found that 49.10% of the sampled students are likely to be classified as “software pirates”, 46.20% “non-software pirates”, and the remaining 4.70% in “neither group.”
2. The SPI is computed as  $[(ATD+DMAC)/2] - [(SUN+MSP)/2]$  or as  $[(ATDI+DMAC+BRE+PBC)/4] - [(SUN+CLA+MSP+HMAC)/4]$ ; both the reduced and the extended indexes provide similar classifications.
3. The classification rule is the following: a respondent with a positive SPI is considered a likely “software pirate”, while a respondent with a negative SPI is considered a likely “non-software pirate”; finally, a respondent with a null SPI is considered as “neither a pirate nor a non-pirate.”
4. The adjusted percentages in Table 6 assumes that the true percentage of the “neither group” may be 4.70% and therefore adds back 14.27% (18.97% - 4.70%) to the 33.23% of the likely “pirates group”, giving the adjusted 47.50% for that group, which is very close to the percentage of Woolley and Eining (2006).

intention to pirate software than do the alternative models. In Table III, we controlled for demographic variables as well as for two sub-scales of a Machiavellianism scale (Model 1): together, these variables account for 13% of the variance in behavioral intention to pirate software. Next, we added two important variables (copyright laws awareness and morality of software piracy): the new model (Model 2) explains 22.60% of the variance in the dependent variable. After Model 2, we entered the two predictors of the Theory of Reasoned Action (TRA): the variance explained in behavioral intention increased to 25.70%. Then, we introduced “perceived behavioral control” of the Theory of Planned Behavior (TPB): the variance increased to only 26%. Finally, we introduce “behavioral readiness” of the Extended Theory of Planned Behavior (ETPB): the variance explained in behavioral intention to pirate software jumped

to 28%. These results show to some extent that the ETPB has some incremental contribution over the two alternative theories (TRA and TPB).

Taking separately, the TRA explained only 17% of the variance in the dependent variable (behavioral intention to pirate software), while the TPB explained 18% and the ETPB explained 28%. The squared multiple correlations for the structural equations were 22.20%, 23.20% and 25.31% respectively for the TRA, the TPB and the ETPB based on their main variables only. These additional results corroborate our conclusion that the ETPB has incremental contributions, in terms of variance explained, over its alternative models (TRA and TPB). Next, we report descriptive and substantive results.

**Table III**  
**Reduced Alternative Models without Control Variables**  
**(Dependent variable is “Behavioral Intention to Pirate Software”)**

		Models					
		Model III B (TRA): Theory of Reasoned Action		Model IV B (TPB): Theory of Planned Behavior		Model V: (ETPB): Extended Theory of Planned Behavior	
		Beta	p-value	Beta	p-value	Beta	p-value
<b>Variables</b>	<b>1. Attitude (ATD)</b>	0.376	0.000	0.375	0.000	0.323	0.000
	<b>2. Subjective Norms (SUN)</b>	-0.116	0.028	-0.089	0.095	-0.056	0.299
	<b>3. Perceived Behavioral Control (PBC)</b>			0.119	0.023	0.125	0.016
	<b>4. Behavioral Readiness (BRE)</b>					0.173	0.002
	<b>Adjusted R<sup>2</sup></b>	<b>0.170</b>		<b>0.180</b>		<b>0.283</b>	
	<b>F-value</b>	33.293		24.242		21.208	
	<b>p-value</b>	0.000		0.000		0.000	

### Discussing the Results for the Hypotheses

First, the RMSEA of the hypothesized Extended Theory of Planned Behavior (ETPB) is 0.000, less than 0.05, p-value = 0.496 (Table IV), which constitutes a very “close fit” (Browne and Cudeck 1992) or very “good fit” (Hair et al. 2006). Further, the 90% confidence interval of the RMSEA ranges from 0.000

Second, for a path coefficient to be significant at a level of 0.05, the related computed t-value should be equal or greater than 1.96, or equal or less than -1.96. As Figure II shows it, the computed t-values for five hypothesized paths meet this decision rule. Only two paths are not significant: the hypothesized direct path from “subjective norms” to “behavioral intentions” (t-value = -0.78) and the path postulated between “perceived behavioral control” and “behavioral readiness” (t-value = -0.37). Thus, hypotheses H2 and H7 are not supported, while the remaining five other hypotheses are supported. In addition, the mediation effect of “behavioral readiness” is partially supported.

**Table IV**  
**Hypothesized Model’s Fit Statistics**

Statistics	Computed Values
RMSEA 90% Confidence Interval	(0.000; 0.0392)
Goodness of Fit Index (GFI)	0.980
Adjusted Goodness of Fit Index (AGFI)	0.963
Normed Fit Index (NFI)	0.979
Relative Fit Index (RFI)	0.969
Chi-Square ( $\chi_{36}$ )	35.42
P-value of the Chi-Square ( $\chi_{36}$ )	0.496

to 0.0392, suggesting that over all possible randomly sampled RMSEA values, 90% of them will fall within the bound of 0.000 and 0.0392, which represents a remarkably good degree of precision. All the alternative fit indexes corroborate the conclusion of the model’s very close or good fit. Thus, it is reasonable to rely on the computed Lisrel path diagram (Figure II) to discuss the results of the study’s hypotheses.

The insignificant path from “subjective norms” to “behavioral intentions” is however consistent with prior studies. For instance, results from 19 prior studies compiled by Ajzen (1991, 190) show that the slopes (betas) of the path from “subjective norms” (SUN) to “behavioral intention” range from 0.01 to just 0.36, with an average of 0.15. Further, in Christensen and Eining (1991) and Woolley and Eining (2006), the beta for “subjective norms” is much smaller than that of “attitude.” Ajzen (1991, 189) explained the lower beta for “subjective norms” by arguing, “For the behaviors considered, personal considerations tended to overshadow the influence of perceived social pressures” captured by subjective norms. Thus, the “-0.04” slope found in this study for SUN is not abnormal.

In contrast, the insignificant path from “perceived behavioral control” (PBC) to “behavioral readiness” (BRE) is more difficult to interpret, at least for two reasons. First, both constructs deal in some way with control over performing the targeted behavior (here, pirating software). “Behavioral readiness” deals with

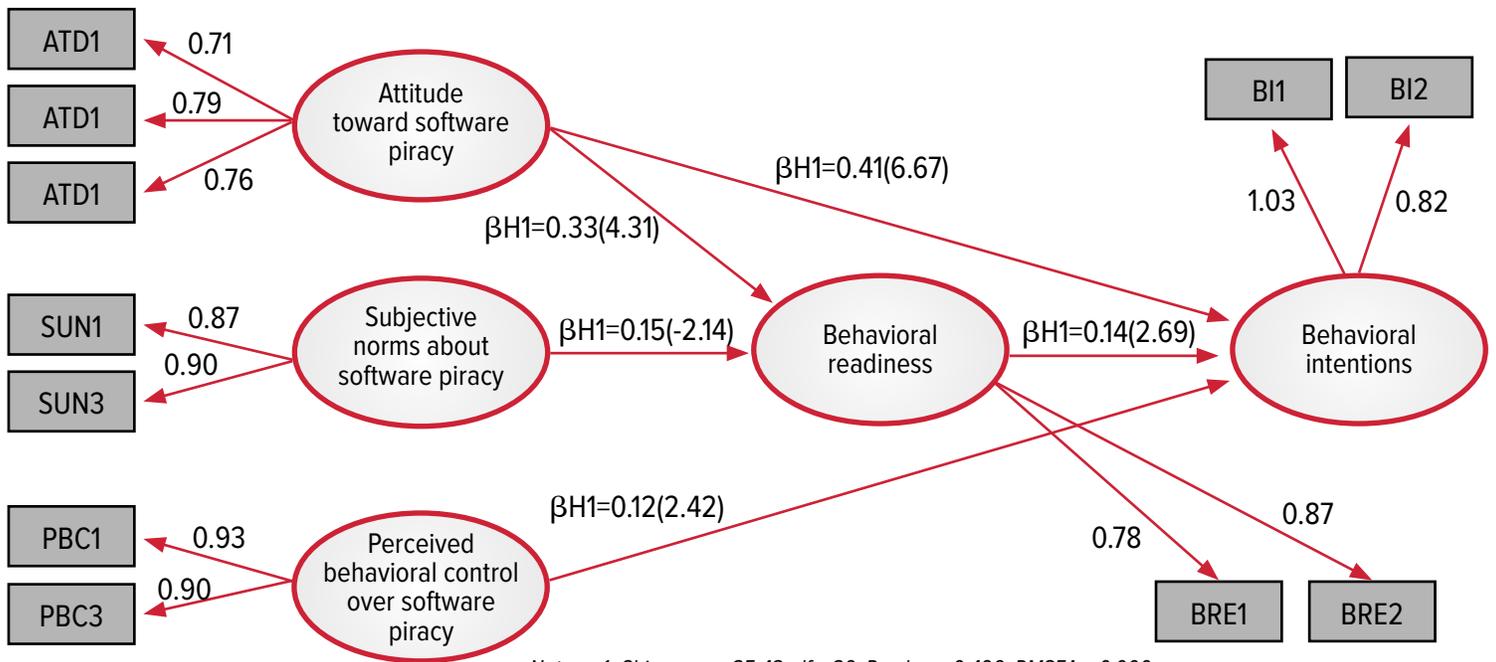
the respondent's capability and knowledge to pirate software, while "perceived behavioral control" deals with the respondent's perception of how easy/difficult or quick/complicated pirating software is. Second, because "perceived behavioral control" produced a significant path with "behavioral intention", we would expect a significant relationship with "behavioral readiness" as well. However, because for "behavioral intention", the range for the betas is 0.07 to 0.84 (Ajzen 1991, 190), the insignificant path between PBC and BRE might not be that abnormal after all.

The results of four remaining hypothesized paths (ATD → BRE, SUN → BRE, ATD → BI, and PBC → BI) all came up as expected. We should however highlight three points. First, consistent with Ajzen (1991, 190), the variable "attitudes toward software piracy" is an important factor that can help predict software piracy intention. This strength of ATD is corroborated by its total effect of 0.45, the highest in the postulated ETPB. Second, "behavioral readiness" proves not only to have a significant path to "behavioral intention" but also to be a significant mediator, with the second highest total effects in the model. This evidence also supports the relevance of the postulated Extended Theory of Planned Behavior (ETPB). Third, because the original concern of Christensen and Eining (1991) was identifying factors influencing software piracy, we should go beyond the results of the postulated ETPB to discuss a few other factors tested as well in this study.

Indeed, we also tested for the effects of Copyright Laws Awareness (CLA), Morality of Software Piracy (MSP), as well as of two subscales of the Machiavellian scale: an Honest Machiavelli (HMAC) and a Dishonest Machiavelli (DMAC) subscales. The CLA, MSP and the DMAC are all significant predictors of software piracy intention in this study. Future studies may retest the effects of these factors together with those of the main constructs of the ETPB to arrive at a more comprehensive model of software piracy behaviors.

This study has several similarities with the two most relevant prior studies (Christensen and Eining 1991 and Woolley and Eining 2006). Like these prior studies, the main objective of the current study was to identify factors that would influence significantly software piracy and help in predicting this behavior. We found consistently with Christensen and Eining (1991) and Woolley and Eining (2006) that "attitude toward" (ATD) software piracy is the single most important factor influencing software piracy. The beta coefficient for the path from ATD to behavioral intention in this study is 0.41, compared to 0.51 in Christensen and Eining (1991, 77) and 0.62 in Woolley and Eining (2006, 57). The higher beta coefficient in Christensen and Eining (1991, 77) and in Woolley and Eining (2006, 57) might be explained by the fact that these authors were testing actual software piracy behavior as dependent variable as compared to mere behavioral intention. Another explanation is that they were testing a less complex model (TRA) compared to the ETPB. Similarly, the low beta coefficient

**Figure II**  
Lisrel Path Diagram of the Modified Model



Notes: 1. Chi-square = 35.42, df = 36, P-value = 0.496, RMSEA = 0.000  
 2. Paths' t-values are in parentheses.  
 3. Items' loadings are in italic.

cient of 0.07 of the path from subjective norms to behavioral intention is not very different from the 0.13 and 0.18 found respectively by Christensen and Eining (1991, 77) and Woolley and Eining (2006, 57). Further, the 0.07 is coincidentally the same beta coefficient found by Cronan and Al-Rafee (2008, 535). Beyond Christensen and Eining (1991) and Woolley and Eining (2006), we found that the constructs “behavioral readiness to software piracy”, “perceived morality of software piracy” and “dishonest Machiavelli”, are also important significant factors that are likely to influence significantly software piracy behaviors as well.

This study also has distinctive differences compared to the studies of Christensen and Eining (1991) and Woolley and Eining (2006). First, our theoretical framework, the Extended Theory of Planned Behavior (ETPB), is broader than the Theory of Reasoned Action used by Christensen and Eining (1991) and Woolley and Eining (2006). Second, our main dependent variable is “behavioral intention about software piracy” rather than actual software piracy (past) behavior, as was the case in Christensen and Eining (1991) and Woolley and Eining (2006). We preferred “behavioral intention about software piracy” to past software piracy behavior for two reasons. On one hand, actual behavior generally comes only as an enactment of a preconceived behavioral intention. As an empirical evidence, the correlation between behavioral intention and actual behavior ranges from 0.18 to 0.84 (Ajzen 1991, 187), with an average of 0.45. On the other hand, the measurement of actual behavior for an unethical behavior like software piracy is problematic due at least to potential demand effects and social desirability bias. The questions related to actual piracy behavior in Christensen and Eining (1991) and Woolley and Eining (2006) are in the direct form: for instance, “I make copies of software programs that my friends have purchased.” The respondent would easily guess the objective of such a question and respond accordingly in the most socially desirable way as possible; thus biasing eventually the study’s results. In contrast, with mere intention, questions can be asked in an indirect form, so that the respondent does not feel being self-incriminated. To recapitulate, because the dependent variables are not the same, the reported R squares by Christensen and Eining (1991) and Woolley and Eining (2006) should not be compared directly to the R square found in the current study.

In this study, we also used a sample of African American students taking accounting courses with the objective of contributing eventually to the generalizability of findings in this research stream. As indicated in the introduction of the study, Christensen and Eining (1991) and Woolley and Eining (2006) used samples of students from the same university (Woolley and Eining 2006, 54), which could limit the generalizability

of their findings. The students we used in our sample are not only from different universities, they are also likely to be more susceptible to software price pressure.

Finally, in computing the proportions of “pirates” and “non-pirates”, Christensen and Eining (1991) and Woolley and Eining (2006) did not isolate the “neither group”, although they have included in their 7-point Likert type scales a “neither” choice. Answers to “neither” cannot be classified as relating to “pirates” or to “non-pirates.” We believe that the best approach would be to isolate this group, so that it would not bias the proportions for the likely pirates and non-pirates. However, in finding whether a respondent is a likely pirate, a non-pirate, or a neutral, we used items used by Christensen and Eining (1991) and Woolley and Eining (2006) as well as a Software Piracy Index. Overall, we did not find any significant evidence to conclude that the proportions of likely software pirates in our sample might be significantly higher than the proportions reported by Woolley and Eining (2006).

## Conclusions and Areas For Future Research

This study has investigated the following key questions. (1) Does the Extended Theory of Planned Behavior (ETPB) predict better behavioral intention to pirate software than the Theory of Reasoned Action (TRA)? (2) Are there other significant factors influencing software piracy than the two predictors tested by Christensen and Eining (1991), and Woolley and Eining (2006)? The answers to these questions are in affirmative based on our empirical results.

Results demonstrate that the Extended Theory of Planned Behavior (ETPB) has explained a greater variance in behavioral intention to pirate software than the alternative models (TRA and TPB). Finally, we found at least four additional factors that seem to influence significantly software piracy: 1) behavioral readiness for software piracy, 2) morality of software piracy, 3) perceived behavioral control over software piracy, and 4) one subscale of a broader Machiavellian dimension referred to as “Dishonest Machiavelli” (DMAC). Further, consistent with Woolley and Eining (2006), we found that our sampled students have a good knowledge of copyright laws, although that knowledge might not have translated directly into decreased intentions for software piracy, partly because software piracy, like other unethical actions, is essentially behavioral rather than rational.

Our tests of “attitudes toward software piracy” (ATD) and “subjective norms” (SUN) show beta coefficients slightly lower than the ones found by Christensen and Eining (1991) and Woolley and Eining (2006), but the coefficients are greater or equal to those found by Cronan and Al-Rafee (2008). Using the Theory

of Planned Behavior (TPB), Cronan and Al-Rafee (2008, 535) found for attitude a beta of 0.105, which is far lower than the 0.41 we found in the current study. For subjective norms, we found the same beta coefficient of 0.07 as did Cronan and Al-Rafee (2008). In addition, not only the postulated path between behavioral readiness and behavioral intention is significant, behavioral readiness also plays a mediating role in the Extended Theory of Planned Behavior (ETPB). Below we discuss some limitations as well as implications of the study before making suggestions for future research.

## Limitations

First, this study shares the common weakness of all survey researches that rely on self-reported data to operationalize their constructs. Responding in as socially desirable a way as possible, either through under or over reporting, is typical in studies focusing on unethical behaviors like software piracy.

Second, while the current study provides initial insights into potential software piracy among a sample of African American students, the sample still suffers two limitations. On one hand, the sample included only African American business students enrolled in accounting courses at two southern Historically Black College and Universities (HBCU). It would be worthwhile to expand the sample not only to other HBCUs but also to other minority colleges and universities. Moreover, inclusive samples (including sufficient majority as well as minority students) might be particularly useful and insightful because of possibility for comparisons.

## Contributions & Implications for Free Enterprise

We believe that this study has important theoretical, methodological, and practical implications for free enterprise. Theoretically, the Extended Theory of Planned Behavior (ETPB) used in this study has the potential to contribute to a better prediction of behavioral intentions about such unethical behaviors as software piracy. Being able to predict better software piracy has not only theoretical implications but also practical implications. A better prediction may lead to better understanding of software piracy, and therefore can help to articulate better awareness about the unethicality and illegality of this behavior. Indeed, as Keller et al. (2007, 299) noted, “understanding the factors which shape the ethical standards of future accountants will help educational institutions develop appropriate ethics curriculum and help firms develop appropriate ethics training for their employees.” In addition, according to these authors, “failure to bring appropriate ethical standards to the work place will most assuredly hamper the profession’s time-honored commitment to serve the public interest.”

