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EDITORIAL BOARD MEMBERS

TABLE OF CONTENTS

EDITORIAL BOARD MEMBERS III

LETTER FROM THE EDITOR VII

AUDITING FOR USEFULNESS: A NEW CONCERN? 1
Carl Brewer, Sam Houston State University
Alice Ketchand, Sam Houston State University
Jan Taylor Morris, Sam Houston State University

REVERSE CONVERTIBLE NOTES: DETERMINANTS OF SECONDARY MARKET PRICES 9
Stephen J. Cotten, University of Houston - Clear Lake
Timothy B. Michael, University of Houston - Clear Lake
Ivelina Pavlova, University of Houston - Clear Lake
Jeffrey Whitworth, University of Houston - Clear Lake

AN OBSERVATIONAL FIELD STUDY OF CONSUMER BEHAVIOR AT MCDONALD'S 19
Gurinderjit B. Mehta, Sam Houston State University
Sanjay S. Mehta, Sam Houston State University

AN ANALYSIS OF US STOCK MARKET VOLATILITY OVER TIME 29
Steve A. Nenninger, Sam Houston State University

ANALYZING SUPERVISORY COMMUNICATION COMPETENCY: AN APPLICATION OF MESSAGE DESIGN LOGICS THEORY 39
Kathryn S. O'Neill, Sam Houston State University
Geraldine E. Hynes, Sam Houston State University
Heather R. Wilson, Sam Houston State University

TERRORISM AND ECONOMIC GROWTH: LESSONS FOR EGYPT AND THE ARAB SPRING ECONOMIES 51
Tamer Rady, Ain-Shams University

LINKING IS AUDIT CONCEPTS TO THE REAL WORLD VIA AN EXPERIENTIAL LEARNING EXERCISE 59
Sandra Blanke, University of Dallas
Sue Conger, University of Dallas
Liz Mulig, University of Dallas

LETTER FROM THE EDITOR

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This is a Special Issue edited by Joey Robertson as a result of the Sam Houston State University conference held in April. We appreciate the opportunity to present the outstanding papers selected from the participants of that conference.

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Laura Sullivan
Special Issue Editor
Sam Houston State University

AUDITING FOR USEFULNESS: A NEW CONCERN?

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Jan Taylor Morris, Sam Houston State University

ABSTRACT

This paper argues that recent changes in the U.S. Generally Accepted Accounting Principles (GAAP) hierarchy logically lead to a new audit objective. The elevation of FASB SFAC 1, The Objectives of Financial Reporting by Business Enterprises, into GAAP also elevated the objective of providing information useful for making economic decisions into the GAAP hierarchy. Since auditing standards require the auditor to indicate if the financial statements are in conformity with GAAP and GAAP now contains the useful information objective, it is a logical conclusion that the audit report must also indicate if the information in the financial statements is useful for making economic decisions.

THE CURRENT AUDIT OBJECTIVE

The primary audit objective for audits of U.S. companies is that the audit client's financial statements *present fairly* its financial position in conformity with U.S. Generally Accepted Accounting Principles (GAAP). As new GAAP is promulgated auditors must consider the new or amended accounting principles as they perform their services. However, as discussed later, when the Financial Accounting Standards Board (FASB) elevated the Conceptual Framework (the Concepts) into GAAP, this may have created a need for reconsideration of the current primary audit objective. The Concepts stress the qualitative characteristic of usefulness of accounting information. Perhaps auditors will no longer be auditing fair presentation of financial information but rather auditing for usefulness.

STATEMENTS OF FINANCIAL ACCOUNTING CONCEPTS

Statements of Financial Accounting Concepts were originally derived by the FASB as a theory on which the Board could base its Statements of Financial Accounting Standards (SFASs). The SFASs of FASB, not the FASB Concept Statements, were GAAP.

Statement of Financial Accounting Concepts (SFAC) 1, *Objectives of Financial Reporting by Business Enterprises* (FASB 1978, 16-17), stated: "Financial reporting should provide information that is useful ... in making rational investment, credit, and similar decisions."

Since the Concepts Statements, as originally proposed, did not establish GAAP (FASB 1978, 6), the usefulness objective was not part of GAAP and could have no direct effect on the audit.

THE GAAP HIERARCHY AS PART OF AUDITING STANDARDS

Prior to 2008, the GAAP hierarchy was located in auditing standards rather than in the accounting standards and could be found in *AICPA Professional Standards* AU Section 411, *The Meaning of Present Fairly in Conformity with Generally Accepted Accounting Principles* (AICPA 2009) . AU Section 411 described GAAP as a four-tiered hierarchy.

The Concepts were not identified as part of the four-tiered GAAP hierarchy but instead were classified as other accounting literature and to be considered when no guidance could be found in the tiered GAAP hierarchy (AICPA 2009, AU Section 411). AU Section 411.11 indicated that "the FASB Concepts Statements would be more influential than other sources in this category " (AICPA 2009).

How the GAAP hierarchy came to be under the control of the AICPA reflects back on the origins of GAAP itself. After the stock market crash of 1929, the American Institute of Accountants (AIA), later becoming the AICPA in 1957, determined that there was a need for accounting principles that had general acceptance and began to issue authoritative standards for use in preparation of financial statements. The Securities Exchange Commission, created in 1934 to oversee the securities markets and, thus, publicly traded companies' financial reports, deferred to the AIA to formulate GAAP. Thus, the public accounting profession determined both accounting standards and auditing standards from 1934 until 1973.

In 1973 the AICPA abandoned its search for GAAP and helped found the Financial Accounting Foundation. The Financial Accounting Foundation established the FASB. The SEC recognized FASB as the organization to develop new GAAP and to modify existing GAAP. The auditors, then, were getting out of the GAAP business, yet, the specification of the GAAP hierarchy remained in the auditing standards for over 35 more years.

The Sarbanes-Oxley Act of 2002 (U.S. House of Representatives 2002, Section 103) created the Public Company Accounting Oversight Board (PCAOB) to oversee the public accounting profession in the U.S., thereby ending the AICPA's authority to determine auditing standards for public companies. When the PCAOB was formed, it adopted the standards of the AICPA as interim standards, however, in 2008, the board issued Auditing Standard No. 6, which effectively removed the GAAP hierarchy from auditing standards for audits of public companies.