Practically, this study may be of interest to several stakeholders in the free enterprise system. Hamzaee and Baber (2014) define free enterprise system as a system “in which private ownership of means of production, physical capital, human capital, financial capital, brand-name capital, social capital, land, and mineral deposits are all protected by laws.” In such a system any unlawful possession of goods, including piracy of software, cannot be tolerated and should be prosecuted. If that is the case, then software companies can expect to reap the just returns on their investments and be more successful. In turn, as software companies become more successful and stay in business, it is a gain for the free enterprise system as a whole. In addition, employers in general and particularly accounting firms and professional organizations like the American Institute of Certified Public Accountants (AICPA) and the National Association of Black Accountants (NABA) and other similar organizations may be encouraged that the propensity of software piracy intentions of black business students is not significantly different from that of majority population students. There is no reasons to believe that such a behavior will be different for our sample. However, an empirical study like the current is needed to show that.

Finally, this study has methodological usefulness as well. First, both the computation of proportions of likely pirates and the test of potential factors influencing significantly software piracy are thorough in this study. To compute the proportions, we used a Software Piracy Index (SPI), a more robust classification approach. Second, to test for factors that may influence significantly software piracy, we used Structural Equations Modeling to estimate path coefficients as well as to compute the total and indirect effects of each factor included in the postulated model. Finally, we predicted in this study behavioral intention rather than actual behavior. We argue that the prediction of actual (past) software behavior, while important, might not be as important and useful as the prediction of the behavioral intention leading to that actual behavior, partly because actual behavior is a consumed action, which does not provide any room for prevention. In contrast, because behavioral intention is only a pre-behavior state of mind, it does provide room for preemptive actions.

## Suggestions for Future Studies

Clearly, the research pioneered by Christensen and Eining (1991) is an important research stream for the accounting and management professions, particularly in the aftermath of the Enron financial debacle and the related demise of Arthur Andersen in 2001. We strongly suggest future research to develop an effective accumulated knowledge and methods to fight software piracy and other similar unethical behaviors.

In particular, we suggest that future research tests the validity and the reliability of the Extended Theory of Planned Behavior (ETPB) used in this study or develop a more innovative model for predicting software piracy behaviors. Finally, because we found that the proportion of likely software pirates in our sample is not significantly different from that found

by Wooley and Eining (2006), future studies may look at (1) why the proportions tend to be the same and (2) why the proportions tend to remain high despite improved copyright law awareness.

## References

- Ahire, S., and S. Devaraj. 2001. An empirical comparison of statistical construct validation approaches. *IEEE Transactions on Engineering Management*, 48(3), 319–329.
- Ajzen, I. 1985. From intentions to actions: a theory of planned behavior. In J. Kuli & J. Beckmann (Eds), *Action – Control: From cognition to behavior*, 11–39. Heidelberg: Springer.
- \_\_\_\_\_. 1991. The theory of planned behavior. *Organizational Behavior and Human Decision Process*, 50, 179–211.
- \_\_\_\_\_, M. Fishbein. 1980. *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, New Jersey, Prentice–Hall.
- Bagozzi, R., U. Dholakia, and S. Basuroy. 2003. How effortful decisions get enacted? The motivating role of decision processes, desires, and anticipated emotions. *Journal of Behavioral Decision Making*, 16, 273–295.
- \_\_\_\_\_. 1992. The Self–regulation of attitudes, intentions, and behavior. *Social Psychology Quarterly*, 55(2), 178–204.
- Baron, R., and D. Kenny. 1986. The mediator–moderator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182.
- Bentler, P., and G. Speckart. 1979. Models of attitude–behavior relations. *Psychological Review*, 5, 452–464.
- Bhattacharjee, A. 2000. Acceptance of Internet applications services: the case of electronic brokerages. *IEEE Transactions on systems, Man, and Cybernetics – Part A: Systems and Humans*, 30, 411–420.
- Browne, M., and R. Cudeck. 1992. Alternative ways of assessing model fit. *Sociological Methods and Research*, 21, 230–258.
- Christensen, A. and M. Eining. 1991. Factors influencing software piracy: Implications for accountants. *Journal of Information Systems*, 5(1), 67–80.
- Clevenger, T., and D. Ziegenfuss, A. Deck, and N. Clevenger. 1988. Audit opportunities to control software piracy to reduce risk of liability. *Internal Auditor*, December, 43–47.
- Cronan, T., and S. Al–Rafee. 2008. Factors that influence the intention to pirate software and media. *Journal of Business Ethics*, 78, 527–545.
- Dodor, K. 2007. An integrative model of organizations’ responsiveness to innovations: theory and empirical test using business schools’ responses to e–commerce education. Unpublished Ph.D. dissertation, Jackson State University, Jackson, Miss.
- Fishbein, M., and I. Ajzen. 1975. Belief, attitude, intention, and behavior: An introduction to theory and research. *Reading, Massachusetts*, Addison–Wesley.
- Fornell, C., and D. Larcker. 1981. Evaluating structural equation models with unobserved variables and measurement error. *Journal of Marketing Research*, 18, 39–50.
- Fredrick, A., and D. Dossert. 1983. Attitude–behavior relations: a comparison of the Fishbein–Ajzen and the Bentler–Speckart models. *Journal of Personality and Social Psychology*, 45, 501–512.
- Hair, J., R. Anderson, R. Tatham, and B. Black. 1998. *Multivariate Data Analysis*. 5<sup>th</sup> Ed. Upper Saddle River, New Jersey, Prentice–Hall, Inc.
- \_\_\_\_\_, B. Black, B. Babin, R. Anderson, and R. Tatham. 2006. *Multivariate Data Analysis*. 6<sup>th</sup> Ed. Upper Saddle River, New Jersey, Prentice–Hall, Inc.
- Hamzaee, R., J. Baber. 2014. Ethics and Market Economic System: A General Review and a Survey. *International Journal of Applied Management and Technology*, 13 (1): p.1–32.
- Jennings, M., K. Pany, and P. Reckers. 2006. Strong corporate governance and audit firm rotation: effects on judges’ independence perceptions and litigation judgments. *Accounting Horizons*, 20(3), 253–270.
- Keller, A. C., K.T. Smith, and L. M. Smith. 2007. Do gender, educational level, religiosity, and work experience affect the ethical decision–making of U.S. accountants? *Critical Perspectives on Accounting*, Vol. 18(3), 299–314.
- Leone, L., M. Perugini, and A. Ercolani. 1999. A comparison of three models of attitude–behavior relationships in the study–

ing behavior domain. *European Journal of Social Psychology*, 29, 161–189.

Nunnally, J. C. 1978. *Psychometric Theory*. Second ed. New York, McGraw–Hill.

Reckers, P., M. Jennings, J. Lowe, and K. Pany. 2007. Judges' attitudes toward the public accounting profession. *European Accounting Review*, 16(3), 625–645.

Sapp, S., and H. Jensen. 1997. A comparison of alternative procedures for resolving indeterminacies in the theory of reasoned action. *Social Behavior and Personality*, 25(4), 305–314.

Shafel, J., and T. Shafel. 2005. The influence of effective teaching in accounting on student attitudes, behavior, and performance. *Issues in Accounting Education*, 20(3), 231–246.

Smits, S., and N. Ezzat. 2003. Thinking the unthinkable: Leadership's role in creating behavioral readiness for crisis management. *Critical Review*, 13(1), 1–23.

Straub, D., and R. W. Collins. 1990. Key information issues facing managers software piracy, propriety databases, and individual rights to privacy. *Management Information System (MIS) Quarterly*, 14(2), 143–156.

Woolley, D., and M. Eining. 2006. Software piracy among accounting students: A longitudinal comparison of changes and sensitivity. *Journal of Information Systems*, 20(1), 49–63.

# The Impact of Value Preferences on Students' Ethical Sensitivity, Moral Judgment, and Intention to Whistleblow

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## ABSTRACT

Almost all economists agree that a well-functioning market includes cooperative exchange free from predation, theft, or fraud (Stringham, 2011). Unfortunately, annual worldwide losses from occupational fraud and abuse exceeds \$3.7 trillion dollars (ACFE, 2016) and these losses generally increase each year. Significant losses and unfair business practices have a negative impact on competition and free enterprise. One way to mitigate fraud losses and uncover unfair business practices is to encourage employees to report unethical behaviors to company hotlines. Therefore, this study explores 17 behaviors on the Perceptions of Ethical Severity Survey (PESS) to determine whether moral, personal, social, and competence value preferences impact ethical sensitivity, moral judgment and whistleblowing intentions. We found that individuals with high moral values are more likely to identify and be more sensitive to unethical actions. However, moral, personal, social, and competence values did not significantly impact whistleblowing judgment nor whistleblowing intention. The implications of these results may be utilized to improve training programs at colleges, universities and corporate organizations. *Keywords: ethical decision making, fraud, values, whistleblowing*

## Introduction

Almost all economists agree that a well-functioning market includes cooperative exchange free from predation, theft, or fraud (Stringham, 2011). Unfortunately, the financial impact of unethical decisions is increasing. The Association of Certified Fraud Examiners (ACFE) reports that annual worldwide fraud losses total more than \$3.7 trillion (ACFE, 2016). Fraud is a serious crime that adversely affects many different types of business stakeholders including not-for-profit and for-profit organizations that are privately owned and publicly traded. Illegal and unethical activities have a negative impact on competition and free markets. Whistleblowing can be a vital tool for authorities to detect anti-competitive practices that damage free markets and consumers (Allen, 2013).

Employees may be willing to whistleblow because occupational fraud has a negative impact on organizations and those who work for them (ACFE, 2014). However, there is often a risk of backlash for whistleblowers, which might explain why a substantial amount of tips (14%) came from anonymous parties (ACFE, 2016). Organizations benefit from having hotlines as a reporting mechanism; schemes were detected by tips in 47.3% of cases at organizations that had hotlines, but in only 28.2% of cases at organizations without them (ACFE, 2016).

The ability to recognize and report ethical violations is critical to uncovering fraud. Ethical decision-making has received considerable attention in the literature; however, there is little

research that explores the impact of an individual's values preferences on ethical decision-making for business decisions. We explore whether value domains impact ethical sensitivity (i.e., is it ethical?), whistleblowing judgment (i.e., should the whistle be blown?), and whistleblowing intentions (i.e., would the whistle be blown?).

The remainder of this paper is organized as follows. Our literature review explores Rest's (1986) four component model of ethical decision-making, values suggested by Rokeach (1973), and whistleblowing studies. Next, our methodology is presented followed by the results. Finally, we offer conclusions and suggestions for future research.

## Literature Review

### **Rest's (1986) Four-Component Model of Ethical Decision-Making**

Rest (1986) describes a four-component model of ethical decision-making that consists of moral sensitivity, moral judgment, moral character and moral motivation. According to Rest, in the first step of moral sensitivity, the individual must interpret a situation as to what outcomes are possible, who would be affected by the situation, and how the situation would impact the welfare of those involved. In the second step, an individual makes his or her personal moral judgment of what should happen in each situation. In the third step,

an individual uses his or her moral character to decide how to react to the situation. In step four, an individual follows through with the decision to engage in a morally correct or incorrect behavior (Rest, 1986).

### **Rokeach Value Survey**

Rokeach (1973) suggests that values are determinants of virtually all kinds of behavior. Rokeach (1973) offers five assumptions of the nature of human values: (1) the total number of values a person possesses is relatively small; (2) everyone possesses the same values to different degrees; (3) values are organized into value systems, (4) the antecedents of human values can be traced to culture, society and its institutions, and personality; and (5) the consequences of human values will be manifested in virtually all phenomena that social scientists might consider worth investigating and understanding. An individual's value system is "an enduring organization of beliefs concerning preferable modes of conduct or end-states of existence along a continuum of relative importance" (Rokeach, 1973, 5). Rokeach describes values as "determinants...of behavior – of social action, attitudes, and ideology, evaluations, moral judgments and justification of self to others, and attempts to influence others" (Rokeach, 1973, 24).

The Rokeach Value Survey (RVS, 1973) is broken down into two different sets of 18 values each that are described as "terminal values" and "instrumental values." "Terminal values" are values that describe an end-state existence, and "instrumental values" describe moral codes of conduct. These two types of values are arranged in their two sets, alphabetically, and the individual rates them on a scale of importance in relation to his or her life. Researchers have attempted to further classify the Rokeach values into organized groups or value domains (Wright et. al, 1997, Weber 1990). These four value domains are competence values, personal values, moral values and social values. Prior research suggests that personal value systems impact ethical decision making (Wright et. al, 1997, Weber 1990). Wright et al. (1997) believe that moral agents confront ethical dilemmas with personal values and these values effect an individual's perception of moral intensity.

### **Jones' (1991) Moral Intensity Model**

Jones (1991) believed that "a person who fails to recognize a moral issue will fail to employ moral decision-making schemata and will make the decision according to other schemata, economic rationality, for example" (Jones, 1991, 380). Moral intensity is made up of six different attributes including: magnitude of consequences, social consensus, probability of effect, temporal immediacy, proximity and concentration of effect (Jones 1991, 374). The Jones model uses the ideology

that the higher the moral intensity of an issue, the greater the likelihood the questionable ethical behavior will be recognized.

### **The Perceptions of Ethical Severity Survey (PESS)**

The Perceptions of Ethical Severity Survey (PESS), developed by Newstrom and Ruch (1975), assesses individuals' attitudes for 17 behaviors commonly found in the business world. These behaviors vary by the degree of moral intensity, include active versus passive involvement, and have situations involving a single person with other situations involving a collaboration of individuals. These behaviors include passing blame for errors to an innocent co-worker, divulging confidential information, falsifying reports, padding expense accounts, and accepting gifts in exchange for preferential treatment, among others. Although, these actions generally are perceived as unethical, participants indicated that their management peers have engaged in many of these behaviors (Newstrom and Ruch, 1975).

### **Whistleblowing**

A whistleblower is a term "used loosely to describe any person who has and reports insider knowledge of misconduct or illegal activity occurring within an organization" (Baird, 2014, 13). A whistleblower is someone who goes against the ranks in their organization to identify malpractice (Baird, 2014). Whistleblowers are often punished more severely than the perpetrators of a crime and may experience the loss of their jobs, homes, or relationships (Baird, 2014).

Prior research has attempted to determine the characteristics of individuals who blow the whistle (Miceli and Near 2005; Miceli and Near 1992; Miceli et al 1991; Miceli and Near 1984; Miceli et al 1988; Miceli and Near 1991; Near and Miceli 1995). Other researchers have attempted to determine the underlying reasons why individuals whistleblow (Miceli et al 1991; Alpern 1982; Ahern and McDonald 2002, Clements 2005, Clements and Shawver 2011a, Clements and Shawver, 2011b, Shawver 2011). Few have attempted to measure the impact of values preferences on ethical decisions.

Wright et al. (1997) explores whether values influence the perceptions of moral intensity and suggests that individuals who prefer person-centered terminal values have more concern for themselves while individuals with a strong preference for society-centered terminal values are likely to be sensitive to consequences to others. A preference for moral values may lead to an emphasis for interpersonal relationships. The domains of personal, social and moral values preferences had a significant impact on moral intensity but found no significance for competence values (Wright et al., 1997).

Karacaer et al. (2009) found that the terminal value of salvation had a significant positive relationship to ethical judgment, while the instrumental value of imagination had a statistically negative relationship with ethical judgment. Although not exploring intentions to whistleblow, Karacaer et al. (2009) found that the values of security, wisdom, forgiveness, intellectual and obedience have a significant negative relationship with behavioral intentions while pleasure, salvation, cheerfulness and independence have a significant positive relationship with behavioral intentions. Shawver and Clements (2015) found that values preferences did not impact ethical sensitivity or intentions to engage in unethical actions, but found competence values impact moral judgment. Rokeach (1973) suggests that the violation of competence values may bring feelings of inadequacy or shame. Therefore, we extend these studies to Rest’s model of ethical decision-making involving whistleblowing and present the following hypotheses:

**H1:** *An individual’s value preferences affect his/her ethical sensitivity.*

**H2:** *An individual’s value preferences affect his/her moral judgment to whistleblow.*

**H3:** *An individual’s value preferences affect his/her intention to whistleblow.*

## Methodology

Two thousand students from a small private educational institution located in the Mid-Atlantic region of the United States were invited by email to participate in an online survey. One hundred and forty-two agreed to participate in this study; but five individuals failed the validity checks leaving 137 usable surveys in the final sample. Demographic information about the participants is reported in Table I. The sample includes 79 females and 58 males distributed across five years from freshmen to graduate students.

The purpose of this study was to determine whether or not values preferences influence ethical sensitivity, whistleblowing judgment and the propensity to whistleblow for unethical behavior. We use the Rokeach Value Survey (1968, 1973) to assess individuals’ value preferences on a 7 point scale, 1 being “not at all important” and 7 being “very important”. These values were then organized into the domains of personal, social, moral, and competence values consistent with prior research (Wright et. al, 1997, Weber 1990). Table II reports the means and standard deviations for each individual value, the composite mean of each value domain, and Cronbach’s alpha for each value domain. These students indicated a high preference for competence values (mean 6.030), followed by personal values (mean 6.022), moral values (mean 5.843) and

**Table I: Demographics**

<b>Panel A: Gender of Participants</b>	<b>N</b>	<b>Percent</b>
Female	79	58%
Male	58	42%
Total	137	100%
<b>Panel B: Major of Participants</b>	<b>N</b>	<b>Percent</b>
Non-Business	64	47%
Business	73	53%
Total	137	100%
<b>Panel C: Year of Participants</b>	<b>N</b>	<b>Percent</b>
Freshmen	16	12%
Sophomore	27	20%
Junior	25	18%
Senior	58	42%
Graduate	11	8%
Total	137	100%
<b>Panel D: Political Views of Participants</b>	<b>N</b>	<b>Percent</b>
Very Liberal	18	13%
Somewhat Liberal	34	25%
Neither liberal nor conservative	44	32%
Somewhat conservative	33	24%
Very conservative	8	6%
Total	137	100%

social values (mean 5.648). Cronbach’s alpha confirms that these value domains have high internal consistency.

The Perceptions of Ethical Severity Survey (PESS) was used to assess attitudes for 17 discrete behaviors involving occupational fraud and abuse commonly found in the business world such as: divulging confidential information, falsifying reports, and padding expense accounts. Ethical sensitivity is evaluated on a 7 point scale, 1 from “not at all unethical” to 7 “highly unethical” for each action. Israeli (1988) suggests that “what peers do” is the best predictor of an individual’s behavior. Therefore, to mitigate concerns over possible social desirability response bias, we purposefully worded survey questions in the third person. Whistleblowing judgment is measured with responses to, “Please indicate the likelihood your peers should report the action to a confidential company hotline” using the following scale: 1= highly unlikely to 7 = highly likely. Whistleblowing intention is measured by responses to, “If your peers became aware of another employee completing each action, please indicate the likelihood your peers would report the action

**Table II: Items Comprising Value Constructs**

	Mean	Std Dev	Cronbach's Alpha 0.773
<b>Competence Values</b>	<b>6.030</b>	<b>0.652</b>	
Ambitious (hardworking; aspiring)	6.090	0.882	
Broad-minded (open-minded)	5.980	1.179	
Capable (competent; effective)	6.040	0.861	
Independent (self-reliant; self-sufficient)	6.180	1.028	
Intellectual (intelligent; reflective)	6.230	1.022	
Logical (consistent; rational)	6.010	1.004	
Loving (affectionate; tender)	6.100	1.291	
Responsible (dependable; reliable)	6.370	0.795	
<b>Moral Values</b>	<b>5.843</b>	<b>0.811</b>	Cronbach's Alpha 0.830
Cheerful (lighthearted, joyful)	5.680	1.266	
Clean (neat; tidy)	5.310	1.474	
Courageous (standing up for your beliefs)	5.930	1.034	
Forgiving (willing to pardon others)	5.710	1.220	
Helpful (working for the welfare of others)	5.980	1.234	
Honest (sincere; truthful)	6.300	1.032	
Imaginative (daring; creative)	5.350	1.473	
Obedient (dutiful; respectful)	5.570	1.444	
Polite (courteous; well-mannered)	6.010	1.144	
<b>Personal Values</b>	<b>6.022</b>	<b>0.664</b>	Cronbach's Alpha 0.841
A Comfortable Life (a prosperous life)	5.770	1.144	
An Exciting Life (a stimulating, active life)	5.800	1.104	
A Sense of Accomplishment (lasting contribution)	6.080	1.044	
Family Security (taking care of loved ones)	6.530	0.940	
Freedom (independence; free choice)	6.360	0.865	
Happiness (contentedness)	6.450	0.907	
Inner Harmony (freedom from inner conflict)	6.000	1.144	
Mature Love (sexual and spiritual intimacy)	6.000	1.254	
Pleasure (an enjoyable, leisurely life)	5.920	1.231	
Salvation (saved; eternal life)	5.340	1.775	
Self-Respect (self-esteem)	6.160	1.086	
Social Recognition (respect; admiration)	5.260	1.510	
True Friendship (close companionship)	6.330	1.072	
Wisdom (a mature understanding of life)	6.300	0.852	
<b>Social Values</b>	<b>5.648</b>	<b>0.948</b>	
A World at Peace (a world free of war and conflict)	5.310	1.459	
A World of Beauty (beauty of nature and the arts)	5.540	1.329	
Equality (brotherhood; equal opportunity for all)	5.800	1.367	
National Security (protection from attack)	5.940	1.181	

**Table III: Descriptive Statistics**

	Mean	Std Dev
<b>Ethical Sensitivity</b>	<b>2.182</b>	<b>0.789</b>
Passing blame for errors to an innocent co-worker	1.500	0.963
Divulging confidential information	1.680	1.137
Falsifying time/quality/quantity reports	1.680	1.194
Claiming credit for someone else's work	1.520	0.978
Padding an expense account over 10 percent	1.660	1.046
Pilfering company materials and supplies	2.010	1.108
Accepting gifts/favors in exchange for preferential treatment	2.050	1.325
Giving gifts/favors in exchange for preferential treatment	2.150	1.401
Padding an expense account up to 10 percent	1.710	1.079
Authorizing a subordinate to violate company rules	1.740	1.146
Calling in sick to take a day off	3.720	1.663
Concealing one's errors	2.610	1.410
Taking longer than necessary to do a job	3.230	1.496
Using company services for personal use	2.260	1.207
Doing personal business on company time	2.360	1.350
Taking extra personal time (lunch, breaks, early departure)	2.840	1.436
Not reporting other's violations of company policies/rules	2.390	1.319
<b>Moral Judgment</b>	<b>3.961</b>	<b>1.653</b>
Passing blame for errors to an innocent co-worker	4.030	2.203
Divulging confidential information	4.390	2.174
Falsifying time/quality/quantity reports	4.180	2.162
Claiming credit for someone else's work	4.210	2.150
Padding an expense account over 10 percent	4.280	2.272
Pilfering company materials and supplies	3.740	2.213
Accepting gifts/favors in exchange for preferential treatment	4.210	2.052
Giving gifts/favors in exchange for preferential treatment	4.120	2.074
Padding an expense account up to 10 percent	4.200	2.266
Authorizing a subordinate to violate company rules	4.090	2.262
Calling in sick to take a day off	3.370	2.142
Concealing one's errors	3.680	2.014
Taking longer than necessary to do a job	3.450	1.867
Using company services for personal use	3.760	1.972
Doing personal business on company time	3.770	2.004
Taking extra personal time (lunch, breaks, early departure)	3.690	1.901
Not reporting other's violations of company policies/rules	4.150	2.078
<b>Whistleblowing Intent</b>	<b>3.872</b>	<b>1.584</b>
Passing blame for errors to an innocent co-worker	3.980	2.133
Divulging confidential information	4.500	2.030
Falsifying time/quality/quantity reports	4.320	2.076

Claiming credit for someone else's work	4.140	1.930
Padding an expense account over 10 percent	4.340	2.088
Pilfering company materials and supplies	3.750	2.107
Accepting gifts/favors in exchange for preferential treatment	4.010	1.961
Giving gifts/favors in exchange for preferential treatment	3.930	1.943
Padding an expense account up to 10 percent	4.200	2.050
Authorizing a subordinate to violate company rules	4.150	2.036
Calling in sick to take a day off	3.100	1.953
Concealing one's errors	3.430	1.870
Taking longer than necessary to do a job	3.280	1.843
Using company services for personal use	3.570	1.920
Doing personal business on company time	3.620	1.937
Taking extra personal time (lunch, breaks, early departure)	3.610	1.899
Not reporting other's violations of company policies/rules	3.890	2.050

to a confidential company hotline” on a scale ranging from 1= highly unlikely to 7 = highly likely.

Table III reports the means and standard deviations for each of the dependent variables used in the study. For the 17 discrete behaviors measured on the PESS, participants indicated that these actions vary in moral intensity with a range of 1.500 to 3.720. The ethical sensitivity mean for all 17 behaviors is 2.182. Participants indicated a whistleblowing judgment for each action ranging from 3.370 to 4.390 with a mean of 3.061 for all behaviors. Intentions to whistleblow range from 3.100 to 4.500 and the mean for whistleblowing intention is 3.872.

## Results

Table IV presents the correlation matrix of the independent and dependent variables. Ethical sensitivity is statistically correlated to moral, personal, and social values suggesting that individuals who identified these values as important to them are likely to be more sensitive to ethical dilemmas. No signifi-

cant correlations were found between the four value domains and whistleblowing judgment or whistleblowing intentions.

Table V presents the regression analyses and tests of hypotheses to explore relationships between each value domain and ethical sensitivity, whistleblowing judgment and whistleblowing intentions for the situations on the PESS. Tests of hypotheses were conducted using separate univariate regression models with the mean for ethical sensitivity, whistleblowing judgment and whistleblowing intention as the dependent variables in each model, and the four value domains (personal, social, moral, and competence) as the independent variables.

The results show that moral values are significant for ethical sensitivity; however, personal, social and competence values were not significant. This partially supports H1. We find no support that the value domains in this study are significant for whistleblowing judgment (H2), or for whistleblowing intentions (H3). Individuals indicated that many of the values explored in this study are important to them; however, only their moral values effect their sensitivity to unethical actions. Further, we are unable to conclude that these values influence their decision making for unethical situations where they make a whistleblowing judgment or formulate an intention to whistleblow.

In Table VI, we present a hierarchical regression consistent with Rest’s four component model of ethical decision-making. The dependent variable of whistleblowing intention is specified in the model with ethical sensitivity in the first step, followed by whistleblowing judgment in the second step, followed by the four value domains in the third step. The results of the hierarchical regression analysis confirm prior results that value orientations suggested by prior research have little impact on intentions to whistleblow.

The results found in this study were similar to those found by Wright et al. (1997) and Shawver and Clements (2015). Wright et al. (1997) found that personal, social and moral

**Table IV: Correlation Matrix**

	Pearson Correlation Coefficients						
	Ethical Sensitivity	Moral Judgment	Whistleblowing Intent	Competence	Moral	Personal	Social
Ethical Sensitivity	1.000						
Moral Judgment	-0.049	1.000					
Whistleblowing Intent	-0.137	0.601**	1.000				
Competence	-0.200	0.112	0.054	1.000			
Moral	-0.365**	0.009	0.044	0.500**	1.000		
Personal	-0.217*	0.093	0.028	0.695**	0.661**	1.000	
Social	-0.272**	0.039	-.004	0.419**	0.501**	0.449**	1.000

**Table V: Regression Analysis**

<b>Panel A Dependent Variable: Ethical Sensitivity</b>		
	<b>t</b>	<b>Sig.</b>
Competence Values	-0.292	0.771
Moral Values	-3.06	0.003 *
Personal Values	0.703	0.483
Social Values	-1.326	0.187
Adjusted R2	0.121	
<b>Panel B Dependent Variable: Whistleblowing Judgment</b>		
	<b>t</b>	<b>Sig.</b>
Competence Values	0.834	0.406
Moral Values	-0.898	0.371
Personal Values	0.641	0.523
Social Values	0.109	0.914
Adjusted R2	-0.010	
<b>Panel C Dependent Variable: Whistleblowing Intention</b>		
	<b>t</b>	<b>Sig.</b>
Competence Values	0.566	0.572
Moral Values	0.439	0.661
Personal Values	-0.258	0.797
Social Values	-0.424	0.672
Adjusted R2	-0.025	

values impacted perception of moral intensity in their study of students. Shawver and Clements (2015) found competence values impact moral judgment but found no support that these

values impact the ethical evaluations or ethical intentions of practicing accountants.

To explore the impact of the demographic variables, we calculated correlations between all variables in this study and age, gender, and years in college, political view, and major of the participants (business or non-business). We find that ethical sensitivity is correlated to age, gender, and years in college; but is not correlated to political view or major of the participants (business or non-business). Further, we find no significant correlations between moral judgment or whistleblowing intention, and these demographic variables. To further explore the impact of the demographic variables, we added the demographic variables as a fourth step in a hierarchical regression, and found that none of the variables are significant predictors of whistleblowing intention in this study.

One way to combat increasing unethical behavior is to properly train students since they will soon be professionals in the business world. The Middle States Commission on Higher Education is “a community dedicated to students, to the pursuit and dissemination of knowledge, to the study and clarification of values, and to the advancement of the society it serves” (MSC, 2014, V). The MSC believes that ethics education should offer “a sufficient scope to draw students into new areas of intellectual experience, expanding their cultural and global awareness and cultural sensitivity, and preparing them to make well-reasoned judgments outside as well as within their academic field” (MSC, 2014, 7). Further, the Association to Advance Collegiate Schools of Business (AACSB) encourages member institutions to teach ethical awareness, ethical reasoning skills, core ethical principles, ensure that students are familiar with formal ethics programs, codes of conduct,

**Table VI: Hierarchical Regression**

<b>Dependent Variable: Whistleblowing Intention</b>						
<b>Model</b>	<b>Variable</b>	<b>t</b>	<b>Sig.</b>	<b>Adj R2</b>	<b>F Change</b>	<b>Sig.</b>
<b>1</b>	<b>Ethical Evaluation Average</b>	(1.605)	0.111 *	0.011		
<b>2</b>				0.364	75.76	0.000 *
	<b>Whistleblowing Judgment Average</b>	8.704	0.000 *			
<b>3</b>				0.352	0.392	0.814
	<b>Ethical Evaluation Average</b>	(1.495)	0.137			
	<b>Whistleblowing Judgment Average</b>	8.663	0.000 *			
	<b>Social Values</b>	0.044	0.965			
	<b>Personal Values</b>	0.800	0.425			
	<b>Competence Values</b>	(0.713)	0.477			
	<b>Moral Values</b>	(0.783)	0.435			

and skills that may allow students to put their values to work in the corporate world (AACSB, 2004).

Mary Gentile (2010, ix) identifies that “the credit market melt-down and governance mis-behavior [had], once again, triggered conversations among business leaders, business educators, and the business press about just what they were communicating and teaching in the halls of industry, in corporate training seminars, and in business schools. After all, you didn’t have to look far to find a lot of highly trained and highly placed managers doing a perp walk. Even more disconcerting were all those business school graduates who had presided over, or at least given silent assent to, a stream of decisions that led to the collapsing dominoes of the worldwide financial system.” In response to these concerns, Gentile developed a curriculum that encourages students and professionals to voice their values.

With the potential for enhancing ethics education in academic curricula there is the potential possibility for future employees to commit fewer fraudulent activities in their careers. We must arm these students, our future professionals, with the tools to mitigate or eliminate fraudulent activities of their co-workers and superiors. This sample of students identified that the 17 behaviors on the PESS are unethical and yet they are less likely to make a judgment or develop an intention to whistleblow for these actions. Further, it appears that their current value orientation has little impact on their decisions to whistleblow. If we have any hope for deterring fraud it is essential for colleges, universities, and organizations to encourage individuals to act upon their values and not remain silent when occupational fraud and abuse occurs.

## Conclusions and Areas for Future Research

During this study it was hypothesized that an individual’s values system would impact ethical sensitivity, whistleblowing judgments and whistleblowing intentions. We found that individuals with high moral values are more likely to identify and be more sensitive to unethical actions. However, we found no support that moral, personal, social, or competence values impact whistleblowing judgments or intentions to report unethical actions to a company hotline.

The implications and results of this study are important for colleges, universities and organizations in a free enterprise system. It is essential that colleges and universities arm these students, our future professionals, with the tools to evaluate ethical dilemmas and develop skills that may help mitigate fraudulent activities. Further, organizations must be committed to encouraging ethical behavior and offering ethics training that encourages reporting ethics violations so that employees

may feel comfortable using their values when considering ethical decision alternatives.

A limitation to this study is that it was conducted at one educational institution. Future research may wish to expand the sample size to more colleges and universities in several geographic areas and to working professionals. Further research may help to determine how to educate students and professionals to be more sensitive to unethical situations and how to encourage others to base their actions on their moral values. Hopefully, this will encourage fair and free markets to operate efficiently while reducing occupational fraud losses and abuse towards organizations and society.

## References

- AACSB International. 2004. Ethics education in business schools. *Report of the Ethics Education Task Force to AACSB International's Board of Directors June*.
- Ahern, K. and S. McDonald. 2002. The beliefs of nurses who were involved in a whistleblowing event. *Journal of Advanced Nursing*, 38(3), 303–309.
- Allen, H. 2013. Whistleblowing and crimes against the market: In response to Bjorkelo and Madsen, *Psychology and Society*, 5(2), 41–45.
- Alpern, K. D. 1982. Engineers as moral heroes. *Beyond Whistleblowing*, V. Weil ed., 400–451.
- Association of Certified Fraud Examiners (ACFE). 2014. *Report to the Nations on Occupational Fraud and Abuse*. Austin, TX: ACFE.
- Association of Certified Fraud Examiners (ACFE). 2016. *Report to the Nations on Occupational Fraud and Abuse*. Austin, TX: ACFE.
- Baird, V. 2014. Don't shoot the messenger! *New Internationalist*, April 2014, 12–16.
- Clements, L. 2005. Whistleblowing: Who, what, when, where, why & how? *Journal of Forensic Accounting*, 4, 149–160.
- Clements, L. and T. Shawver. 2011a. Moral intensity and intentions of accounting professionals to whistleblow internally. *Journal of Forensic Studies in Accounting and Business*, 31, 67–82.
- Clements, L. and T. Shawver. 2011b. Moral intensity and intentions of accounting professionals to whistleblow externally, *Advances in Management*, 45, 34–40.
- Ethics Resource Center NBES. 2013. National Business Ethics Survey of the U.S. Workforce. <http://www.ethics.org/ecihome/research/nbes>
- Gentile, M. C. 2010. *Giving Voice to Values: How to Speak Your Mind When You Know What's Right*. New Haven, CT: Yale University Press.
- Israeli, D. 1988. Ethical beliefs and behavior among managers: A cross-cultural perspective. *Journal of Business Ethics*, 7, 263–271.
- Jones, T.M. 1991. Ethical decision making by individuals in organizations: An issue- contingent model. *Academy of Management Review*, 16, 366–395.
- Karacaer, S., et al. 2009. Effects of personal values on auditor's ethical decisions: A comparison of Pakistani and Turkish professional auditors. *Journal of Business Ethics*, 88(1), 53–64.
- Miceli, M. P. and J. P. Near. 1984. The relationships among beliefs, organizational position, and whistleblowing status: A discriminant analysis. *Academy of Management Journal*, 27, 687–705.
- Miceli, M.P. and J. P. Near. 2005. Standing up or standing by: What predicts blowing the whistle on organizational wrongdoing? *Research in Personnel and Human Resources Management*, 24, 95–136.
- Miceli, M.P. and J. P. Near. 1991. Whistleblowing as an organizational process. *Research in the Sociology of Organizations*, 9, 139–200.
- Miceli, M. P. and Near, J. P. 1992. *Blowing the Whistle: The Legal Implications for Companies and Employees*, Lexington Books, New York.
- Miceli, M. P., J. P. Near, and C. R. Schwenk. 1991. Who blows the whistle and why? *Industrial and Labor Relations Review*, 45(1), 113–130.
- Miceli, M. P., B. L. Roach, and J. P. Near. 1988. The motivations of anonymous whistle-blowers: The case of federal employees. *Public Personnel Management*, 17, 281–296.
- Middle States Commission on Higher Education MSC. 2014. *Standards for Accreditation and Requirements of Affiliation*. Philadelphia, PA.
- Near, J. P., & Miceli, M. P. 1995. Effective whistle-blowing. *Academy of Management Review*, 20, 679–709.
- Newstrom, J. W., and W. A. Ruch. 1975. The Ethics of Management and The Management of Ethics. *MSU Business Topic*, Winter, 29–37.
- Rest, J. 1986. *Moral Development: Advances in Research and Theory*. New York, NY: Praeger.
- Rokeach, M. 1973. *The Nature of Human Values*. New York, NY: Free Press.
- Rokeach, M. 1968. *Beliefs, Attitudes, and Values; a Theory of Organization and Change*. San Francisco, CA: Jossey-Bass.
- Shawver, T. J. 2011. The effects of moral intensity on whistleblowing behaviors for accounting professionals. *Journal of Forensic and Investigative Accounting*, 32, 162–190.