In 2008 FASB issued SFAS 162, *The Hierarchy of Generally Accepted Accounting Principles* (FASB 2008). SFAS 162 brought the existing GAAP hierarchy into accounting standards at the same time that the hierarchy was deleted from auditing standards for public companies by the PCAOB and AU 411 was withdrawn by the AICPA.

ELEVATION OF THE CONCEPTS STATEMENTS INTO GAAP

SFAS 162 was superseded by SFAS 168, *The FASB Accounting Standards Codification and the Hierarchy of Generally Accepted Accounting Principles*, in 2009 (FASB, 2009). SFAS 168 established the FASB Accounting Standards Codification (ASC) as the only source of authoritative GAAP and also established a two tier GAAP hierarchy: 1) authoritative GAAP and 2) nonauthoritative GAAP. Authoritative GAAP is the Codification itself.

SFAS 168 (paragraph 9) indicated: "If the guidance for a transaction or event is not specified within a source of authoritative GAAP for that entity, an entity shall first consider accounting principles for similar transactions or events within a source of authoritative GAAP for that entity and then consider nonauthoritative guidance from other sources."

SFAS 168 specified nonauthoritative GAAP as consisting of FASB Concepts Statements as well as other items, such as practices widely recognized in an industry, accounting textbooks, and International Financial Reporting Standards (FASB 2009, 3). In the Exposure Draft of SFAS 168 the FASB stated that the Concepts would normally be more influential than other nonauthoritative GAAP, but this was eliminated from the final standard (FASB 2009, para. A19). In SFAS 168 itself, FASB indicated that FASB may elevate the Concepts into the Codification as part of its conceptual framework project but that they would not do so at the time of issuance of SFAS 168 (FASB 2009, para. A19). Yet, the prospect looms that the Concept Statements, while already part of nonauthoritative GAAP, may become part of authoritative GAAP. In fact the SEC has indicated it envisions a GAAP hierarchy where the Concepts Statements are included in authoritative GAAP (SEC, 2003, para.IV(c)). At a minimum the content of SFAS 168, with the Concepts as a part of the GAAP hierarchy, has been incorporated into the Codification.

A CONTRADICTION

It must be pointed out that FASB has contradicted itself. SFAS 168 states that, in FASB's view, the issuance of the Statement and the Codification would not change GAAP (FASB 2009, Summary, para. A14, para. A19). Nevertheless, it has changed GAAP, because the Concepts are now explicitly recognized by FASB as part of GAAP. Also, while SFAC No. 8 (FASB 2010), which superseded SFAC 1 (as well as SFAC 2), states that it is not part of *authoritative* GAAP, SFAC Nos. 4-7 continue to specifically state that the Concepts are not part of GAAP. Again, this is a contradiction because these Concepts are now recognized by FASB as a part of nonauthoritative GAAP.

Further, as noted previously, FASB has indicated that it intends to elevate the Concepts into authoritative GAAP via the conceptual framework project. In a project update, the FASB notes that respondents to documents issued by the FASB and the IASB should assume that the Concepts authoritative status will be elevated in the US GAAP hierarchy to a status comparable

to the IASB's current Framework (FASB Conceptual Framework Project Update, 2006). The IASB's Conceptual Framework currently provides guidance to financial statement preparers when there is no standard or interpretation specifically applicable to a particular or similar transaction or event. In other words, the IASB treats its Concepts as authoritative guidance.

How these contradictions will be resolved is a fundamental issue. The analysis presented below relies on and assumes to be true that GAAP has been changed in that the Concepts are now explicitly part of nonauthoritative GAAP; and moreover are expected, at the conclusion of the FASB's conceptual framework project, to be explicitly a part of authoritative GAAP.

A NEW AUDIT OBJECTIVE

At the present time the objective of the audit is to express an opinion on the fairness of the financial statements in conformity with GAAP. The audit report must state whether the financial statements are presented in accordance with GAAP. SFAC No. 8, issued in September 2010, superseding SFAC 1 and 2, notes in OB 2 that "the objective of general purpose financial reporting is to provide financial information about the reporting entity that is ***useful*** to existing and potential investors, lenders, and other creditors in making decisions about providing resources to the entity" (emphasis added). However, via the Codification, SFAC No. 8 is now part of GAAP, specifically, SFAC No. 8 is part of nonauthoritative GAAP, but, as previously noted, may be elevated into authoritative GAAP.

The elevation of SFAC No. 8, which discusses the objective of general purpose financial reporting, into nonauthoritative GAAP, also elevated the objective of providing information useful for economic decision making into the GAAP hierarchy. Since auditing standards require the auditor to indicate if the financial statements are in conformity with GAAP, and GAAP now contains the useful information objective, it seems worth considering whether or not the audit must address and the audit report must indicate if the information in the financial statements is useful for economic decision making.

In other words, a simple logical inference leads to the conclusion that a new audit objective may be evolving. Perhaps the objective of the audit will no longer be focused on the question, "Do the statements present fairly?" but instead, "Do the statements provide information useful for making decisions about providing resources to the entity?" Why? Because auditing standards require the auditor to indicate if the financial statements are in conformity with GAAP and to be in conformity with GAAP under the existing hierarchy, the financial statements must provide information that is useful in making these types of decisions.

"UNDERSTANDABILITY" IN EXISTING AUDITING STANDARDS

Some may say that auditors are already concerned with usefulness. Auditing standards do require the auditor to test management assertions regarding presentation and disclosure that

are embedded in the financial statements (AICPA, 2009, AU326). One, "Classification and Understandability," indicates that management asserts that financial information has been appropriately presented and described and that disclosures are clearly expressed.

Regarding auditor opinion formulation, both the AICPA and PCAOB make references to understandability. For instance, the PCAOB states "The auditor's opinion that financial statements present fairly ... in conformity with generally accepted accounting principles should be based on his or her judgment as to whether ... the financial statements ... are informative of matters that may affect their use, understanding, and interpretation ...." (PCAOB, 2010, 411.04)

In auditing, the objective is to test management's assertions, so, theoretically the auditor is supposed to be auditing "understandability" already. Of course, understandability is not the same as usefulness, but in SFAC No. 8, the FASB defines understandability as "a qualitative characteristic that enables users to comprehend the information and therefore make it useful for making decisions (FASB, 2010)." In short, information cannot be useful if it not understandable.

"USEFULNESS" IN EXISTING AUDITING STANDARDS?

So, if the Concepts will potentially be considered GAAP (nonauthoritative, albeit), one could infer that by incorporating the Concepts into nonauthoritative GAAP, FASB is raising the bar relative to the usefulness of reported information. How will this translate for auditors?

SFAC No. 8 lists two primary decision-specific qualities for information to be useful, i.e., relevance and faithful representation. Relevant financial information is capable of making a difference in a user's decision making process. FASB notes that information is relevant if it has predictive value, confirmatory value, or both. Auditors do not currently audit for the primary decision-specific quality of relevance, nor do they audit for its ingredients. Auditors do, of course, consider materiality—which the FASB considers an entity-specific aspect of relevance that is based on the nature and/or magnitude of the related items in the context of the individual entity's financial reports—in determining the scope of their audits but auditors do not audit for the characteristic of materiality.

Faithful representation is a different issue. Auditors routinely audit management's assertions for occurrence, completeness, accuracy, existence, classification and understandability, and valuation. These assertions seem to address faithful representation and its ingredients of completeness, neutrality, and freedom from error (as well as the enhancing qualitative characteristics of verifiability and understandability). One can conclude, then, that auditors audit for one of the two dimensions of information usefulness already.

CONCLUSIONS

Given that auditors already audit for one of the two dimensions of information usefulness, can the audit of the other dimension, relevance and its components of predictive

value and confirmatory value, be far over the horizon? Does the elevation of "usefulness" into GAAP not push the profession in this direction?

At the very least, including the usefulness criteria via the FASB Concepts into the GAAP hierarchy may further widen the "audit expectation gap" – defined by Liggio (1974) as the difference between financial statement user expectations of the audit and the expectations of the independent accountant. Perhaps a change in the stated audit objective may not occur, but—as the concepts become more fully integrated into the GAAP hierarchy—the users, including the preparers of financial statements, may begin to expect the auditor to consider the items that make up "relevance" of financial information.

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REVERSE CONVERTIBLE NOTES: DETERMINANTS OF SECONDARY MARKET PRICES

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ABSTRACT

We examine the secondary market price changes and their determinants for a large sample of reverse convertible notes issued by the Royal Bank of Canada. Our dataset includes 1,112 reverse convertible notes issued by the Royal Bank of Canada (RBC) between January 2007 and October 2010. We find that the daily return of the reference stock is the most important factor affecting secondary market prices of RC notes. Further research including liquidity proxies may improve the goodness of fit of our models.

INTRODUCTION

Reverse convertible (RC) notes are unsecured short-term securities backed by an issuing bank and tied to an underlying stock. At maturity, the owner receives either full par value plus a relatively large coupon payment, or if the value of the stock has fallen to a barrier price, a predetermined number of shares of the stock. There are three possible outcomes of owning an RC: (1) the underlying stock price stays flat, so the investor collects their principal and the large coupon payment; (2) the underlying stock price increases, so the investor collects their principal and large coupon payment but foregoes the gains from owning the stock directly, or (3) the underlying stock price decreases and the investor is paid in stock at a loss. Issued since 1998, the market for RCs has dramatically grown in recent years, exposing inexperienced investors to what can appear on the surface to be highly-desirable fixed-income securities despite having a risky option component.

Recent research has shown that RCs have been a windfall for issuing banks. Investors, exposed to both the risk of changes in the underlying stock price and the credit risk of the issuer, have been consistently overpaying (see Ruf, 2011; Szymanowska, et al, 2009; Stoimenov and Wilkens, 2005). In 2010, for example, the S&P 500 Index returned 8 percent and corporate bonds gained 11.1%, while RCs, a $6 billion market that year, lost 1% on average. Banks, meanwhile, charged fees averaging 1.6% on three-month RCs (Faux, 2011). FINRA has issued a formal warning to investors that RCs contain significantly greater risks than standard bonds and

that only the default and credit risk are covered by the credit rating – not the risk of variations in the price of the underlying equity.

Reverse-convertibles, being of short maturity, are typically a buy-and-hold investment although a secondary market for them does exist. This secondary market is thin, providing limited liquidity, but is of academic interest because of what transactions may reveal about the behavior of investors in the primary market. Given the large nominal returns of successful RC investments, the speculative motive for selling an existing RC rather than holding it to maturity is to get rid of it before the underlying stock hits the barrier price (with a buyer betting the underlying will not hit) or if the issuing bank is expected to be unable to make the coupon payment. Secondary market trades driven by credit risk more than stock price changes may suggest that credit risk has surprised primary market investors. Likewise, trades driven more by stock price changes may suggest that the option component has surprised primary market investors.

Using secondary market data for RCs issued by the Royal Bank of Canada (RBC), which allows us to factor out effects on RC prices of different issuers and focus on the effect of the underlying stock prices and changes in RBC's credit risk, we find that there is a strong relationship between the return of the reference stock and daily price changes of the RC, while term-structure variables and issuer credit risk do not appear to be significant determinants. This suggests that investors may have focused too much on the fixed-income component of RCs and have insufficiently accounted for the option component and are reacting accordingly in the secondary market. We also find that RCs exhibit an inverted yield curve. Given that the structure of these securities lends strongly to a normal yield curve, this may be further evidence of the degree to which inexperienced investors are making poor decisions with respect to RCs.

The rest of the paper is organized as follows. The next section outlines a brief review of recent studies on the pricing of reverse convertibles bonds. We then describe the data sources and discuss the models and empirical results. The final section concludes and offers suggested extensions.

LITERATURE REVIEW

Reverse convertible notes are just one type of structured product, albeit a relatively popular type (Hens and Reiger, 2009). As noted by Ruf (2011), the early literature on structured products focuses on valuation and finds significant overpricing of these products compared with their constituent securities. Ruf points out, though, that more recently there has been an emphasis on examining whether issuers use this market to prey on investors with weaker financial backgrounds and/or biases regarding liquidity (page 1).