- Shawver, T.J., L.H. Clements. 2015. The impact of value preferences on ethical decisions made by professional accountants. *Journal of Forensic Studies in Accounting and Business*, 7, 35–52.
- Stringham, E.P. 2011. Embracing morals in economics: The role of internal moral constraints in a market economy. *Journal of Economic Behavior and Organization*, 78, 98–109.
- Weber, J. 1990. Managerial value orientations: A typology and assessment. *International Journal of Value Based Management*, 3, 37–54.
- Wright, G. B., C. P. Cullinan, and D. M. Blin. 1997. The relationship between an individual's values and perceptions of moral intensity: An empirical study. *Behavioral Research in Accounting*, 9, 26–41.

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# Linking Earnings, Dividends, and Operating Cash Flow to Stock Price in the Hospitality Industry

A Comparison of the Effectiveness of Earnings, Dividends, and Operating Cash Flow on Hospitality Stock Valuation

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## ABSTRACT

This study examines valuation in the hospitality industry. As reported in the general literature, different variables have been used to explain stock valuation among cross-industry firms. Earnings and cash flow are the two most studied variables in the literature; however, experts are conflicted regarding which variable is the most effective in determining stock valuation. One consideration that may explain these contradictory results is that variables of interest may be ranked differently among different industries. Additionally, there are very few studies that focus on the valuation issue in the hospitality industry. This study aims to fill that scholarly gap by comparing the effectiveness of earnings, dividends, and operating cash flow on the stock valuation of restaurants and hotel firms. Using a sample of 527 unique firms over a 30-year period and using both multiple valuation and multiple regression analysis, our findings confirm that operating cash flow is the most effective valuation indicator of hospitality stocks, followed by earnings and then dividends. *Keywords: stock valuation; multiple valuation; earnings; dividends; operating cash flow*

## Introduction

Valuation is the process of determining the intrinsic worth of a firm. As such, it is of significant importance to each of the three essential players in the investment environment: investors, analysts and firms. First, an investor would need a reference value before making an informed investment decision about a firm. Second, a financial analyst would need to formulate the intrinsic value of a business before feeling confident about making any investment recommendations to the public. Finally, for a firm to maintain its attractiveness to investors, its true value must be calculated and communicated accurately to potential investors and analysts.

For a publicly traded firm, valuation refers to assessing the intrinsic stock price of the firm, which typically involves two decisions. First, a valuation model needs to be chosen. Second, valuation variables need to be selected for incorporation into the appropriate model. Two categories of value models that have been widely used are the discounted model and the multiple model. The discounted model involves predicting future values of the variables of interest, which is quite difficult to do in practice (Fisher 1991; Francis et al. 2000; Ganchev 2000a; Lee and Upneja 2007; Liu et al. 2007; Ming-Hsiang and Woo Gon 2010; Rushmore 1992b; Upneja and Lee 2004). Multiple valuation represents another category for determining valuation that can be more easily performed and requires fewer assumptions (Fernandez 2001; Liu et al. 2002). After an

appropriate valuation mechanism has been chosen, valuation variables need to be identified.

Stock price represents an essential valuation component since it is impacted by dividends, earnings and ultimately a firm's cash flow. Many empirical studies have been conducted to access the effect of these variables on stock prices (Fama 1970; Shiller 1981; Liu et al. 2002, 2007; Ackert and Smith 1993; DeFond and Hung 2003; Sloan 1996). Although scholars disagree regarding which variable is the most effective in predicting stock price, prior studies indicate that different industries may favor different valuation variables (Liu et al. 2002). Most previous investigations that have focused on the relationships among stock price and cash flow, earnings or dividends have used cross-industry data, primarily the S&P 500 Index, which does not distinguish between the service industry and the manufacturing industry (Fama 1970; Shiller 1981; Ackert and Smith 1993; Liu et al. 2007, 2002). Moreover, because the hospitality industry usually contains small- to middle-sized firms in terms of market capitalization, they are usually underrepresented in the S&P 500.

The service industry is different from manufacturing in many ways, such as the intangibility of its products, the simultaneity of production and consumption, customer participation in the production and the delivery of the service, heterogeneity and perishability (Olsen et al. 2007). These and other salient features make the service industry different from manufacturing. Thus, cash assets may take on a more significant role in

a hospitality firm's valuation. Due to the relative importance of cash assets in the hospitality industry, cash management becomes an essential task in its daily operation (Olsen et al. 2007). In addition, differences exist within the hospitality industry; for example, between hotel firms and restaurant firms. A restaurant, for instance, will typically have greater financial leverage, requiring a higher cash flow level from immediate operations to service the debt (Huo and Kwansa 1994). In short, identifying the most relevant variable for stock price valuation in the hospitality industry can assist managers in monitoring their own stock price changes more reliably. Such information would allow managers to take action to increase stock prices and reduce unexpected shocks in the stock price, thus enhancing their ability to attract more investors. It also provides guidance on how to properly value hospitality stocks. To date, however, few studies have investigated how to identify the most relevant indicator of stock price change in the hospitality industry.

To address this deficit, this study will rank the effectiveness of operating cash flow, earnings, and dividends in explaining stock price variations in the hospitality industry using a traditional multiple valuation model. Results from this investigation are expected to provide both managers and investors with specific guidelines that may help explain price variations in hospitality firms, thereby enabling them to monitor this essential variable more confidently.

## Literature Review

Economists and theorists (and others) have looked into ways to determine stock prices, as well as account for their price shifts, for a very long time, almost as long as the market has existed (Keynes 1936; Fama 1970). What factors determine changes in a company's stock price? This question has elicited various responses, from the "animal spirits" of Keynes (1936) to the Market Efficiency Hypothesis of Fama (1970). More recently, researchers have proposed a variety of stock valuation models to determine the value of a stock (Keynes 1936; Fama 1970; Shiller 1981; Ackert and Smith 1993; Sloan 1996; Scott 1985; Kothari and Zimmerman 1995). Theoretically, one can calculate a stock's value by discounting all future dividends at an appropriate discount rate, and this approach represents the fundamental logic behind many stock valuation models (Fama 1970). However, stock price shifts in the empirical world are more volatile and are not well served by this approach (Shiller 1981). Therefore, half of the analysts never use a dividend discount model for conducting stock valuation analysis (Block 1999; Yong Keun 2006). In the following section, two of the most popular stock valuation models—the present value model and the multiple valuation model—will be discussed.

Different valuation variables that have been employed in stock valuation models will then be presented and their effectiveness in stock valuation will be compared.

## Stock Valuation Models

The present value (PV) model is a popular valuation technique for the hotel industry (Rushmore 1992; Ganchev 2000; Chen and Woo Gon Kim 2010). A residual income model, which is an example of a PV model used in this industry, was utilized to investigate whether lodging stocks were undervalued during the 1990s compared to non-lodging stocks (Lee and Upneja 2007). However, there is some criticism surrounding this technique. Present value valuation models are based on variables that are inordinately difficult to obtain in the real world. According to Block's survey of professional financial analysts, half never used a PV model and instead preferred the use of a multiple valuation model (Block 1999). Investment managers also seem to favor a price-to-earnings multiple model over a PV model (Carter and Van Auken 1990). According to a survey conducted by Bing (1971), although 85% of respondents usually applied more than one technique in stock valuation, the multiple valuation method was the most popular choice among all techniques. Based on this preference, a multiple valuation model will be utilized as the valuation technique in this study.

Multiple valuation is a technique applied to determine the current fair value of a company based on certain valuation variables and an appropriate multiple (Fernandez 2001). Some common variables upon which multiples are calculated include free cash flow, operating cash flow, dividends and earnings (Liu et al. 2002; Sloan 1996; DeFond and Hung 2003). It should be noted, however, that these valuation variables only require short-term forecasts. Compared to other stock valuation techniques (e.g., discounted cash flow), multiple valuation is a much easier method to apply, since it requires fewer unrealistic assumptions, unlike PV models, which require an estimate of anticipated cash flow, an estimate for an appropriate discount rate and an estimate for a terminal value. Another advantage of multiple valuation is that it requires very limited forecasts, which reduces the possibility of significant deviations from true market value (Fama 1970; Shiller and Grossman 1981). In fact, the only forecasted value typically needed for a multiple valuation model is the chosen variable, such as earnings, operating cash flow or dividends. Once the variables are chosen, an appropriate multiple needs to be determined, which is usually achieved by looking at a group of peer companies and calculating the industry average (Liu et al. 2007). A company's value can then be calculated by multiplying the selected valuation variable by the corresponding multiple (Liu et al. 2007).

## Variables in Stock Price Valuation

While a multiple valuation model can incorporate a number of variables, such as types of cash flow, earnings, dividends, sales and book value (Fernandez 2001, 2007), this study's multiple valuation model will feature the three most commonly used variables: cash flow, earnings and dividends. Generally, cash flow is defined as the amount of cash being received and spent by a business during a defined period of time; it is sometimes tied to a specific project or area to differentiate a firm's principal business divisions. Cash flow of interest can be further narrowed into two types: operating cash flow and free cash flow. As its name implies, operating cash flow is the income a company generates from the revenue it brings in via operating activities. Operating cash flow has been used as an indicator of financial distress (Casey and Bartczak 1985). Furthermore, free cash flow is a measure of how much cash is available to a firm after taking into account capital expenditures such as equipment or buildings. Free cash flow can also be viewed as money available to service a debt or pay dividends to equity holders. Both operating cash flow (Sloan 1996; DeFond and Hung 2003; Liu et al. 2002) and free cash flow (Liu et al. 2002) have been used in previous research. Since it is less influenced by a firm's financing decisions, operating cash flow will be used as a valuation variable for this study.

The term "earnings" simply represents the difference between revenue and expenses and is an indicator of the change in the overall net worth during a given period. Since an income statement is presented on an accrual basis, while a cash flow statement is presented on a cash basis, there will be differences between earnings and cash flow. For example, not all recorded earnings on the income statement are necessarily received in the form of cash; thus, they would not show up on a cash flow statement (Vernimmen et al. 2005; Dechow et al. 1998).

The third variable of interest for this study is dividends, which are defined as payments made by a corporation to its shareholders. As a percentage of corporate profits paid out to stockholders (O'sullivan et al. 2003), dividends can be distributed in different forms—usually as cash or share repurchases. However, Fernandez (2007) criticized the practice of using dividends as a valuation variable, since paying dividends does not actually contribute to a firm's future growth. The logic is that firms pay out dividends because they do not have value-adding projects in which to invest; therefore, dividend payments actually lower a firm's growth potential (Fernandez 2007).

As noted above, although analysts can and do use multiple variables in valuation models (i.e., cash flow, earnings, dividends, sales, and book value), earnings and cash flow are by far the most commonly utilized measures (Block 1999; Carter and

Van Auken 1990; Fernandez 2004; Liu et al. 2002; Penman and Sougiannis 1998; Yong Keun 2006). The views expressed in the existing research are split regarding which measure is better. Wilson and O'Brien (1986) and Fernandez (2004) assert that operating cash flow is better in valuations than reported earnings, since it is less likely to be subjected to management manipulations. However, in most of the studies listed above, the earnings variable has proven to have greater explanatory power (Gallizo and Salvador 2006; Penman and Sougiannis 1998) for stock price variations (Liu et al. 2002, 2007).

The problem with using earnings for valuations is that it is difficult to compare earnings across firms. Different firms use different options for calculating accrual income. This means that managers can manipulate accruals to change reported earnings (Bernard and Stober 1989). Accrual income inherently involves estimates, which can be done in a biased manner to help achieve a desired earnings number. In addition to tweaking accrual earnings, managers can also engage in real-earnings management (or mismanagement, as the case may be), meaning that managers can utilize real economic outcomes, such as decreased discretionary spending on R&D and advertising, to meet an earnings target (Graham et al. 2005). It should be noted that the level of real earnings management activity increased significantly after the passage of the Sarbanes-Oxley Act of 2002; in contrast, the level of accrual earnings management activity declined significantly (Cohen et al. 2008).

A heightened level of earnings over operating cash flow has also been associated with financial reporting fraud (Lee et al. 1999). Fraud has been defined by the American Institute of Certified Public Accountants as an intentionally deceptive act that results in a material misstatement on a publicly available financial statement. Among all discovered financial reporting frauds, earnings were, without exception, affected, and in most cases, the perpetrators created a variance between earnings and operating cash flow. In other words, when a firm engages in fraudulent transactions to inflate earnings, operating cash flow is initially unaffected (Lee et al. 1999). Thus, cash flow may be a better indicator than earnings.

## Research Questions

Most of the prior studies in this area have focused on the S&P 500 or Dow Jones Industrial Average indices, which represent large firms in the manufacturing sector. For example, Liu, Nissim, and Thomas (2007) conducted an industry-by-industry assessment involving four major industrial sectors (energy, finance, health care, and public utilities) to compare their earnings performance and operating cash flows. In marked contrast, meaningful comparisons between share price and operating cash flow among both large and small firms in the

hospitality industry are largely absent from the literature. As noted in the Introduction, the service industry is characterized by certain features that distinguish it from major manufacturing; these include its product intangibility, the simultaneity of production and consumption, customer participation in the production and delivery of the services, its heterogeneity of umbrella organizations and service perishability. In addition, some critical valuation factors are unique to the hospitality industry and not germane to the valuation process in other industries (Jianan et al. 2011). One such example is revenue per available room (RevPAR), which has been documented in the hospitality literature in terms of whether lodging stocks are correctly priced (Elgonemy 2000; Lee and Upneja 2007). Therefore, the question remains whether the sensitivity of stock price to earnings will prove to be applicable within the service industry.

### **Hypothesis One**

It is harder for managers to manipulate cash flow—and especially cash inflow—in the hospitality industry, in which products and services have a very short shelf life and production/consumption often happen simultaneously (Olsen et al. 2007). Moreover, credit sales in hospitality tend to be smaller in scale on both the individual and aggregate levels. Due to these distinct features, hospitality firms have little or no control of the timing of operating cash inflow.

Analysts favor cash flow in valuing firms with high capital intensity (DeFond and Hung 2003), which, when combined with high financial leverage represents an important characteristic of the hospitality industry, specifically in hotel and restaurant firms (Huo and Kwansa 1994). The average degree of financial leverage (DFL) for hotel and restaurant firms is 3.17 and 4.36, respectively, while the analogous ratio for the manufacturing industry is 2.2 (Huo and Kwansa 1994; Ferris et al. 1995). The hospitality industry is considered a cash business, since most operating assets exist in the form of cash and firms tend to possess very little inventory on their balance sheets. The high debt-to-equity ratio also requires a strong cash flow to service financing costs. Another important feature of the hospitality industry is that it tends to use more cash to finance mergers and acquisitions (Oak et al. 2008). During the 20-year period between 1980 and 2000, 75% of hospitality mergers and acquisitions were financed with cash; in comparison, in all other industries combined, only 43% was financed with cash. Subsequent capital inputs are relatively low for the hospitality industry (Lee et al. 2011). Operating cash flow has also been chosen as a reliable performance indicator in previous hospitality research (Madanoglu et al. 2010), which supports this study's research design.

Given these distinctive features of the hospitality industry, Hypothesis 1a is proposed:

***Hypothesis 1a:*** *Operating cash flow per share has greater relevance for determining stock price variations than earnings per share.*

Dividends have also been compared to cash flow and earnings in terms of valuation effectiveness. The Dividend Discount Model (DDM) asserts that stock price represents the present value of future dividends discounted by an appropriate discount rate. However, critics of the DDM claim that dividend is not as appropriate as a valuation variable when compared to cash flow and earnings. First, stock prices tend to be too volatile when compared to the forecasted value using dividends, causing the DDM to yield significant pricing errors (Shiller 1981). Second, relying on the DDM is risky if firms routinely only pay out a fraction of earnings as dividends and engage in dividend stabilization. These practices undermine the effectiveness of the DDM.

Another important concern over dividend valuation occurs when the firm being valued does not pay dividends at all. For example, only 30% of all US publicly traded companies paid dividends in 2003 (Liu et al. 2007), which is analogous to the percentage of hotel and restaurant firms during the period of 1980 to 2009. In addition, dividend paying does not add value to a firm over the long term, since only firms that are unsuccessful in identifying profitable investment opportunities would pay out cash as dividends to shareholders (Fernandez 2007). Given the advantages of cash flow encapsulated in Hypothesis 1a as well as the criticisms of valuation using dividends (Ackert and Smith 1993; Kleidon 1986; Bagwell and Shoven 1989), we propose that dividends will not be an effective valuation variable in explaining the stock variances of hospitality firms. Hence, Hypothesis 1b states the following:

***Hypothesis 1b:*** *Operating cash flow per share has greater relevance for determining stock price variations than dividends per share.*

### **Hypothesis Two**

As noted earlier, most prior research relies on S&P 500 Index data, which primarily encompasses large cap firms in the manufacturing sector, but very few hospitality firms. Consequently, most available literature cannot be extended to an industry featuring mostly small capitalization firms, which represents an important consideration since firm size has been linked to cash holding levels within the literature. Indeed, cash holding levels have long been known to play a more critical role in the operation of small firms in comparison to large firms due to the effect of economies of scale (Miller and Orr 1966).

Specifically, a negative relationship between cash holdings and firm size has been documented (Opler et al. 1999), which has also been found in the restaurant industry (Kim et al. 2011). This finding begs the question of whether the results of other studies that primarily use S&P 500 companies will hold in the hospitality setting with relatively small firms.

Given their varying sizes—from large hotel chains to small restaurants—hospitality firms tend to employ different capital structures that indicate how the firms fund their operations through various available financing options. Debt financing and equity financing are two such choices, each with its pros and cons (Jensen and Meckling 1976). In general, debt is cheaper than equity for two reasons. First, debt holders will have an immediate claim on the company's assets if it should go bankrupt. Second, debt is tax deductible; in contrast, dividends paid out to equity holders are not. In addition to cheaper financing costs, debt financing may encourage managers to be more mindful about how they use their cash in value-adding projects, because debt holders can impose debt covenants to limit any risk exposure. This, in turn, will limit a firm's investment opportunities in potentially profitable projects with relatively high associated risks. Given these tradeoffs (and depending on the specific circumstances of each firm), there is an ultimate capital structure that balances out the cost and benefit of debt and equity financing (Jensen and Meckling 1976). Therefore, firms in different industries may employ different capital structures.