Stoimenov and Wilkens (2005) study the German market for equity-linked structured products. These authors refer to reverse-convertibles of the type we study as *knock-in products*, wherein the product pays as a bond if the underlying equity remains above a barrier price. They

examine both pricing in the primary market and the secondary market for 2,566 different issues, including 408 knock-in securities. For the overall sample, they find that structured products are priced well above their theoretical values, and with knock-in options have higher premiums than other types of securities. They find that the secondary market premiums decline as maturity approaches.

Another early study by Benet, et al (2006) looks more closely at reverse-exchangeable securities (RES), and in particular those issued by ABN-AMRO Bank between June 2001 and July 2003. These authors use a portfolio approach to determine the theoretical value of each RES at issue and determine that there seems to be a sizable bias in favor of the issuer overall. They suggest that this is consistent with the growth in these markets, and that the different risk characteristics of these products are beneficial to the hedging of the sponsor.

Hens and Reiger (2009) provide a comprehensive analysis of many different types of structured products, and attempt to rationalize these products from the view of an investor rather than the issuer. They examine the popularity of different products in different markets as well, and discuss the optimal design of the various contracts. In addressing the question of "why" investors pursue these securities, they suggest that perhaps systematic misestimation of risk or unwarranted attention to small-probability outcomes leads to their appeal. They divide structured products into categories based on the "degree of deviation from rational preferences" that is needed to justify investor preferences (Hens and Reiger, 2009, pg. 27). Hens and Reiger (2011) refines some of the analysis of the original study.

Ruf (2011) uses a very large collection of German over-the-counter warrant data to draw conclusions about the structured products market overall. He finds that retail investors are more likely to use options that are either far out-of-the-money or far in-the-money, and suggests that far out-of-the-money warrants may be overpriced because there is no alternative and because investors may have the hardest time pricing them without institutional input. With respect to the secondary market, this author finds evidence that issuers can anticipate upcoming demand and exploit that to increase their returns on sales of these types of securities. Additionally, the author finds that premiums decline over the life of these products, but that this is mainly due to the time to expiration and "moneyness" of the option, which should be expected. The large drop in premiums found by prior work is explained here as perhaps an artifact of the matching methodology used by those authors and the unavailability of proper matching securities. Finally, he looks at the credit risk component of the premiums and finds a negative effect from credit risk after the bankruptcy of Lehman Brothers in the U.S.

Szymanowska et al (2009) examine the pricing of reverse convertible bonds in the Dutch market and provide a thorough discussion of the characteristics of these issues. They analyze a sample of 108 issues from four different issuing banks (ABN AMRO, Fortis Bank, ING Bank, and Rabo Securities) and end up with a subsample of 75 issues that had enough ancillary data to be priced using their method, including 43 "knock-in" issues. They find overpricing of approximately 6 percent for their entire sample, and document that some premium remains over

the entire period these securities are outstanding. They address this premium and its persistence in several ways, concluding that only a small percentage of overpricing differences can be explained without behavioral reasons such as financial marketing, framing and representativeness bias. They document substantial differences between issuers and between those securities with trending underlying equities.

Data

Table 1
Descriptive Statistics

Term in months	Frequency	STAT	Coupon Rate	Initial Stock Price	Barrier Price	Principal Amount	Barrier to Initial price ratio
2	3	MIN	0.240	$22.11	$16.58	$1,000,000.00	0.70
		MAX	0.250	$95.19	$71.39	$1,000,000.00	0.75
		MEAN	0.243	$48.24	$35.72	$1,000,000.00	0.73
		STD	0.006	$40.75	$30.92	$0.00	0.03
3	599	MIN	0.081	$2.19	$0.60	$5,000.00	0.30
		MAX	0.425	$464.19	$371.35	$6,058,000.00	0.90
		MEAN	0.182	$45.71	$32.34	$588,726.96	0.71
		STD	0.062	$46.28	$34.05	$715,619.18	0.07
6	327	MIN	0.083	$4.86	$0.50	$4,000.00	0.50
		MAX	0.280	$555.98	$444.78	$10,778,000.00	0.80
		MEAN	0.141	$52.13	$36.78	$593,218.35	0.72
		STD	0.037	$48.04	$36.38	$1,044,267.76	0.06
9	3	MIN	0.109	$25.23	$18.92	$1,000,000.00	0.60
		MAX	0.168	$118.64	$71.18	$2,087,000.00	0.80
		MEAN	0.129	$73.30	$50.31	$1,362,333.33	0.72
		STD	0.034	$46.76	$27.67	$627,579.74	0.10
12	180	MIN	0.070	$3.74	$0.65	$21,000.00	0.50
		MAX	0.229	$530.26	$424.21	$7,601,000.00	0.85
		MEAN	0.119	$50.32	$33.40	$795,746.99	0.72
		STD	0.030	$54.38	$40.41	$1,073,338.87	0.08

Our initial dataset includes 2,195 reverse convertible notes issued by the Royal Bank of Canada (RBC). The total principal of these notes is $1,410,064,000 and the period during which the notes were issued spans from January 2007 till October of 2010. We collect data on the note's pricing date, issuance date, maturity date, coupon rate, strike price and barrier price from the prospectus and the pricing supplement of each issue.

Daily stock prices for the reference stocks and for the reverse convertible notes are gathered from Thomson Datastream. The maturity of the notes is two, three, six, nine or twelve months. The coupon is paid monthly or quarterly. After merging the initial dataset with the stocks and notes data from Datastream and deleting observations with missing data our sample consists of 1,112 notes.

Descriptive statistics on the data are reported in Table 1. The majority of the notes in our sample have a three-month maturity, followed by six and twelve months. The coupon rates in our sample range from 7 to 42.5 percent. The means for the three-, six- and twelve-month maturity notes are 18.2, 14.1 and 11.9 percent, respectively. On average, the coupon rate appears to go down the longer to maturity. The lowest principal amount in our sample is $4,000 and the highest is $10,778,000. The ratio of the barrier price to the initial stock price of the underlying is close to 72 percent, with the highest range from 30 to 90 percent in the three-month maturity notes.