The relationship between firm size and capital structure has been examined in the literature. In the hospitality industry, larger firms use less total debt and long-term debt than smaller firms (Kim 2008); however, a hospitality firm with high operating cash flow will generally use more long-term debt (Upneja and Dalbor 2001). Compared to equity, debt requires more constant cash flow streams, which are typically generated from relatively reliable operating activities. Previous findings in the hospitality industry indicate that small hospitality firms with a high operating cash flow are more likely to raise long-term debt. Consequently, the high long-term debt-to-equity ratio will require smaller hospitality firms to generate a significant cash flow level to remain solvent. Therefore, stock price volatility might be more sensitive to the operating cash flow of small hospitality firms than large hospitality firms. Given these factors, Hypothesis 2 is proposed:

**Hypothesis 2:** *Operating cash flow is a more valuable indicator for explaining stock price variations for small hospitality firms than for large hospitality firms.*

### **Hypothesis Three**

Although both restaurant and hotel firms tend to be highly leveraged in comparison to manufacturing firms, the financial leverage for restaurants is generally higher than for hotels (Huo and Kwansa 1994). As reported by Huo and Kwansa (1994), the average degree of financial leverage (DFL) for hotel firms is 3.17, while the analogous rate for restaurant firms is 4.36. In general, a higher degree of financial leverage will require more stable operating cash flow levels to service any debt.

The market value of cash holdings may also contribute to the importance of operating cash flow for restaurant firms (Pinkowitz and Williamson 2002). Investors tend to place more value on cash holdings for a firm with good growth opportunities than for a firm with poor growth opportunities (Pinkowitz and Williamson 2002). Conversely, investors are less concerned about cash holdings when a firm is able to demonstrate stable investment strategies (Pinkowitz and Williamson 2002). Due to their large capital requirements, hotels usually have a longer investment horizon and engage in more stable investment programs than do restaurants. When making an investment decision, hotel firms will generally need a large capital outlay with a relatively long investment horizon; in contrast, restaurants may have more flexibility in investment decision making. In short, a restaurant's cash flow may be a more significant variable than a hotel's cash flow. If proven true, this hypothesis indicates that operating cash flow will likely have a stronger impact on stock price variations for restaurant firms than for hotel firms. Given these factors, Hypothesis 3 is proposed:

**Hypothesis 3:** *Operating cash flow is a more informative variable for explaining stock price variations for restaurant firms than for hotel firms.*

### **Methodology**

This section describes the dataset utilized in this study, the standards used to define the sample parameters in that dataset, and the measurements and calculations we utilized to assess the variables of interest.

#### **Firm Selection**

In order to identify the hotels and restaurants to be included in the dataset, we applied two strategies. First, we utilized COMPUSTAT North America Industry Annual and I/B/E/S as source databases. The Standard Industrial Classification (SIC) system and its associated four-digit code structure was chosen as the firm selection standard—namely, 5,812 for restaurants and 7,011 for hotels. Second, we included firm samples with

annual data available from 1982 to 2012. Using both SIC and time period criteria, 5,110 restaurant firm-years and 1,859 hotel firm-years were extracted from the COMPUSTAT database for multiple regression analyses. There were 385 unique restaurant firms and 142 unique hotel firms, not all of which were operating for the entire 30-year period. However, due to missing data, 2,980 restaurant firm-years and 1,263 hotel firm-years were deleted. This winnowing process resulted in a total sample size of 2,726 firm-years (i.e., 2,130 firm-years for the 313 sample restaurant firms combined with 596 firm-years for the 101 sample hotel firms) with complete data in the COMPUSTAT database for the multiple valuation analyses. Sample firm descriptive statistics are provided in Table I.

Category	Multiple Regression	n
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**Table I: Sample Firms Descriptive Statistics for Multiple Regression**

<b>Industry</b>	Restaurant	2130
	Hotel	596
<b>Market Cap</b>	<= \$25 million	928
	> \$220 million	937
<b>Debt Level</b>	LTD/E <= 0.56	924
	LTD/E > 1.45	920

## Variables

We included four variables from the COMPUSTAT database: share price, operating cash flow per share, earnings per share, and dividends per share. Share price represents the closing price at the end of the fiscal year. Operating cash flow per share corresponds to operating cash flow deflated by total common shares still outstanding. Earnings per share correspond to the annual earnings per share reported in 10-k. Dividends per share represent the annual common dividends deflated by the total common shares outstanding.

We also included five control variables in the multiple regression analysis. The three size-related control variables are as follows: natural log of total number of employees, natural log of total assets and natural log of total revenue. Only one of these was included in each multiple regression model due to multicollinearity. Return on assets (ROA) was included as a profitability control variable. Debt-to-equity ratio (DTE) was included as a capital structure control variable. Industry was included as a control variable to account for the difference between the restaurant industry and the hotel industry. Due

to the time series nature of financial data, calendar fixed effects were included in the multiple regression analysis as well.

## Multiple Valuation

In order to evaluate the effectiveness of operating cash flow, earnings and dividends in explaining variations in share price in the hospitality industry, the traditional multiple valuation method is followed, which assumes a proportional relationship between share price and the valuation variable:

$$P_{it} = \beta_t x_{it} + \varepsilon_{it}$$

**Equation 1**

Where  $P_{it}$  and  $x_{it}$  are the price and valuation variable for firm  $i$  in year  $t$ , respectively.  $\beta_t$  is the multiple on the valuation variable and  $\varepsilon_{it}$  is the pricing error for firm  $i$  in year  $t$  (Liu et al. 2007).

To allow comparison of valuation errors for stocks of different values, the pricing error is deflated by the stock price (Liu et al. 2007):

$$1 = \beta_t \frac{x_{it}}{P_{it}} + \frac{\varepsilon_{it}}{P_{it}}$$

**Equation 2**

We evaluated three valuation variables in this study: operating cash flow, earnings and dividends. An industry multiple for each year was constructed for each valuation variable for each company, which we based on the price and valuation variables for all remaining companies for that industry year in the sample set. In order to avoid the target's valuation being contaminated by its own price, we eliminated the target company from the sample. Based on prior research, we utilized the harmonic mean of the price ratio, which tends to reduce the effect of extreme values in the group and provides a more appropriate average multiple (Liu et al. 2007). The harmonic mean is calculated by taking the reciprocal of the arithmetic mean of the reciprocals.

This method facilitated the construction of three multiples. The first multiple is the price-to-earnings ratio (P/E), which is calculated by dividing share price at fiscal year-end with the corresponding annual earnings per share. The second multiple is price-to-dividend ratio (P/D), which is calculated by dividing share price at fiscal year-end with the corresponding annual dividends per share. The third multiple is price-to-operating cash flow ratio (P/C), which

is calculated by dividing share price at fiscal year-end with the corresponding operating cash flow per share. Using the traditional multiple valuation model, industry average multiples for P/E, P/D, and P/C are calculated with the harmonic mean method for each industry by year. In this study, industry harmonic mean multiples were calculated.

### Multiple Regression

Share price served as the dependent variable in the multiple regression analysis. The three independent variables were earnings per share, operating cash flow per share and dividends per share. The five control variables utilized in the multiple regression analysis were as follows: Size, ROA, DTE, Industry and CFE. Accordingly, the model was constructed as

$$P = \gamma_1 EPS + \gamma_2 DPS + \gamma_3 CPS + \gamma_4 Size + \gamma_5 ROA + \gamma_6 DTE + \gamma_7 Industry + \gamma_8 CFE + \epsilon$$

Equation 3

### Analytical Procedure

To perform the multiple valuation analysis, the earnings, dividends, and operating cash flow were deflated by common shares still outstanding to arrive at earnings per share, dividends per share and operating cash flows per share. We also calculated a price-to-earnings ratio (P/E), a price-to-dividend ratio (P/D) and a price-to-operating cash flow ratio (P/C) for each firm for each year. We determined the industry multiples for earnings, dividends and operating cash flow according to the methods detailed above, after which we calculated any pricing errors based on equation (2). The variables used in this study are summarized in Table II.

According to the multiple valuation method, we utilized the T-test to test the four proposed hypotheses (H1a, H1b, H2, and H3). This procedure (a) compares the means of two variables for a single group, (b) computes the differences between the values of those variables for each case, and (c) tests whether the average differs from zero. We employed the T-test to test Hypothesis 1a and Hypothesis 1b to compare whether the pricing error means computed by P/E, P/D and P/C differed from each other. To investigate Hypothesis 2, we divided the sample set into three equal-sized categories according to their market value: (a) Small-Cap: Market value is equal to or smaller than \$25 million, (b) Mid-Cap: Market value is between \$25 and \$220 million, and (c) Large-Cap: Market value is greater than \$220 million. We then applied T-tests to group (a) and group (c). This strategy was designed to yield approximately equal numbers of operating cash flow pricing error data

Table II: Variable Definition

Name	Definition	Calculation
P	Share Price	Closing Share Price from COMPUSTA
CSO	Common Shares Outstanding	Common Shares outstanding from COMPUSTAT
C	Operating cash flow	Net Cash Flow from Operating Activities from COMPUSTAT
D	Dividends	Dividends from COMPUSTAT
AT	Total Assets	Total Assets from COMPUSTAT
EMP	Total Employees	Total Employees from COMPUSTAT
REVT	Total Revenues	Total Revenues from COMPUSTAT
LT	Total Liabilities	Total Liabilities from COMPUSTAT
SEQ	Shareholders' Equity	Shareholders Equity from COMPUSTAT
NI	Net Income	Net Income from COMPUSTAT
Ln_AT	Natural Log of Total Assets	Ln_AT=ln (AT)
Ln_EMP	Natural Log of Total Employees	Ln_EMP=ln (EMP)
Ln_REVT	Natural Log of Total Revenues	Ln_REVT=ln (REVT)
DTE	Debt-to-Equity Ratio	DTE=LT/SEQ
ROA	Return on Assets	ROA=NI/AT
EPS	Earnings per share	EPS from COMPUSTAT
DPS	Dividends per share	DPS=D/CSO
CPS	Operating cash flow per share	CPS=C/CSO
P/EPS	EPS multiple	Price to earnings per share
P/DPS	DPS multiple	Price to dividends per share
P/CPS	CPS multiple	Price to operating cash flow per share
PE_EPS	EPS pricing error	Calculated from multiple valuation model
PE_DPS	DPS pricing error	Calculated from multiple valuation model
PE_CPS	CPS pricing error	Calculated from multiple valuation model

points for the three groups. We divided the sample into three categories in order to identify more easily the differences between the upper and lower groups without losing too much of the sample, given the small sample size. To test Hypothesis 3, we divided the sample set into two categories based on SIC codes: 5,812 for restaurant firms and 7,011 for hotel firms.

Next, we conducted multiple regression analyses using actual earnings per share, dividends per share, and operating

cash flow per share as the independent variables. See Model 1 (Equation 4).

$$P = \gamma_1 EPS_a + \gamma_2 DPS_a + \gamma_3 CPS_a + \gamma_4 Size + \gamma_5 ROA + \gamma_6 DTE + \gamma_7 Industry + \gamma_8 CFE + \epsilon$$

**Model 1/Equation 4**

## Results And Discussion

### Multiple Valuation Results

The results of hypotheses testing with multiple valuations are provided in Table III. T-tests revealed statistically significant differences between operating cash flow pricing errors and earnings pricing errors as well as between operating cash flow pricing errors and dividend pricing errors for restaurant firms. The mean difference between earnings pricing errors and operating cash flow pricing errors for the restaurant industry is 0.694, and this difference is significant at the 0.05 level. The mean difference between dividend pricing errors and operating cash flow pricing errors for the restaurant industry is 0.469, and this difference is significant at the 0.05 level. The mean difference between earnings pricing errors and operating cash flow pricing errors for the hotel industry is 1.267, while the mean difference between dividend pricing errors and operating cash flow pricing errors for the hotel industry is -0.195. However, these two mean differences are not significant at the 0.05 or

the 0.1 levels. Therefore, both H1a and H1b are supported for the restaurant industry, whereas neither is supported for the hotel industry. These results indicate that operating cash flow is indeed a better valuation variable than either earnings or dividends when explaining stock variations for the restaurant industry.

Furthermore, our results for H2 show that firm size does have an impact on the effectiveness of operating cash flow in explaining the stock variations in the hospitality industry. The mean difference between operating cash flow pricing errors for small hospitality firms and for large hospitality firms is 0.724, which is significant at the 0.05 level. The results of the first T-test confirm a significant difference in operating cash flow pricing errors among both restaurants and hotels, regardless of their size. However, the smaller mean pricing error for small hospitality firms indicates that operating cash flow is a more valuable indicator of stock price variations for these firms. Therefore, H2 is supported, indicating that size is an important factor in evaluating the effectiveness of operating cash flow in explaining stock price variations in the hospitality industry, which tends to be true for manufacturing businesses (Fama and French 1993). Additionally, since small hospitality firms tend to accrue more debt in comparison to larger companies (Kim 2008), a reliable level of operating cash flow needed to whittle down a higher level of debt can be crucial for the viability of these smaller operations.

**Table III: Analysis Results for H1, H2, and H3**

Hypothesis	Industry	Multiple Error	Pricing	Mean Difference	T	Test	Results
H1 a & b	Restaurant	EPS-CPS		0.694	4.777***	T-Test	Partially Supported
	n=204	DPS-CPS		0.469	5.079***		
	Hotel	EPS-CPS		1.267	1.157		
	n=63	DPS-CPS		-0.195	-0.478		
H2	Size	Multiple Error	Pricing	Mean	T	Test	Results
	Small (n=97)	CPS		0.34	-	T-Test	Supported
	Large (n=115)	CPS		-0.383	-		
Small-Large	CPS	0.724		2.928**			
H3	Industry	Multiple Error	Pricing	Mean	T	Test	Results
	Restaurant (n=204)	CPS		0.488	-	T-Test	Supported
	Hotel (n=63)	CPS		1.223	-		
R-H	CPS	-0.735		-3.461***			

\*Significant at the 0.05 level \*\*Significant at the 0.01 level \*\*\*Significant at the 0.000 level

As illustrated in Table III, operating cash flow does impact stock prices for restaurant and hotel firms in several ways. The t score for the mean difference between operating cash flow pricing errors for restaurants and hotels is -3.461, which is significant at the 0.05 level. It should be noted that this pricing error mean is smaller for restaurants than for hotels. Therefore, H3 is supported, indicating that operating cash flow is a more informative variable for explaining stock price variations for restaurant firms than for hotel firms. Additionally, since restaurants on average carry more debt than hotels, operating cash flow might be more critical for restaurants than for hotels.

These results contradict the findings of Liu et al. (2007), who examined firms across many different industries, most of which were large capitalization firms in the S&P 500 Index. In contrast, our study included only hospitality firms that tend to be relatively small in terms of market capitalization. It must also be stressed that the income system for hospitality firms is more immediate; in other words, payments typically coincide with sales. This is an important distinction between manufacturing and hospitality. Therefore, the valuation findings associated with large capitalization firms may not be generalizable to hospitality firms.

### Multiple Regression Analysis

Several multiple regression analyses were performed to examine the explanation power of earnings, dividends, and operating cash flow on share price variations in the hospitality industry. Tables IV, V, and VI present the descriptive statistics, model summary and regression results, respectively. As shown, the model that included constant, earnings, dividends, and operating cash flow was able to account for 46.3% of the share price variations in the hospitality industry. Earnings per share and cash flow per share were statistically significant at the 0.00 level, while dividends per share were statistically significant at the 0.05 level. The coefficient for operating cash flow per share is 3.057, which is larger than both earnings per share (0.651) and dividends per share (0.684).

Four regression models were run in order to obtain the incremental values of EPS, DPS and CPS in explaining stock price variations for both the restaurant industry and the hotel industry.

$$P = \gamma_1 \text{Size} + \gamma_2 \text{ROA} + \gamma_3 \text{DTE} + \gamma_4 \text{CFE} + \varepsilon$$

**Model 2/Equation 5: Regression for the Restaurant Industry without Any Valuation Multiple**

**Table IV: Descriptive Statistics for Regression Models**

		Mean	Std Dev	N
<b>Model 1 All Firms</b>	<b>Price</b>	13.566	20.073	2736
	<b>EPS</b>	0.367	3.962	
	<b>CPS</b>	1.557	3.169	
	<b>DPS</b>	0.152	0.869	
	<b>DTE</b>	3.210	76.823	
	<b>ROA</b>	-0.138	3.409	
	<b>Size</b>	1.086	2.245	
<b>Model 10 Small Size</b>	<b>Price</b>	2.817	5.067	928
	<b>EPS</b>	-0.324	2.810	
	<b>CPS</b>	0.521	3.534	
	<b>DPS</b>	0.059	0.937	
	<b>DTE</b>	2.836	89.785	
	<b>ROA</b>	-0.464	5.820	
	<b>Size</b>	-0.725	1.920	
<b>Model 10 Large Size</b>	<b>Price</b>	27.739	27.836	937
	<b>EPS</b>	1.294	5.821	
	<b>CPS</b>	2.789	3.481	
	<b>DPS</b>	0.279	1.093	
	<b>DTE</b>	2.827	51.193	
	<b>ROA</b>	0.072	0.264	
	<b>Size</b>	2.937	1.469	
<b>Model 11 Restaurant</b>	<b>Price</b>	13.252	20.964	2130
	<b>EPS</b>	0.326	2.063	
	<b>CPS</b>	1.561	2.617	
	<b>DPS</b>	0.115	0.601	
	<b>DTE</b>	3.751	60.053	
	<b>ROA</b>	-0.065	0.853	
	<b>Size</b>	1.291	1.982	
<b>Model 11 Hotel</b>	<b>Price</b>	14.685	16.471	596
	<b>EPS</b>	0.511	7.523	
	<b>CPS</b>	1.544	4.634	
	<b>DPS</b>	0.285	1.465	
	<b>DTE</b>	1.277	118.727	
	<b>ROA</b>	-0.398	7.106	
	<b>Size</b>	0.355	2.886	

**Table V: Model Summary for Model 1**

R	R Square	Adj R Square	Std Error of Estimate	Durbin-Watson
0.685	.470	.463	14.706	2129