The list of the reference stocks and the number of notes issued for each reference stock are available upon request from the corresponding author. The largest number of notes was issued on Apple (42 notes), followed by Wells Fargo (41 notes), GM (40 notes), Freeport-McMoRan Copper & Gold, Inc. (28 notes) and JPMorgan Chase (25 notes). The total number of reference stocks included in our sample for which reverse convertibles notes were issued is 316.

EMPIRICAL ANALYSIS

The reverse convertibles included in our sample are senior unsecured obligations issued by RBC. They are a combination of a bond and a put option written by the buyer of the reverse convertible bond. Therefore, the price of the reverse convertible should reflect the value of a bond less the value of the short put:

$$\textit{Reverse convertible note price} = \textit{Bond price} - \textit{Put option price} \qquad (1)$$

Theoretically, the variables affecting the reverse convertible's price should be the inputs in the bond pricing and option pricing models. The bond price depends on the time to maturity, the face value of the bond, the coupon payment amount and yield to maturity. The option price is affected by the time to maturity, the risk-free interest rate, the volatility of the underlying stock return, as well as the stock price and the strike price.

While few recent papers investigate the overpricing of reverse convertibles at the time the securities are issued (Szymanowska et al, 2009; Stoimenov and Wilkens, 2005; among others), our focus is on secondary market price determination. In particular, we examine to what extent the theoretical determinants of RC prices help explain the changes in daily secondary market prices of these notes. We run time series regression for each reverse convertible note and then average the coefficients. Our base regression model follows:

$$\Delta P_t^i = \alpha^i + \beta_1 \Delta Tnote_t + \beta_2 \Delta Slope_t + \beta_3 \Delta VIX_{t-1} + \beta_4 S\,\&\,P500ret_{t-1}$$
$$+ \beta_5 \Delta RBCSpread_t + \beta_6 Stockret_t^i + \varepsilon_t^i \qquad (2)$$

Where $\Delta P^{ij}{}_t$ is the change in price of note *i* from day *t-1* to day *t*, $\Delta Tnote_t$ is the change in the one-year Treasury rate, $\Delta Slope_t$ is the change in the term structure slope measured as the difference between the ten- and one-year Treasury rates in first difference; $S\&P500ret_t$ is the contemporaneous return on the S&P 500 Index, and ΔVIX_t is the change in the VIX, $\Delta RBCSpread_t$ is the change in the yield spread of a bond of the issuer (RBC) over the corresponding (used as a proxy for credit risk of the issuer) and $Stockret_t$ is the daily equity return of the reference stock for each reverse convertible note.

Table 2
Regression models by maturity

	3 month		6 month		12 month	
Variable	Estimate	t Value	Estimate	t Value	Estimate	t Value
Intercept	-0.00011	0.11	-0.00136	-0.16	-0.0016	-0.53
ΔRBCspread	-0.00017	-0.33	-5.90E-06	-0.01	-3.60E-05	-0.10
ΔSlope	0.00214	0.01	0.00636	0.30	0.00773	0.42
S&P500ret	-0.00104	-0.21	-0.00223	-0.77	-0.00204	-1.26
Stockret	0.32375	4.15	0.47403	7.68	0.47976	11.32
ΔTnote	0.02237	0.39	0.02871	0.92	0.02516	1.30
ΔVIX	-0.00024	-0.12	-0.00028	-0.08	-4.10E-06	0.06
R^2	46.26%		48.72%		45.60%	

The parameters estimates of our base model are reported in Table 2. We run the model separately for each note and then average them by maturity. We only use the three-, six- and twelve-month maturities since we have only three notes with two- and nine-month maturities respectively. The regression results reveal that the most important factor in secondary market price changes of reverse convertible notes appears to be the daily return on the reference stock and the statistical significance of the stock return increases the longer the term to maturity of the note. The level and slope of the yield curve do not appear to have an effect for any of the maturity groups. More surprisingly, the credit risk of the issuer of the reverse convertible does not play a role in secondary market pricing even though there is significant widening in RBC bond yield spread during the period of our study. Equity market risk proxies such as the VIX are not significant in the regression either. A possible explanation for the significance of the daily return of the reference stock in explaining daily changes in prices of the reverse convertible notes

in our sample could be that investors trade RC notes in the secondary market mostly out of fear that the stock price will reach the barrier price, whereas the initial focus at the time of issuance is on the coupon payments of the notes and the view of RC notes as a high yield fixed income instrument. Furthermore, the R^2s of the regression models range from approximately 46 to 49 percent, which means that there may be another factor playing a significant role which is not captured in our model. A possible candidate is the liquidity of the securities which may be quite limited in the secondary market.

Table 3
Regression models by coupon rate
Panel A. Quartiles of the coupon distribution

	Coupon <10.75%		10.75<=Coupon <13.20		13.20<=Coupon <16.8		16.80<=Coupon	
Variable	Estimate	tValue	Estimate	tValue	Estimate	tValue	Estimate	tValue
Intercept	-0.00051	0.03	-0.00043	-0.02	-0.00098	-0.17	-0.0008	-0.09
ΔRBCspread	-1.7E-05	0.00	-5.80E-05	-0.12	-9.20E-05	-0.17	-0.0002	-0.34
ΔSlope	0.00611	0.40	0.00919	0.20	0.00844	0.13	-0.0035	0.02
S&P500ret	-0.00085	-0.66	-0.0016	-0.62	-0.0025	-0.73	-0.0011	-0.30
Stockret	0.42291	7.97	0.40761	6.83	0.4295	6.60	0.3513	5.21
ΔTnote	0.02830	1.10	0.02108	0.74	0.02887	0.73	0.0205	0.45
ΔVIX	0.000453	0.32	-0.00028	-0.16	-0.0006	-0.20	-0.0001	-0.10
R^2	45.98%		47.24%		48.48%		46.22%	

Table 3
Regression models by coupon rate
Panel B. Top and bottom 1 percent of the coupon distribution

	Coupon <8 (1%)		Coupon >31.1 (99th%)	
Variable	Estimate	tValue	Estimate	tValue
ΔRBCspread	-0.00012	-0.17	-0.00075	-0.07
ΔSlope	0.00021	1.41	-0.00052	-0.77
S&P500ret	0.00824	0.76	-0.04510	-0.82
Stockret	-0.00136	-1.53	0.00063	0.05
ΔTnote	0.53975	17.52	0.23031	4.06
ΔVIX	0.01458	1.74	0.03113	0.36
ΔRBCspread	0.00062	1.18	0.00033	-0.01
R^2	58.64%		52.60%	

To examine whether the regression results differ by coupon rate of the notes, we split the sample into four subsamples based the quartiles of the distribution of the coupon rate. We expect that the lower the coupon payment, the lower the risk of the bond converting into shares of stock at maturity and the higher the significance of the term structure variables. The results reported in Panel A of Table 3 are similar to those in Table 2 and again confirm the significance of the stock return. We also investigate the extreme tails of the distribution of the coupon rates in Panel B of Table 2 and find that in the bottom 1 percent the change in the Treasury note becomes marginally significant. The stock return of the underlying is still the most important determinant.