**Table VI: Regression Results for Model 1**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Collinearity Statistics	
	B	Std Error	Beta			Tolerance	VIF
(Constant)	6.092	1.181		5.157	.000		
EPS	.659***	.075	.130	8.807	.000	.901	1.110
DPS	.700*	.338	.030	2.071	.038	.918	1.089
CPS	3.057***	.096	.483	31.988	.000	.865	1.157
Ln_EMP	2.017***	.137	.226	14.760	.000	.843	1.186
DTE	-.002	.004	-.008	-.577	.564	.989	1.011
ROA	-.058	.084	-.010	-.690	.490	.959	1.043
Industry	3.269***	.697	.067	4.691	.000	.955	1.047
CFE_1987	-4.774	3.568	-.020	-1.338	.181	.901	1.110
CFE_1988	-3.250	1.875	-.030	-1.733	.083	.639	1.566
CFE_1989	-1.597	1.910	-.015	-.836	.403	.653	1.530
CFE_1990	-4.040*	1.930	-.036	-2.094	.036	.660	1.514
CFE_1991	-1.690	1.867	-.016	-.905	.365	.638	1.568
CFE_1992	.267	1.830	.003	.146	.884	.623	1.606
CFE_1993	1.738	1.779	.018	.977	.329	.601	1.665
CFE_1994	-3.477*	1.744	-.037	-1.994	.046	.583	1.715
CFE_1995	.405	1.672	.005	.242	.809	.549	1.822
CFE_1997	-.149	1.653	-.002	-.090	.928	.538	1.858
CFE_1998	-2.731	1.670	-.031	-1.635	.102	.547	1.828
CFE_1999	-4.281*	1.687	-.048	-2.537	.011	.557	1.796
CFE_2000	-4.229*	1.711	-.046	-2.471	.014	.568	1.761
CFE_2001	-2.365	1.792	-.024	-1.320	.187	.602	1.662
CFE_2002	-3.800*	1.807	-.038	-2.103	.036	.612	1.635
CFE_2003	-.548	1.837	-.005	-.298	.766	.623	1.604
CFE_2004	1.810	1.848	.017	.979	.328	.627	1.595
CFE_2005	4.016*	1.888	.037	2.127	.033	.642	1.557
CFE_2006	5.230**	1.894	.048	2.761	.006	.644	1.552
CFE_2007	2.148	1.928	.019	1.114	.265	.654	1.528
CFE_2008	-4.614*	1.984	-.040	-2.325	.020	.675	1.482
CFE_2009	-2.121	1.984	-.018	-1.069	.285	.675	1.482
CFE_2010	4.128*	2.027	.035	2.036	.042	.670	1.493
CFE_2011	7.555***	2.040	.063	3.703	.000	.686	1.459
CFE_2012	34.565***	4.005	.127	8.631	.000	.904	1.106

\*Significant at the 0.05 level \*\*Significant at the 0.01 level \*\*\*Significant at the 0.000 level

$$P = \gamma_1 EPS_a + \gamma_2 Size + \gamma_3 ROA + \gamma_4 DTE + \gamma_5 CFE + \epsilon$$

**Model 3/Equation 6: Regression for the Restaurant Industry with EPS**

$$P = \gamma_1 DPS_a + \gamma_2 Size + \gamma_3 ROA + \gamma_4 DTE + \gamma_5 CFE + \epsilon$$

**Model 4/Equation 7: Regression for the Restaurant Industry with DPS**

$$P = \gamma_1 CPS_a + \gamma_2 Size + \gamma_3 ROA + \gamma_4 DTE + \gamma_5 CFE + \epsilon$$

**Model 5/Equation 8: Regression for the Restaurant Industry with CPS**

$$P = \gamma_1 Size + \gamma_2 ROA + \gamma_3 DTE + \gamma_4 CFE + \epsilon$$

**Model 6/Equation 9: Regression for the Hotel Industry without Any Valuation Multiple**

$$P = \gamma_1 EPS_a + \gamma_2 Size + \gamma_3 ROA + \gamma_4 DTE + \gamma_5 CFE + \epsilon$$

**Model 7/Equation 10: Regression for the Hotel Industry with EPS**

$$P = \gamma_1 DPS_a + \gamma_2 Size + \gamma_3 ROA + \gamma_4 DTE + \gamma_5 CFE + \epsilon$$

**Model 8/Equation 11: Regression for the Hotel Industry with DPS**

$$P = \gamma_1 CPS_a + \gamma_2 Size + \gamma_3 ROA + \gamma_4 DTE + \gamma_5 CFE + \epsilon$$

**Model 9/Equation 12: Regression for the Hotel Industry with CPS**

**Table VII: Regression Results for Models 2–9**

Industry	Model	Adjusted Square	R
Restaurant	2	0.279	
	3	<b>0.387</b>	
	4	0.278	
	5	0.241	
Hotel	6	0.286	
	7	0.294	
	8	0.289	
	9	0.274	

As illustrated in Table VII, the results associated with our hotel analysis differed from the analytical results for the restaurant industry. Specifically, the regression results indicate that, after incorporating cash flow into the regression model, the adjusted R-square actually decreases from 0.279 to 0.241. However, increases in earnings resulted in an adjusted R-square value from 0.279 to 0.387, which remained largely unchanged after incorporating dividends. For the hotel industry, the regression results indicate that, after incorporating cash flow into the regression model, the adjusted R-square actually decreases from 0.286 to 0.274. However, increases in earnings resulted in an adjusted R-square value from 0.286 to 0.294, which also remains

largely unchanged after incorporating dividends. These results are consistent with the multiple valuation results for the hotel industry. Therefore, neither H1a nor H1b is supported by the regression analyses.

As presented in Table VI, two control variables—namely, size and industry—were also shown to be statistically significant at the 0.000 level. This finding confirms that these three variables do contribute to the explanatory power of share price variations in the hospitality industry. Regression analyses were performed for different sub-groups based on size and industry. Therefore, two more regression models were run to examine how share price variations will be explained differently by operating cash flow among hospitality firms that differ in size.

$$P = \gamma_1 EPS_a + \gamma_2 DPS_a + \gamma_3 CPS_a + \gamma_4 ROA + \gamma_5 DTE + \gamma_6 Industry + \gamma_7 CFE + \epsilon$$

**Model 10/Equation 13: Regression for Small-sized Hospitality Firms**

$$P = \gamma_1 EPS_a + \gamma_2 DPS_a + \gamma_3 CPS_a + \gamma_4 Size + \gamma_5 ROA + \gamma_6 DTE + \gamma_7 CFE + \epsilon$$

**Model 11/Equation 14: Regression for Restaurants Firms**

Table VIII summarizes the coefficients for operating cash flow per share for different sub-groups. According to Table VIII, Hypothesis 2 is not supported, since the coefficient for small-sized hospitality firms is lower in comparison to large-sized hospitality firms. Hypothesis 3 is supported, indicating that operating cash flow is also a more informative variable than either earnings or dividends for explaining stock price variations for restaurant firms (5.018) in comparison to hotel firms (0.838).

**Table VIII: Coefficients Summary for Models 10 and 11**

Group by		CPS Coefficients Unstandardized	Sig
Size	Small	2.768***	0.000
	Large	10.380***	0.000
Industry	Restaurant	5.031***	0.000
	Hotel	0.838***	0.000

## Conclusion and Areas for Future Research

This study utilized a traditional multiple valuation model, in tandem with multiple regression analyses, to evaluate the efficacy of using operating cash flow, earnings and dividends as a way to explain share price variations in the hospitality industry. Following the multiple valuation model, we calculated multiples using operating cash flow, earnings and dividends for each individual firm as well as for industry by year. Using equation (2), we then determined pricing errors, which we subsequently analyzed through T-tests to investi-

gate our proposed hypotheses. The results of the multiple valuation show that Hypothesis 1a is only partially supported. Specifically, our findings indicate that although operating cash flow is more effective than either earnings or dividends in explaining variations in the restaurant industry, it did not yield analogous results for the hotel industry. Similarly, our multiple valuation results support our second hypothesis in that operating cash flow is more effective in explaining share price variations for small-sized hospitality firms than for large-sized hospitality firms. Our multiple valuation findings also uphold our third hypothesis, that compared to earnings and dividends, operating cash flow is a more informative variable for explaining stock price variations for restaurant firms than for hotel firms.

However, our second hypothesis was not supported by our multiple valuation results. Specifically, we were unable to confirm that operating cash flow is an important variable for explaining stock price variations for small hospitality firms in comparison to large hospitality firms. Our multiple regression analyses yielded the same results as the multiple valuation analyses for H3 (thus supporting the hypothesis) and also failed to support H1a and H1b for the hotel industry. Unlike our results from the multiple valuation analysis, the multiple regression analysis did not support H1a or H1b for the restaurant industry or H2.

Business managers are usually tasked to accomplish a long list of goals. Depending on the size and type of firm, at or near the top of that list, one is likely to find the goals of increasing share price and minimizing stock volatility. Various studies have been conducted to provide managers with feasible and effective indicators for the movement of share prices. According to prior studies, earnings have proven to be somewhat reliable in explaining the variability of share price. However, most investigations that have focused on the relationship between stock price and cash flow have used cross-industry data (i.e., mixing service industries with manufacturing) from the S&P 500 Index. To reiterate, these studies do not distinguish the service industry from the manufacturing industry by taking into account the inherently significant differences between them. Thus, results from prior studies may not apply to hospitality firms.

To address this scholarly deficit, the present study was designed to ascertain the optimal strategy for determining stock valuation in the hospitality industry. Based on our analysis, we confirmed that operating cash flow is the best indicator for valuing share prices among hospitality firms, followed by earnings and dividends. By extrapolating this finding, it could be possible to achieve more stable share prices by regularizing a company's cash flow stream.

Additionally, managers and investors concerned about the viability of smaller restaurants should pay particular attention to operating cash flow, since it represents an important component of potential success—more so than in larger hospitality firms.

There are several limitations of this research. The first is related to its departure from the equal sample size assumption in T-tests and ANOVA tests. Regrettably, this limitation could not be avoided, since our sample comprised 2,130 restaurant firm-years but only 596 hotel firm-years. Thus, there is a relatively large sample size difference in the tests for H1 and H3. Moreover, due to the limited number of publicly traded restaurant and hotel firms, matching sample size for the two groups was not desirable, since it would have led to a loss of valuable information associated with the deleted firm years.

The second limitation of this study is the use of operating cash flow—as opposed to free cash flow—as a valuation multiple for hospitality firms. Most prior studies using S&P 500 cross-industry data have relied on free cash flow to obtain their results. However, due to the high initial capital investment and relatively small subsequent capital requirement typified in the hospitality industry, operating cash flow is a more relevant variable in this environment. Nonetheless, this feature could very well limit the comparability of this study's results with other related investigations. This limitation, however, also gives rise to an interesting avenue for future research—namely, comparison of the relationship of operating cash flow and free cash flow with stock prices in a cross-industry setting as well as in the hospitality industry.

A third limitation of this study involves the configuration of the firm datasets we employed. In other words, to employ multiple valuation accurately, an appropriate comparable firm dataset must be created (Fernandez 2007). Due to the small number of hospitality firms, the sample could not be further divided into smaller groups. Thus, other researchers could modify the parameters of this study by forming more specific comparable firm sets with criteria such as market capitalization and financial leverage.

The final limitation of this study involves the use of data from COMPUSTAT. Like any valuation strategy, the valuation results obtained from multiple valuation are only as good as the inputs. Our findings assume that the COMPUSTAT data was reliable, which may not have been the case. However, we are confident that the findings presented herein will help fill a gap in the hospitality literature with respect to linking earnings, dividends, and operating cash flow to stock price in the hospitality industry.

## References

- Ackert, L.F., and B.F. Smith. 1993. Stock price volatility, ordinary dividends, and other cash flows to shareholders. *The Journal of Finance*, 48(4), 1147.
- Bagwell, L.S., and J.B. Shoven. 1989. Cash distributions to shareholders. *The Journal of Economic Perspectives*, 3(3), 129–140.
- Bernard, V.L., and T.L. Stober. 1989. The Nature and amount of information in cash flows and accruals. *The Accounting Review*, 64(4), 624.
- Block, S.B. 1999. A study of financial analysts: Practice and theory. *Financial Analysts Journal*, 55(4), 86–95.
- Carter, R.B., and H.E. Van Auken. 1990. Security analysis and portfolio management. *The Journal of Portfolio Management*, 16(3) 81–85.
- Casey, C., and N. Bartczak. 1985. Using operating cash flow data to predict financial distress: Some extensions. *Journal of Accounting Research*, 23(1), 384–401.
- Chen, M.-H., and W.- G. Kim. 2010. Hotel valuation in China. *Cornell Hospitality Quarterly*, 51(3), 429–445.
- Cohen, D. A., A. Dey, and T.Z. Lys. 2008. Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods. *The Accounting Review*, 83(3), 757–787.
- Dechow, P.M., S.P. Kothari, and R.L. Watts. 1998. The relation between earnings and cash flows. *Journal of Accounting and Economics*, 25(2), 133–168.
- DeFond, M.L., and M. Hung. 2003. An empirical analysis of analysts' cash flow forecasts. *Journal of Accounting and Economics*, 35(1), 73–100.
- Elgonemy, A.R. 2000. The pricing of lodging stocks: A reality check. *Cornell Hotel and Restaurant Administration Quarterly*, 41(6), 18.
- Fama, E.F. 1970. Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, 25(2), 383–417.
- Fama, E.F., and K.R. French. 1993. Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, 33(1), 3–56.
- Fernandez, P. 2001. *Valuation Using Multiples: How Do Analysts Reach Their Conclusions?* University of Navarra.
- Fernandez, P. 2004. *Cash Flow is a Fact. Net Income is Just an Opinion.* University of Navarra.
- Fernandez, P. 2007. Company valuation methods: The most common errors in valuations. In Available at SSRN: <http://ssrn.com/abstract=274973> or doi:10.2139/ssrn.274973: University of Navarra.
- Ferris, G.R., S.D. Rosen, and D.T. Barnum. 1995. *Handbook of Human Resource Management.* Wiley.
- Gallizo, J.L., and M. Salvador. 2006. Share prices and accounting variables: a hierarchical Bayesian analysis. *Review of Accounting and Finance*, 5(3), 268–278.
- Ganchev, O. 2000. Applying value drivers to hotel valuation. *Cornell Hotel and Restaurant Administration Quarterly*, 41(5), 78–89.
- Graham, J.R., C.R. Harvey, and S. Rajgopal. 2005. The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, 40(1), 3–73.
- Huo, Y.H., and F. Kwansa. 1994. Effect of operating and financing leverage on firm's risk. *Journal of the International Academy of Hospitality Research*, 8.
- Jensen, M.C., and W.H. Meckling. 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360.
- Jianan, C., K. Yoon, and L. Seoki. 2011. Does the market care about RevPAR? A case study of five large U.S. lodging chains. *Journal of Hospitality & Tourism Research*, 35(2), 258–273.
- Keynes, J. M. 1936. *The General Theory of Employment Interest and Money.* New York: Harcourt, Brace and Company.
- Kim, J.-E. 2008. *Strategic choice and financial structure in casual themed restaurants.* Master's Thesis. The Virginia Polytechnic Institute and State University.
- Kim, J., H. Kim, and D. Woods. 2011. Determinants of corporate cash-holding levels: An empirical examination of the restaurant industry. *International Journal of Hospitality Management*, 30(3), 568–574.
- Kleidon, A.W. 1986. Variance bounds tests and stock price valuation models. *The Journal of Political Economy*, 94(5), 953.
- Kothari, S.P., and J.L. Zimmerman. 1995. Price and return models. *Journal of Accounting and Economics*, 20(2), 155–192.
- Lee, S., Y. Koh, and K.H. Kang. 2011. Moderating effect of capital intensity on the relationship between leverage and financial distress in the U.S. restaurant industry. *International Journal of Hospitality Management*, 30(2), 429–438.

- Lee, S., and A. Upneja. 2007. Does Wall Street truly understand valuation of publicly traded lodging stocks? *Journal of Hospitality and Tourism Research*, 31(2), 168–181.
- Lee, T.A., R.W. Ingram, and T.P. Howard. 1999. The difference between earnings and operating cash flow as an indicator of financial reporting fraud. *Contemporary Accounting Research*, 16(4), 749–786.
- Liu, J., D. Nissim, and J. Thomas. 2002. Equity valuation using multiples. *Journal of Accounting Research*, 40(1), 135.
- Liu, J., D. Nissim, and J. Thomas. 2007. Is cash flow king in valuations? *Financial Analysts Journal*, 63(2), 56.
- Madanoglu, M., M.D. Olsen, and F.A. Kwansa. 2010. *Restaurant industry risk dimensions and their influence on operating cash flows*. Paper read at International CHRIE Conference–Refereed Track.
- Miller, M.H., and D. Orr. 1966. A model of the demand for money by firms. *Quarterly Journal of Economics*, 80 (3), 413–435.
- O’Sullivan, A., S.M. Sheffrin. Prentice–Hall, and W. S. Journal. 2003. *Economics, Principles in Action*. Prentice Hall.
- Oak, S., W. Andrew, and B. Bryant. 2008. Explanations for the predominant use of cash financing in hospitality acquisitions. *The Journal of Hospitality Financial Management*, 16 (1), 47.
- Olsen, M.D., E.C.–Y. Tse, , and J.J. West. 2007. *Strategic Management in the Hospitality Industry*. Third ed., Prentice Hall.
- Opler, T., L. Pinkowitz, R. Stulz, and R. Williamson. 1999. The determinants and implications of corporate cash holdings. *Journal of Financial Economics*, 52 (1), 3–46.
- Penman, S.H., and T. Sougiannis. 1998. A comparison of dividend, cash flow, and earnings approaches to equity valuation. *Contemporary Accounting Research*, 15 (3), 343–383.
- Pinkowitz, L.F., and R.G. Williamson. 2002. What is a dollar worth? The market value of cash holdings. Available at SSRN, <http://ssrn.com/abstract=355840> or doi, 10.2139/ssrn.355840, Georgetown University.
- Rushmore, S. 1992. Seven current hotel–valuation techniques. *Cornell Hotel and Restaurant Administration Quarterly*, 33 (4), 49–56.
- Scott, L.O. 1985. The present value model of stock prices, regression tests and Monte Carlo results. *The Review of Economics and Statistics*, 67 (4), 599.
- Shiller, R.J. 1981. Do stock prices move too much to be justified by subsequent changes in dividends? *The American Economic Review*, 71 (3), 421.
- Shiller, R.J., and S.J. Grossman. 1981. The determinants of the variability of stock market prices. *The American Economic Review*, 71 (2), 222.
- Sloan, R.G. 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review*, 71 (3), 289.
- Upneja, A., and M. Dalbor. 2001. The choice of long–term debt in the U.S. lodging industry. *Journal of HTL Science*. 1 (1), 19.
- Vernimmen, P., P. Quiry, M. Dallocchio, Y.L. Fur, and A. Salvi. 2005. *Corporate Finance*. Haddington, John Wiley & Sons, Ltd.
- Yong Keun, Y. 2006. The valuation accuracy of equity valuation using a combination of multiples. *Review of Accounting and Finance*, 5 (2), 108.

# A Comparison of Performance Control Approaches Using ROA and CFO as Performance Measures

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## ABSTRACT

The main purpose of this study is to identify a more effective and efficient approach to control for financial performance in earnings management studies. Therefore, our research issues involve comparing three estimation approaches of discretionary accruals. The first approach of using the traditional industry approach—with no performance control—provides a baseline for comparison. The performance controlling approaches are the ROA portfolio approach and the CFO portfolio approach. This study measures the effectiveness of controlling for performance in terms of adjusted  $R^2$  values, consistency, and the statistical significances of the individual coefficients, and type-1 errors. We document that the CFO portfolio approach significantly outperforms both the industry approach and the ROA portfolio approach in terms of adjusted  $R^2$ , coefficient consistency and significance, and type-1 errors. *Keywords:* performance control, earnings management, industry approach, ROA approach, CFO approach

## Introduction

Securities markets in fee enterprise systems depend on the preparation and delivery of external financial statements that are representationally faithful. However, since the 1980's the accounting literature has been populated by accrual-based earnings management studies that are based on the belief that management engages in the purpose driven use of discretionary accruals that impact external financial reporting to facilitate private gain (Schipper 1989). While progress has been made in accrual-based earnings studies, the following literature review indicates that there are opportunities to improve the methodologies employed in this research to gain greater efficiencies, reliability and reduce the tendency to make too many type-1 errors by falsely rejecting the null hypothesis of no earnings management.

## Literature Review

According to Kothari et al. (2005), performance controlled discretionary accrual measures enhance the reliability of inferences from earnings management research. They studied two approaches for performance control: a matched-pair sample selection method based on the return on assets (ROA) versus the use of ROA as an additional variable in the accrual model. Kothari et al. document that discretionary accrual models reject the null hypothesis of no earnings management too often (too many type-1 errors) when applied to samples of firms with extreme ROA performance. Inspired by Kothari et al., many researchers used the matched-pair ROA performance control approach in their studies (see Chaney et al. 2011; Dechow

et al. 2010 among others). Dechow et al. (2012) argued that Kothari et al.'s approach rarely eliminates misspecification and sometimes exaggerates misspecification, and yet, fail to suggest a solution for these problems. Subsequently, Yoon et al. (2016) argued that cash flows from operations (CFO) can be an alternative measure of financial performance for a number of reasons: (1) ROA includes the results of accrual management in addition to CFO; (2) Cash flow management is more costly than accrual management; (3) the use of ROA as a performance proxy leads to an endogeneity problem since accruals affect ROA; (4) Accrual management is easier and less costly than real management; (5) Firms with extremely poor performance may rely more on real management or big-bath strategies, whereas firms with extremely good performance may rely on income-decreasing accrual management.

This study compares the traditional industry approach with two portfolio approaches that use ROA and CFO performance measures, respectively, to control for financial performance. While Yoon et al. (2016) document that a single-step CFO portfolio approach is an efficient and effective way for controlling performance, they did not test an ROA portfolio approach. Therefore, it is worthwhile to compare the ROA and CFO portfolio approaches to control for performance. The single-step estimation approach to control for performance does not go through the two-step process of estimating discretionary accruals by using the industry approach and then employing a time-consuming matched-pair process based on ROA. Instead, performance ranks are used to partition the sample into sub-sample groups by which the accrual models are run to estimate discretionary accruals in a single-step.

Because the estimation of the earnings management metric, discretionary accruals, is dependent on both the estimation approaches and accrual models applied, this study uses two models to provide a basis for comparing estimation approaches. The models used are a modification of the popular modified Jones model (MMJ) and the YK model (Yoon and Kim 2013) which was proven to be better performing than the MMJ model.

Dechow et al. (1995) document that the models tend to incorrectly reject the null hypotheses of no earnings management in the presence of extreme financial performance. Kothari et al. (2005) argue that the accrual models might be misspecified when applied to samples of firms exhibiting extreme performance.

Following Yoon et al. (2016), this study uses a single-step process to control for performance and constructs performance-based portfolios based on ROA or CFO ranks and applies the accrual models to the ROA and CFO portfolios in estimating discretionary accruals. This methodology is in contrast to Kothari et al.'s performance-matched approach that uses a two-step process. The performance-based portfolio approach of estimation is not affected by the endogeneity issue that Kothari et al. encountered with their ROA augmented model. As documented by Yoon et al. (2016), the benefits of the performance-based estimation approach include simplicity, time efficiency and more robust statistical results when estimating discretionary accruals. Furthermore, the approach allows for multiple piecewise-linearity for different coefficients of the same accrual model, and allows for a proper performance control irrespective of firms' performance levels. The portfolio approach can be considered a ten-piecewise linear approach. We believe this to be a much richer piecewise approach than the two-piecewise approach that was suggested by Ball and Shivakumar (2005).

Section II describes our methodology. Section III describes the sample and discusses the empirical results. Section IV provides conclusions.

## Methodology

### Research Issues

The main purpose of this study is to identify a more effective and efficient approach to control for financial performance in earnings management studies. Therefore, our research issues involve comparing three estimation approaches of discretionary accruals. The first approach of using the traditional industry approach—no performance control—provides a baseline for comparison. The performance controlling approaches are the ROA portfolio approach and the CFO portfolio approach. This

study measures the effectiveness of controlling for performance in terms of adjusted R2 values, consistency and the statistical significances of the individual coefficients, and type 1 errors.

### Research Methods

This study compares two accrual models. One is a modification of the MJ model (Dechow et al. 1995), the most popular model in the literature, and the other model is the YK model (Yoon and Kim 2013) which was shown to have greater explanatory power than the original MJ model. Yoon et al. (2014) document that the inadvertent suppression of the intercept term in the original Modified Jones model unduly magnifies coefficients on property, plant and equipment and improves adjusted R2 values. Kothari et al. (2005, 173) also document that “discretionary accrual measures based on models without a constant term are less symmetric, making the power of the test comparisons less clear-cut.” Therefore, instead of using the original MJ model, we change the model by replacing the inverse of firm size with the intercept terms. Formally, the MMJ model used in this study is as follows:

$$TA_t/A_{t-1} = \beta_0 + \beta_1 \Delta CREV_t/A_{t-1} + \beta_2 PPE_{t-1}/A_{t-1} + \varepsilon_t$$

Equation 1

Here, TA represents total accruals;  $A_{t-1}$  represents lagged total assets; PPE represents property, plant and equipment; and  $\Delta CREV$  represents change in cash revenue. The change in cash revenue is defined as the change in revenue less the change in accounts receivable.

Yoon and Kim (2013) show that the YK model outperforms the Jones models in terms of explanatory power and coefficient consistency using Korean data. Yoon et al. (2016) confirm that the YK model outperforms the Jones model using multinational data. The YK model proposed by Yoon and Kim (2013) is as follows:

$$TA_t/A_{t-1} = \beta_0 + \beta_1 \Delta REV_t/A_{t-1} + \beta_2 \Delta NREC_t/A_{t-1} + \beta_3 PPE_{t-1}/A_{t-1} + \beta_4 INTG_{t-1}/A_{t-1} + \varepsilon_t$$

Equation 2

As compared to the MMJ model, the YK model uses  $\Delta REV$  that represents change in revenue; and adds two more variables:  $\Delta NREC$  and  $INTG$ .  $\Delta NREC$  is a proxy for current accruals.  $\Delta NREC$  is defined as the change in accounts receivable less the change in accounts payable.  $INTG$  (intangible assets) is an additional proxy for noncurrent accruals to take into account the fact that intangible assets are becoming more important in the modern technology- and knowledge-dependent business world.

A single-step performance control in the estimation stage of discretionary accruals

As mentioned above, Kothari et al. (2005) use a time-consuming two-step performance control approach. Yoon et al. (2016) propose a single-step CFO portfolio approach. This study applies the same logic of applying a portfolio approach to control for ROA performance rather than applying the two-step approach used by Kothari et al. (2005), and compares the same portfolio approach based on competing measures of performance between net income (ROA) and CFO. The comparison will help identify a better way of controlling performance. Though ROA suffers from endogeneity issues, it is generally considered a better but softer performance measure as compared to CFO.

We construct ten equal-size portfolios based on the ranks of ROAs and CFOs, respectively, from the lowest rank (Portfolio 1) to the highest rank (Portfolio 10). Each of the ten portfolios contained observations of 9,254 firm years. (The number of portfolios can be adjusted based on researcher preferences.) The main benefits of the ROA or CFO portfolio approach are that they are more time-efficient than the two-step approach of controlling for performance, and yet properly control for performance differences at the estimation stage of discretionary accruals.

### **Impact of Estimation Approaches on Earnings Management Inferences**

Following Yoon et al. (2016), this study investigates the consequences of using different combinations of accrual models and estimation approaches (the industry approach, the ROA portfolio approach and the CFO portfolio approach) on adjusted R<sup>2</sup> values, coefficient consistency and significance, and correlation coefficients between different measures of accruals (total accruals, nondiscretionary accruals and discretionary accruals). To corroborate the findings of the study, we show plots of the fitted values (nondiscretionary accruals) estimated by six different combinations of the two models and three estimation approaches.

We conduct t-tests to compare average total accruals between the ROA portfolio approach and the CFO portfolio approach across the ten portfolios which are formed based on ROA and CFO ranks, respectively. This will demonstrate the tendency for overstating or understating accruals depending on the performance control approaches employed.

Use of a good fitting model and proper estimation approach can be identified by conducting type-1 error analyses. We use standardized prediction errors which are obtained from hold-out samples. We first estimate regression coefficients by

running the MMJ and the YK models, respectively, by three different estimation approaches. For the type-1 error analyses, we randomly select 200 firm-years from each of ten ROA (or CFO) portfolios. This leads us to having 2,000 firm-years in total as the hold-out sample. We estimate the models' regression coefficients using all firm-years except for the randomly selected 200 firm-years by each ROA (or CFO) portfolio. Then, we use each model's coefficient estimates to calculate discretionary accruals for the randomly selected firm-years. For the industry approach, since firm-years across industries differ, we select a hold-out sample randomly in proportion to the number of firm-years in each industry so that we can have 2,000 hold-out observations overall. We then compute prediction errors using the coefficients estimated from the estimation samples. Prediction errors are divided by standard errors estimated from the estimation samples to obtain standardized prediction errors. When standardized residuals are greater (less) than 1.645 (-1.645), the null hypotheses of no earnings management are rejected.

## **Results**

### **Sample**

The sample consists of US firm-years data from 62 two-digit industries for the period 1991 to 2012. The initial sample is comprised of 179,977 firm-years for the 12-year period after eliminating first-year data to convert some variables into change variables. Then, we further eliminated firm-years without key financial variables like net income, cash flow from operations and so forth (60,272), foreign firm-years cross-listed on US stock exchanges (17,709), outliers in the total accruals, change in revenue, change in net receivables and so forth from both sides of the extremes when their absolute values are greater than specified multiples (2.5 times for the average change in net receivables, 3.5 times for the average total accruals, 5 times for the average measures for the other variables in the models) of At-1 (9,001), and lastly, firm-years with less than 100 observations in a two-digit industry (471). These procedures left us with a final sample of 92,524 firm-years.

### **Comparison of Estimation Approaches**

Table I compares summary statistics for six different combinations of the two accrual models and the three estimation approaches in terms of adjusted R<sup>2</sup> values and individual regressor's t-values on coefficients. Panel A through C show the results for the industry approach, the ROA portfolio approach and the CFO portfolio approach, respectively. (For the sake of presentational efficiency, regression results by the individual industries, by the ROA portfolios, and the CFO

portfolios are not provided in this paper. These results will readily be provided by the authors.)

Table I shows that the YK model outperforms the MMJ model, in terms of adjusted R<sup>2</sup>, by about 2.4 times (the ROA approach), 2.7 times (the industry approach) and 3.7 times (the CFO approach). Furthermore, the proxies for current accruals, ΔCREV or ΔREV, have insignificant relationships with total accruals when the model is run using the industry approach (t=1.42, MMJ model; t=0.47, YK model) and the ROA approach (t=0.08, MMJ model; t=-0.12, YK model). This problem is remedied under the CFO approach (t=11.31, MMJ model; t=9.27, YK model).

PPE is expected to have a negative relation with total accruals. This relationship is weakly supported under the industry approach (t=-1.53, MMJ model; t=-2.33, YK model). This casts a serious question regarding the validity of using a combination of the MMJ model and the industry approach. Under the ROA and the CFO approaches, however, PPE consistently exhibits significantly negative relationships with total accruals.

Table I clearly reveals that a combination of the YK model and the CFO approach is the best combination in terms of the adjusted R<sup>2</sup> and the individual variables' statistical significances with expected signs. That is, the two proxies for current accruals have significant positive relationships with total accruals (t=9.27 for ΔREV; t=18.74 for ΔNREC) while the

**Table I: Estimation of Accruals**

Panel A: The Industry Approach (62 two-digit SICs)							
Models	Summary Statistics	t-ratios					Adj. R <sup>2</sup>
		Intercept	ΔREV(ΔCREV)	ΔNREC	PPE	INTG	
MMJ	Mean	-4.91	1.42		-1.53		0.036
	Min	-19.45	-8.46		-6.72		-0.014
	Max	4.01	16.17		3.31		0.217
YK	Mean	-2.95	0.47	7.19	-2.33	-2.49	0.097
	Min	-15.93	-10.64	-0.91	-7.57	-10.44	-0.003
	Max	4.43	14.42	28.14	1.82	1.17	0.376

Panel B: The ROA approach (ten equal-sized ROA-based portfolios)							
Models	Summary Statistics	t-ratios					Adj. R <sup>2</sup>
		Intercept	ΔREV(ΔCREV)	ΔNREC	PPE	INTG	
MMJ	Mean	-11.84	0.08		-19.03		0.046
	Min	-51.45	-8.19		-28.56		0.008
	Max	21.47	5.81		-6.17		0.088
YK	Mean	-5.86	-0.12	21.57	-21.00	-11.30	0.109
	Min	-37.49	-9.96	15.15	-29.78	-15.22	0.061
	Max	16.05	6.23	32.39	-4.61	-2.85	0.201

Panel C: The CFO approach (ten equal-sized CFO-based portfolios)							
Models	Summary Statistics	t-ratios					Adj. R <sup>2</sup>
		Intercept	ΔREV(ΔCREV)	ΔNREC	PPE	INTG	
MMJ	Mean	-22.91	11.31		-4.35		0.021
	Min	-44.47	-2.33		-8.78		0.003
	Max	-8.12	17.13		-1.54		0.042
YK	Mean	-15.04	9.27	18.74	-6.66	-9.70	0.078
	Min	-34.54	-4.13	13.90	-11.54	-23.38	0.024
	Max	1.31	15.25	27.21	-3.58	-1.21	0.150

**Models:** MMJ model:  $TA_t/A_{t-1} = \beta_0 + \beta_1 \Delta CREV_t/A_{t-1} + \beta_2 PPE_{t-1}/A_{t-1} + \varepsilon_t$   
 YK model:  $TA_t/A_{t-1} = \beta_0 + \beta_1 \Delta REV_t/A_{t-1} + \beta_2 \Delta NREC_t/A_{t-1} + \beta_3 PPE_{t-1}/A_{t-1} + \beta_4 INTG_{t-1}/A_{t-1} + \varepsilon_t$

**Variables:** TA = total accruals; A<sub>t-1</sub> = lagged total assets; ΔREV = change in revenue; PPE<sub>t-1</sub> = lagged property, plant and equipment; ΔCREV = change in revenue – change in accounts receivable; ΔNREC = change in accounts receivable – changes in accounts payable; INTG<sub>t-1</sub> = lagged intangible assets

two proxies for non-current accruals have significant negative relationships ( $t=-6.66$  for PPE;  $-9.70$  for INTG).

## Descriptive Statistics of Accruals

Table II reports the descriptive statistics for the various accruals. Accruals include three different measures: total accruals, non-discretionary accruals, and discretionary accruals. Nondiscretionary accruals are fitted values, while discretionary accruals are regression residuals. As such, the sum of nondiscretionary accruals and discretionary accruals equals total accruals. Also, mean total accruals should be equal to mean nondiscretionary accruals since discretionary accruals should have a zero mean value by construction.

Total accruals and nondiscretionary accruals all have mean values of  $-0.07$  as expected by construction. The standard deviations of nondiscretionary accruals are larger for the YK model ( $0.07, 0.12,$  and  $0.08$ ) than for the MMJ model ( $0.04, 0.11,$  and  $0.12$ ). Discretionary accruals (residuals) have all zero mean values as expected. The standard deviations of discretionary accruals are nearly the same across the different models and estimation approaches. The ranges between the minimum values and the maximum values of nondiscretionary accruals estimated by the YK model are larger than those of the MMJ model across the three estimation approaches, indicating that the YK model elicits more information from total accruals than the MMJ model does.

Since descriptive statistics or summary statistics fail to show the detailed distributions of the variables, graphical presentations of accruals can be used as a way to evaluate the performances

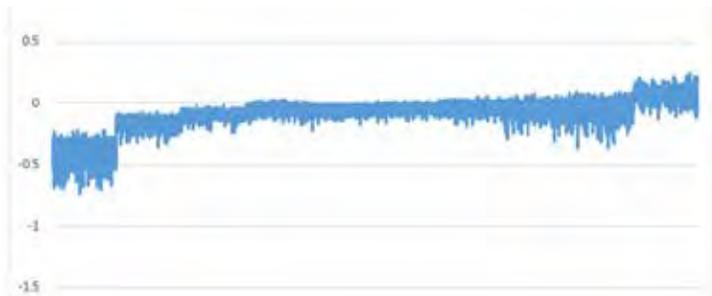
of different models and estimation approaches. Four figures are provided as supplements to Table I and Table II to show the distributions of nondiscretionary accruals estimated from the MMJ model and the YK model under the ROA and CFO estimation approaches. We also analyzed the figure analyses for the nondiscretionary accruals estimated by the MMJ and YK models under the industry approach. The results are similar to those of the ROA and CFO portfolio approaches in that the MMJ model extracts less information from total accruals than the YK model does.

The figures clearly show that the variances of nondiscretionary accruals are much lower for the MMJ model than the YK model under either of the performance controlling estimation approaches. This is consistent with the low adjusted R<sup>2</sup> values of the MMJ model reported in Table I, indicating that the MMJ model elicits far less information from total accruals than the YK model does. Figure I and Figure II show that the MMJ model tends to restrict nondiscretionary accruals to have different step values within bands across the ROA portfolios, whereas the YK model produces less restricted nondiscretionary accruals across the portfolios. For example, Portfolio 1 has nondiscretionary accruals between  $-0.2$  and  $-0.8$ , Portfolio 2 between  $-0.08$  and  $-0.035$ , and so forth.