CONCLUSION

We examine the secondary market price changes and their determinants for a large sample of reverse convertible notes issued by the Royal Bank of Canada. We find that the daily return of the reference stock is the most important factor affecting secondary market prices of RC notes. Further research including liquidity proxies may improve the goodness of fit of our models.

One useful avenue of further research would be to more directly explore the behavioral factors underlying the mispricing of reverse convertibles. Our results suggest that the fixed-income component seems to carry more weight with investors than the risk of the option component, but there are numerous confounding factors. Laboratory testing could show how individuals treat these types of investments when compared against normal bonds, straight equity, and other types of structured notes. There is also room to compare reverse convertibles across issuers to better explore the impact of credit risk on investor decisions.

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AN OBSERVATIONAL FIELD STUDY OF CONSUMER BEHAVIOR AT MCDONALD'S

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ABSTRACT

Observation research was used to study restaurant patron behavior at several locations in TX. A sample of 281 patrons of McDonald restaurants revealed that people spend an average of eighteen minutes dining, the most popular sandwich is hamburger, most people order the value/combo meal, cold beverages are more popular that hot beverages, and the medium size drink is most popular. Salad and water are not ordered very often, free Wi-Fi and Red box are used by a select few. Finally, a majority of patrons throw their unwanted trash and get drink refills. Customers of McDonald's restaurants are very value oriented.

INTRODUCTION

Both academic and practitioners from multiple disciplines have been studying the Quick Service Restaurant (QSR) industry ("fast-food" restaurants) for over half a century (Mehta, 1999). QSRs are restaurants where the food and drink are paid for before being served (Dharmawirya, Hera, & Erwin, 2012). The main focus of QSR's are to have food served to the maximum number of customers in the least amount of time, simple décor, limited menu, and may also have drive-thru and take-out services (Knutson, 2000; Jackson, 2011; Walker, 2011).

One of the most successful QSR, McDonalds, has been the poster child for many of these studies. Economist have used McDonald's to develop the Big Mac Index (Costa, 2012), Financial analyst have included it as part of the Dow Jones Industrial Average, Management faculty have studied its business strategies (Han, 2008; Goldman et. al., 2008), and Nutritionist have studied its impact on health and public policy (Powel, 2009).

Similarly, Marketers have studied McDonald's globalization strategies (Mehta, 1999; Vignali, 2001; Asamoah & Chovancova, 2011), the impact of "the combo meals" on consumer behavior (Sharpe & Staelin, 2010), consumer's perceptions of price and quality (Farhana & Islam, 2011), locational and trade area analysis (Duggal, 2007), and the franchising business model in the context of McDonald's (Gerhardt, Dudley, & Hazen, 2012). While many of these studies employed secondary data, some of them used primary data methodologies. For example, Conlin, Lynn, and O'Donoghue (2003) studied factors that influence tipping behavior at QSR's by surveying restaurant employees.

Today, McDonald's faces challenges from numerous environmental factors. They face tremendous competition from the likes of Wendy's, Jack-in-the-box, and Burger King. They face challenges that impact the QSR industry as a whole. These include, economy (e.g., depleting middle-class), legal (e.g., changes in health laws, changes in packaging), political (e.g., attitude towards US fast food), technological (social media, changes in production techniques), and social (e.g., changes in eating out behavior). Like other businesses, McDonald's has to be constantly concerned about the needs and wants of their target market, building a strong brand, and creating loyal customers. Generally, marketing research is used to create the right marketing mix and developing an appropriate strategy in meetings the needs of the target market.

While marketing research can be done in many different ways (e.g., exploratory, descriptive, and experiment), surveys have been mainly used to study the target market's attitude (in the context of McDonald patrons). Research has been done to determine why families visit McDonald's (to give their children a treat), why children visit McDonald's (to have fun), why business customers want to eat at McDonald's (want a quick meal on the go), and why teenagers eat at McDonald's (the menu items are very affordable). It is widely believed that studying consumer's attitudes (e.g., satisfaction and perception) can help us understand their behavior (Pettijohn et. al., 1997). While this link between ones attitude and behavior may be generally strong, but to really understand how people behave; the best technique is to conduct primary data collection thru *observation*.

Unfortunately, to date, very few research studies within the QSR industry have utilized observation research methodology. Roberto, Agnew, & Brownell (2009) observed that only 0.1% of consumers were accessing on-premise nutrition information. Myers, Bellows, Fakhoury, Hale, Hall, & Ofman (2010), thru observation, found that female customers waited longer for their order than males. Goldman, Santos, & Tully (2008) observed restaurant general managers and their leadership styles and found that they put in significant effort to motivate their employees. Some reasons cited for the limited use of observation research methodology to study behavior at QSRs include; collecting a large number of samples is expensive and time consuming, difficult to generalize findings using small samples, can only explain *how* and not *why* people behave in a certain way, researchers may inject subjective interpretation to the observation, geographic limitation to doing observations, etc.

METHODOLOGY

Rather than asking consumers about their perceptions, beliefs, attitudes, and knowledge, our research focused on studying consumer/patron behavior at McDonald restaurants. To overcome many of the above stated limitations, we conducted a direct observation study, where the researchers observed the behavior as it was occurring. We used a structured paper-and-pencil observational form (see appendix) that included a minimum number of subjective questions. This methodology was used to acquire large sample of reliable data. We trained field

workers to disguise themselves as customers while recording the observed behavior at multiple McDonald's locations in East Texas. Disguising researchers is popular in the QSR industry so as to not create a Hawthorne effect. We collected a large sample of only dine-in and carry-out (no drive-thru) customers. The data was entered into Excel and checked for consistency. Field and Office edits were done when necessary and the data was analyzed using SPSS.

Field workers were instructed to visit a McDonald's restaurant closest to their residence and/or place of employment. This was necessary so as to get diversity in geography and demography. The field workers self-selected the day, date, and time they conducted their observations. They were given a week (in November) to complete their observations.

ANALYSIS

A total of 281 usable observations were completed, out of which 260 (92.5%) were dine-in and 21 (7.5%) were carry-out patrons. Majority of the observations were done in Walker County (55.9%) on a Monday (29.2%) between 11am – 5pm (43.1%). Table 1 summarizes the characteristics of the customers and their transactions. A majority of the customers were between the ages of 20–40 years old (62%) and 63.5% of the customers were white. Whereas, 32.4 % of the customers came in with children 67.6% dined alone or with other adults. On average, a patron spent approximately 18 minutes to order, wait, and eat their food. Out of the 18 minutes, 1.52 minutes were spent waiting in line to order their food and they got their food in 2.83 minutes after ordering. Therefore, a customer(s) took 14.85 minutes to eat their food. Credit card was the most common method of payment (used by 52% of the customers).

TABLE 1
Characteristics of Patrons and Transactions

Patrons Characteristics	
Average # of patrons in a group	2.6
Patrons with children	32.4%
Patrons alone	35.9%
Transaction Characteristics	
Total time spent	17.99 minutes
Wait in line to order food	1.52 minutes
Receive their order	2.83 minutes
Eat their food	14.85 minutes
Patrons who did not have to wait in line to order	17.4%
Method of payment (Credit Card)	52.0%

Table 2 breaks down the food item ordered by the customers. Although regular, breakfast, and Dollar menu items were ordered by about 28% of the customers, 41.3% of the patrons ordered a food item from the "Extra Value" menu (also referred to as combo meals). While 32.4% of the patrons came with children, only 18.1% of them ordered from the kids

menus. With regard to the type of burger ordered, 65.4% of the customers bought Hamburgers and 18.8% bought items made from chicken. Only 6.5% of the patrons got a salad. Approximately 41% of the patrons ordered a snack (wrap) or sides (fries)

TABLE 2 **Food Menu Orders**	
Food (Menus)	
Regular Menu	28.5%
Breakfast Menu	28.1%
Dollar Menu	27.4%
Kids Menu	18.1%
Extra Value Menu	41.3%
Hamburger	65.4%
Chicken	18.8%
Snack or Sides	40.8%
Salads	6.5%

Table 3 summarizes the beverage ordered by customers. Beverages were ordered by 71.2% of the patrons; out of which Soda was ordered 66.2% of the time. Approximately, 27% of the drinks ordered were hot, 36.3% ordered a medium size drink (which typically came with the extra value meal), and water was ordered by only 5% of the customers. A majority (53.8%) of the customers went for a refill of their drinks, with half going while eating their meal and other half going after the completion of their meal.

TABLE 3 **Beverage Orders**	
Beverages	**71.2%**
Soda	66.2%
McCafe	14.6%
Hot Drink	12.7%
Fruit Drink/juice	7.7%
Water	5.0%
Soda size most ordered (Medium)	36.3%
No Refills	38.8%
Refills	53.8%
Refills while dining	28.5%
Refills after dining	25.3%

Table 4 summarizes other behaviors of customers at McDonald's. Restrooms were frequented by 38.5% of the patrons. A majority of the people used their cell phone (57.3%), however, only 6.4% of the patrons used the free Wi-Fi provided by McDonald's. Similarly, Red Box (which rents DVD's and Games) was only used by 12.5% of the customers. Other self-

service items were also used by a majority. For example, napkins were used by 64.4% of the customers and condiments by 60.9%. It seems that McDonald customers are mindful of other customers, because 81.1% of the patrons threw away their trash. Approximately 50% of the patrons did not waste any food (they either finished it or took it home).

TABLE 4
Miscellaneous

Other Activities	
Restroom use	38.5%
Red Box	12.5%
Cell phone use	57.3%
Wi-Fi access	6.4%
Put away their trash	81.1%
Condiments	60.9%
Napkins	64.4%
Did not waste any food	49.8%

CONCLUSIONS

We can conclude that the customers of McDonald's restaurants are *value oriented*. This is evident from the fact that they ordered items from the menu that were value oriented. Medium drinks were bought because they were part of the Extra Value menu and the customers could get free refills. So the sale of large drinks was significantly lower than medium drinks. Also, "combo meals" sales indicated that patrons are value oriented.

Even though there was free Wi-Fi, not many used it. This could be because the concept of fast food is that you can get in and out quickly. They probably did not have the time or inclination to use it. Low Wi-Fi utilization may also be due to lack of smart phones. To overcome this low Wi-Fi usage, McDonalds could provide a few access points (e.g., computers along a wall that customers could utilize and IPad rentals).

Zhao et al. (2002) highlighted that research has identified how speed is becoming one of the most important factors in the QSR industry and that customers tend to perceive waiting for service as a negative experience (Roslow et al., 1992). The average time spent by the customers in McDonalds was approximately 18 minutes. The time spent waiting for their food after the order is significantly longer when compared to other QSRs. However, patrons were finished eating in 15 minutes, a standard within the fast food restaurants (because they want high turnovers).

In our observation, it was identified that customers preferred booths to chairs and this was also evident in the study done by Baker & Cameron (1996) and Davis & Heineke, 1994). Sulek & Hensley (2004) suggest that furnishing and décor also have an impact on customers'

perceived waiting times. Uncomfortable furnishings and non-appealing décor can increase customer dissatisfaction.