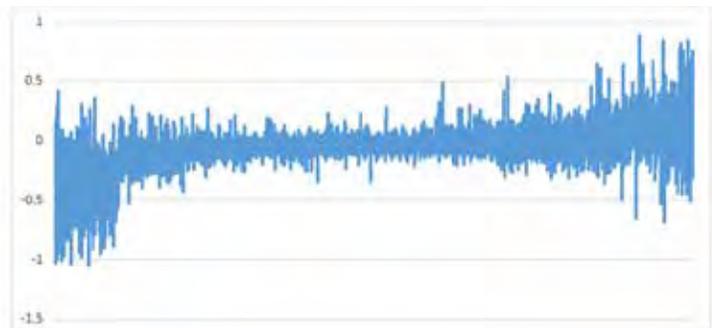
Figure III also shows similar but less distinct step value changes across the portfolios for the MMJ model as compared to Figure I. A comparison of Figure II and Figure IV reveals that the YK model under the CFO portfolio approach elicits more information from total accruals for low-performing firm-years (Portfolios 1 and 2) but not for high-performing ones. This is in contrast to the MMJ model under the ROA portfolio

**Table II: Descriptive Statistics**

Accruals	Estimation Approach	Models	Mean	Median	Std Dev	Min	Max
Total accruals			-0.07	-0.05	0.22	-2.99	2.99
Nondiscretionary Accruals	Industry Approach	MMJ	-0.07	-0.07	0.04	-0.67	0.82
		YK	-0.07	-0.07	0.07	-0.96	1.05
	ROA Approach	MMJ	-0.07	-0.05	0.11	-0.73	0.24
		YK	-0.07	-0.05	0.12	-1.05	0.88
	CFO Approach	MMJ	-0.07	-0.06	0.05	-0.74	0.28
		YK	-0.07	-0.07	0.08	-1.02	1.12
Discretionary Accruals	Industry Approach	MMJ	0.00	0.01	0.22	-2.90	3.07
		YK	0.00	0.02	0.21	-2.95	3.13
	ROA Approach	MMJ	0.00	0.00	0.19	-2.67	2.88
		YK	0.00	0.00	0.19	-2.73	2.99
	CFO Approach	MMJ	0.00	0.02	0.22	-2.97	3.16
		YK	0.00	0.01	0.21	-2.99	3.12



**Figure I: Nondiscretionary accruals from MMJ model—The ROA Approach**

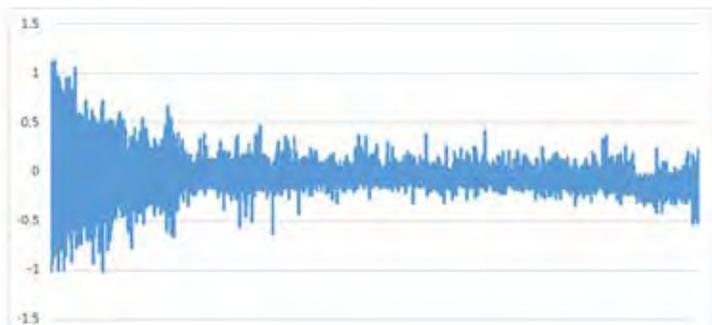


**Figure II: Nondiscretionary accruals from YK model—The ROA Approach**

**Note:** The horizontal axis under the ROA approach indicates observations based on the ten ROA ranked portfolios from the lowest performing to the highest performing. The vertical axis indicates nondiscretionary accruals, measured as a ratio to lagged total assets.



**Figure III: Nondiscretionary accruals from MMJ model – The CFO Approach**



**Figure IV: Nondiscretionary accruals from YK model – The CFO Approach**

**Note:** The horizontal axis under the CFO approach indicates observations based on the ten CFO-ranked portfolios from the lowest performing to the highest performing. The vertical axis indicates nondiscretionary accruals, measured as a ratio to lagged total assets.

approach which shows more volatility in both ends of the extreme performance portfolios.

In summary, the figures show heteroscedasticity issues arise across different performance levels that need to be controlled. Therefore, it is appropriate to control for performance when it comes to the estimation of discretionary accruals, like the ROA portfolio approach or the CFO portfolio approach.

## Impact of Estimation Approaches on Coefficient Consistency and Significance

Table III summarizes the coefficient consistency across estimation approaches.

First, the proxy for current accruals in the MMJ model— $\Delta\text{CREV}$ —has more numerous inconsistent (positive and negative) relations with total accruals. In contrast, the alternative proxy for current accruals in the YK model— $\Delta\text{NREC}$ —shows more consistent positive relations with total accruals (58 out of 62 industries; and ten out of ten in both ROA and CFO portfolios), indicating that  $\Delta\text{NREC}$  is a better proxy for current accruals than  $\Delta\text{CREV}$ . Second, the first proxy for noncurrent accruals— $\text{PPE}$ —predominantly exhibits negative relationships with total accruals (ranging from 46 to 52 out of 62 industries; and ten out of ten in both ROA and CFO portfolios). The second proxy for noncurrent accruals— $\text{INTG}$ —also shows similar results as  $\text{PPE}$ . The results indicate that the performance control approach functions better than the industry approach without a performance control in ensuring coefficient consistency and significance.

Second, the CFO portfolio approach does a much better job in enhancing both the consistency and significance of the first proxy for current accruals— $\Delta\text{CREV}$  or  $\Delta\text{REV}$ —than the ROA portfolio approach does. That is, under the ROA portfolio approach,  $\Delta\text{CREV}$  or  $\Delta\text{REV}$  exhibit 60% significantly positive and 40% significantly negative relationships with total accruals. However, the relationship between these variables and total accruals increases to a 90% significantly positive relationship under the CFO portfolio approach. Other variables— $\Delta\text{NREC}$ ,  $\text{PPE}$  and  $\text{INRG}$ —demonstrate essentially equivalent consistent and statistically significant relationships with the dependent variable, total accruals under both ROA and CFO portfolio approaches.

The results indicate that the CFO portfolio approach outperforms both the industry approach and the ROA portfolio approach in ensuring the consistency and significance of coefficients

**Table III: Coefficient Consistency**

Panel A: The Industry Approach (62 two-digit SIC industries)					
		Models			
		MMJ		YK	
Variables	Sign	Counts	Significant Counts	Counts	Significant Counts
Intercept	+/-	4/58	1/49	7/55	2/31
$\Delta$ REV or $\Delta$ CREV	+/-	37/25	23/18	31/31	20/20
$\Delta$ NREC	+/-			58/4	52/0
PPE	+/-	16/46	4/30	10/52	1/42
INTG	+/-			6/56	0/37

Panel B: The ROA Approach (ten ROA portfolios)					
		Models			
		MMJ		YK	
Variables	Sign	Counts	Significant Counts	Counts	Significant Counts
Intercept	+/-	4/6	4/6	5/6	5/4
$\Delta$ REV or $\Delta$ CREV	+/-	6/4	6/4	6/4	6/4
$\Delta$ NREC	+/-			10/0	10/0
PPE	+/-	0/10	0/10	0/10	0/10
INTG	+/-			0/10	0/10

Panel C: The CFO Approach (ten CFO portfolios)					
		Models			
		MMJ		YK	
Variables	Sign	Counts	Significant Counts	Counts	Significant Counts
Intercept	+/-	0/10	0/10	1/9	0/8
$\Delta$ REV or $\Delta$ CREV	+/-	9/1	9/1	9/1	9/1
$\Delta$ NREC	+/-			10/0	10/0
PPE	+/-	0/10	0/9	0/10	0/10
INTG	+/-			0/10	0/9

**Variable:s**

$\Delta$ REV = Changes in revenues/Lagged total assets;  
 $\Delta$ CREV = (Changes in revenues – Changes in accounts receivable)/Lagged total assets;  
 $\Delta$ NREC = (Changes in accounts receivable – Changes in accounts payable)/Lagged total assets;  
PPE = Lagged property, plant and equipment/  
Lagged total assets;  
INTG = Lagged intangible assets/Lagged total assets

**Impact on Correlation Coefficients between Accruals and on Accrual Levels**

Table IV reports the correlation coefficients between pairs of various accruals. The accruals include total accruals, non-discretionary accruals and discretionary accruals from the combinations of two accrual models and three estimation approaches. The YK model outperforms the MMJ model by showing higher correlations between total accruals and nondiscretionary accruals (0.33 vs. 0.20 under the industry approach; 0.55 vs. 0.51 under the ROA approach; and 0.35 vs. 0.20 under the CFO approach). A corollary to the NDA results is the higher correlation coefficients between TAs and

DAs (discretionary accruals) for the MMJ model than for the YK model.

The correlation coefficients between NDAs and DAs from the same model are all zeroes as expected by construction (See diagonal shaded but unboxed six cells in Panels A, B and C). However, correlation coefficients between the MMJ model's DAs and the YK model's NDAs are still significantly positive, ranging between 0.09 and 0.23 (See the boxed three cells in Panels A, B and C). In contrast, the correlation coefficients between the YK model's DAs and the MMJ model's NDAs are zero (See the boxed and shaded three cells in Panels A, B and C). This indicates that the MMJ model underestimates

NDA as compared to the YK model and that a significant amount of DAs from the MMJ model can be further explained by the YK model, but not vice versa.

The ROA approach results in higher correlations between total accruals and nondiscretionary accruals. It is not plausible to argue that the ROA works better than the CFO approach. However, it looks like that the higher correlation between total accruals and nondiscretionary accruals under the ROA approach results from the fact that ROA includes managed accruals, thereby systematically misstating nondiscretionary accruals. This possibility is corroborated in Table V which shows statistical differences in total accruals between the same level portfolios of ROA and CFO. For portfolios 1 through 3, the ROA portfolios have significantly more negative total accruals, while for portfolios of 5 through 10, the ROA portfolios have significantly more positive accruals than the CFO portfolios do.

**Table IV: Correlation Coefficients between Accruals**

Panel A: The Industry Approach				
	TA	MMJNDA	YKNDA	MMJDA
MMJNDA	0.20			
YKNDA	0.33	0.61		
MMJDA	0.98	0.00	0.21	
YKDA	0.94	0.00	0.00	0.96

Panel B: The ROA Approach				
	TA	MMJNDA	YKNDA	MMJDA
MMJNDA	0.51			
YKNDA	0.55	0.93		
MMJDA	0.86	0.00	0.09	
YKDA	0.83	0.00	0.00	0.97

Panel C: The CFO Approach				
	TA	MMJNDA	YKNDA	MMJDA
MMJNDA	0.20			
YKNDA	0.35	0.58		
MMJDA	0.98	0.00	0.23	
YKDA	0.94	0.00	0.00	0.96

**Variables:** TA: total accruals; MMJNDA: nondiscretionary accruals from the MMJ model; YKNDA: nondiscretionary accruals from YK Model; MMJDA: discretionary accruals from the MMJ model; YKDA: discretionary accruals from YK Model

## Impact on Type-1 Errors

Table V summarizes the results of type-1 error analyses. When standardized residuals are greater than 1.645 or less than -1.645, the null hypotheses of no earnings management are rejected.

For the type-1 error analyses with 2,000 observations, we set the benchmark rejection rate of 2.5% with a confidence interval of 1.8% and 3.2% for either the income-increasing earnings management (IIEM) or the income-decreasing earnings management (IDEM); and the benchmark rejection rate for the total hold-out sample was set to be 5% with a confidence interval of 4.0% and 6.0%. For Low and High CFO quartiles with 500 observations each, the confidence intervals of 2.5% and 5% significance levels are between 1.1% and 3.9% and between 3.1% and 6.9%, respectively. For Mid CFO quartiles with 1,000 observations, they are between 1.5% and 3.5% and between 3.6% and 6.4%, respectively.

The last row of Table VI, showing type-1 errors for the total hold-out sample, indicates that the MMJ model under the ROA approach over-rejects the null-hypothesis of no earnings management and the YK model under-rejects under the CFO approach. However, when firm-years are broken down into different performance groups, the results are very different. Under the industry approach, both the income-increasing and income-decreasing earnings management are over-rejected for the low ROA or CFO quartile, ranging between 5.4% and 7.8% which significantly exceed the benchmark rate of 2.5%. The same is true with the sub-total for the Low ROA or CFO quartile with the rejection rates ranging between 13.0% and 13.9% which far exceed the benchmark rate of 5%. The results are consistent with Dechow et al. (1995) and Kothari et al. (2005). However, when the ROA or CFO approach is used, the income-increasing rejection rates fall within the confidence interval across the models, even though the income-decreasing rejections rates all exceed the benchmark rate of 2.5%.

For the Mid CFO quartiles (50% of the hold-out sample), the industry approach always under-rejects both of the income-increasing and income-decreasing earnings management, ranging from 0.6% for the income-increasing rejections to 1.3% for the income-decreasing rejections. As a result, the sub-total rejection rates for the Mid CFO quartiles, ranging between 1.8% and 1.9%, are far below the benchmark rate of 5%. The MMJ model under the ROA approach and the YK model under the CFO approach under-rejects the income-increasing earnings management at 0.9%.

For the High ROA or CFO quartile, the industry approach tends to under-reject with a rejection rate of 0.7% across the models. However, the income-increasing earnings management is over-rejected and the income-decreasing earnings manage-

**Table VI: Type-1 Errors (2,000 hold-out observations)**

*Income-increasing earnings management (IEM): Standardized residuals > 1.645 (Test for H<sub>a</sub>: accruals >0)*

*Income-decreasing earnings management (IDEM): Standardized residuals < -1.645 (Test for H<sub>a</sub>: accruals <0)*

Performance Groups	Earnings Management Classification	Models					
		MMJ			YK		
		Industry Approach	ROA Approach	CFO Approach	Industry Approach	ROA Approach	CFO Approach
Low CFO (or ROA) (1 <sup>st</sup> quartile)	IEM	<b>6.1</b>	2.4	1.8	<b>5.4</b>	2.2	1.8
	IDEM	<b>7.8</b>	<b>5.0</b>	<b>6.8</b>	<b>7.6</b>	<b>5.6</b>	<b>6.2</b>
	Sub-total	<b>13.9</b>	<b>7.4</b>	<b>8.6</b>	<b>13.0</b>	<b>7.8</b>	<b>8.0</b>
Mid CFO (or ROA) (2 <sup>nd</sup> and 3 <sup>rd</sup> quartiles)	IEM	<b>0.6</b>	3.0	<b>0.9</b>	<b>0.6</b>	2.7	<b>0.9</b>
	IDEM	<b>1.3</b>	3.5	3.0	<b>1.2</b>	<b>3.6</b>	3.4
	Sub-total	<b>1.9</b>	<b>6.5</b>	3.9	<b>1.8</b>	6.3	4.3
High CFO (or ROA) (4 <sup>th</sup> quartile)	IEM	<b>0.7</b>	<b>6.0</b>	3.8	<b>0.7</b>	<b>4.8</b>	2.8
	IDEM	2.7	<b>0.6</b>	2.4	2.9	<b>0.6</b>	2.8
	Sub-total	3.8	6.6	6.2	3.6	5.4	5.6
Total hold-out	IEM	2.0	<b>3.6</b>	1.9	1.8	3.1	<b>1.6</b>
	IDEM	<b>3.3</b>	3.2	<b>3.8</b>	<b>3.3</b>	<b>3.4</b>	<b>4.0</b>
	Sub-total	5.3	<b>6.8</b>	5.7	5.1	<b>6.5</b>	5.6

**Notes:** Cell entries are % rejected of no earnings management. The rejection rates outside of the confidence interval of type-1 error of zero accruals appear in bold type.

**Confidence Intervals:** Low CFO (ROA) and High CFO (ROA) quartiles: (1.1%, 3.9%) for IEM and IDEM; (3.1%, 6.9%) for sub-total; Mid CFO (ROA) quartiles: (1.5%, 3.5%) for IEM and IDEM; (3.6%, 6.4%) for sub-total; Total hold-out sample: (1.8%, 3.2%) for IEM and IDEM; (4.0%, 6.0%) for sub-total

ment is under-rejected under the ROA approach, while the rejection rates fall within the confidence interval of no earnings management under the CFO approach.

The results indicate that the CFO approach works better than the industry approach and the ROA approach in controlling performance and eliminating or mitigating the over- or under-rejection problems caused. Overall, the CFO approach is superior not only to the industry approach but also to the ROA approach when it comes to type-1 errors.

## Conclusions and Areas for Future Research

Kothari et al. (2005) document that performance controlled discretionary accruals improve inferences about earnings management by using a ROA matched performance control approach. Yoon et al. (2016) document that a single-step CFO portfolio approach is both an efficient and effective method of controlling for performance. However, Yoon et al. do not address the issue of applying a similar portfolio approach to ROA-based performance portfolios. This study compares three approaches for estimating discretionary accruals: the industry approach which does not control performance, and two approaches that do control for performance; the ROA and the CFO portfolio approaches. Of these, the ROA portfolio

approach is new to the literature, and the CFO portfolio approach was documented by Yoon et al. (2016) as doing a good job at controlling performance control and at enhancing other statistical properties.

The study documents that the CFO approach is superior not only to the industry approach but also to the newly attempted ROA approach in terms of adjusted R<sup>2</sup> values, coefficient consistency and significance, and type-1 errors. In addition, this study supports the findings of Yoon and Kim (2013) and Yoon et al. (2016) that the YK model outperforms the MMJ model. If there is in fact a “best” approach for estimating discretionary accruals and it is applied in evaluating performance the result may positively affect free enterprise system.

We make a contribution to performance control literature by comparing the ROA approach and the CFO approach and showing that the CFO approach better performs than the ROA approach and the industry approach.

## References

- Ball, R., and L. Shivakumar. 2006. The role of accruals in asymmetrically timely gain and loss recognition. *Journal of Accounting Research*, 44 (2): 207–242.
- Chaney, P., M. Faccio, and D. Parsley. 2011. The quality of accounting information in politically connected firms. *Journal of Accounting and Economics*. 51, 58–76.
- Dechow, P., R. Sloan and A. Sweeny. 1995. Detecting earnings management. *The Accounting Review*. 70, 193–225.
- Dechow, P., W. Ge and C. Schrand. 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*. 50, 344–401.
- Dechow, P., A. Hutton, J.H. Kim and R. Sloan. 2012. Detecting earnings management: A new approach. *Journal of Accounting Research*. 50(2), 275–334.
- Kothari, S., A. Leone and C. Wasley. 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics*. 39, 163–197.
- Schipper, K. 1989. Commentary on earnings management. *Accounting Horizons*. 3: 91–102.
- Yoon, S. and H. Kim, 2013. A study on the models for the estimation of discretionary accruals, *The Korean Accounting Review*. 38(4), 61–93.
- Yoon, S., H. Kim, and G. Woodruff. 2016. A CFO based performance control in earnings management studies. *The Korean Accounting Review*. 41(3), 171–202.
- Yoon, S., H. Kim, and G. Woodruff. 2014. On the models and estimation of discretionary accruals. Working paper.





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