RECOMMENDATIONS

Based on the research study, the majority of the patrons were white and between the age 20 -40. So a promotional campaign could be to done target this demographic. The busiest time of the day was during the afternoon hours (between 11am and 5pm), so McDonald could schedule more experienced staff/employees to handle the increased traffic (Goldman, Santos & Tully, 2008). Booths were preferred over tables by majority of the customers (while dinning in), so it is recommended that McDonald add more booths to the dine-in facility. Credit cards were used by the majority of the customers. It will be advisable to update credit card machines and keep them operational at all times. It is also recommended to maybe have more than one machine per register, so that the wait time while ordering is reduced. So as to reduce transaction time, McDonald's already lets customers swipe their own credit card. The most popular items ordered were from the "Value menu". McDonald could add more items to the Value menu, and maybe weekly special items can be added to the value menu regularly to create greater excitement and repeat customers. Red box was clearly underutilized. Maybe a coupon printed at the back of the receipt could encourage the customers to use it.

LIMITATIONS AND FUTURE RESEARCH

The timing of the study may have created some bias, since 43.1% were done from 11am - 5pm and 29.2% were done on Monday. A majority of the data was collected from white patrons, this too may have biased the sample results. While a lot of care was taken to minimize subjectivity, some questions required subjective interpretation (e.g., obesity and dress). Most of the observations were done in three counties within East TX with 55.9% in Walker County. A larger more diverse geographic sample would have improved the validity of the sample.

Only McDonald restaurants were used in this study. In the future, other QSRs (besides McDonald's) could be studied. Other types of restaurants patron behavior (including casual and fine-dining) could also be observed. Only the dine-in and carry-out patron behavior was observed in this study. Drive-thru behavior could be observed in the future. While past research has concluded that free Wi-Fi can be a viable strategy to increase profitability (Yusop, Tiong, Aji, & Kasiran, 2011), our research indicated that only 6.4% of the patrons took advantage of the free Wi-Fi. Low Wi-Fi use could be attributed to few patrons having smart phones. Unfortunately, we did not measure how many patrons had smart phones. While the focus of this research effort was on conducting observation research, future research could employ triangulation and/or pluralistic research, which uses observation followed by a survey of the patrons.

Observation Form

A. Observer: _____ **B**. Day & Date: _____ **C**. Location: _____
D. Time of Day: **1**. Morning (< 11 am) **2**.Afternoon (11:01-5:00 pm) **3**. Evening/Night (> 5:00 pm)
E. Time Observation *began*: _____ **F**. Time Observation *Ended*: _____

1. ***Number* of people in the group**? **1**. Adult Males: ___ **2**. Adult Females: ___ **3**. Children (< 18): ____
2. **What is the *age* of the customer?** **1**. < 20 years **2**. 20-40 years **3**. >40 years
3. **What is the *race* of the customer?** **1**. White **2**. Black **3**. Hispanic **4**. Other **5**. Undetermined
4. **How long did the customer(s) *wait in line* to order**: **1**. ____minutes **2**. ____ seconds
5. ***Method of payment* used?** **1**. Cash **2**. Plastic (credit, debit) **3**. Other (coupon, gift-card)
6. **How long did the customer(s) *wait to receive* their order?** **1**. ____minutes **2**. ____ seconds
7. **Did the customer(s)?** **1**. Dine-in **2**. Carry/Take-out (***stop observation***)

When answering the questions below, please pick ONE person/individual (if in a group) to make your observations.

8. **Customer(s) *ordered from (check all that apply)*? 1**. Regular Menu **2**. Breakfast Menu **3**. Dollar Menu **4**. Kids Menu (Happy, Might) **5**. Extra Value Menu (sandwich, fries, drink) **6**. Unsure

9. **What menu item(s) did the customer order (*check all that apply*)?** **1**. Sandwich/Burger **2**. Chicken **3**. Snacks & sides **4**. Salads **5**. Beverages (soda) **6**. McCafe (hot/cold) **7**. Dessert & shakes **8**. Other

10. **Beverage ordered** **1**. None **2**. Soda **3**. Hot Drink **4**. Fruit drink/juice **5**. Water **6**. Other
11. ***Size* of beverage ordered?** **1**. Small **2**. Medium **3**. Large **4**. Undermined
12. **When did the customer *refill* their drink?** **1**. Did not **2**. When dining **3**. After dining (before leaving)
13. **How long did the customer take to *eat their meal*?** **1**. ____minutes **2**. ____ seconds
14. **Customer *restroom* usage?** **1**. Did not **2**. Before dinning **3**. During dining **4**. After dining
15. **Did the customer interact with *Redbox*** (to view, return, or rent movies)? **1**. Yes **2**. No **3**. Unsure
16. **Did the customer use his/her *cell phone*?** **1**. Yes **2**. No **3**. Unsure
17. **Did the customer use the free *Wi-Fi*?** **1**. Yes **2**. No **3**. Unsure
18. **How was the customer *dressed*?** **1**. Casually **2**. Uniform **3**. Formal **4**. Unsure
19. **Did the customer throw/discard their *trash***? **1**. Yes **2**. No **3**. Unsure
20. **Was any food *wasted* and/or not eaten?** **1**. Yes **2**. No **3**. Unsure
21. **Did the customer get *condiment*(s)?** **1**. Yes **2**. No **3**. Unsure
22. **When did the customer grab *napkins*?** **1**. Didn't get any **2**. Before sitting **3**. After sitting **4**. Unsure
23. **Where did the customer choose to *sit*?** **1**. Table **2**. Booth **3**. Outside **4**. Other
24. **Can the customer be considered *obese*?** **1**. Yes **2**. Maybe **3**. No **4**. Undetermined

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AN ANALYSIS OF US STOCK MARKET VOLATILITY OVER TIME

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ABSTRACT

This paper examines the risk-reward relation of US stock market investing since 1950, using the S&P 500 index as a proxy for stock market returns. Excess returns and standard deviation of excess returns are examined on a daily, weekly, monthly, and annual basis. Technology has impacted the mechanics and volume of equity trading, and this paper examines evidence of how this has impacted volatility in both the short- and long-run.

INTRODUCTION

A fundamental concept of finance is that risk and return are positively related. That is to say that investments with higher levels of risk should provide the holders of those investments a higher return as compensation for taking on the additional risk. Risk is generally defined as volatility and measured by variance of returns. For example, if I buy a CD from a bank, I know exactly what my return will be, and the principal is actually guaranteed by the US government through the FDIC. However, if I buy a stock, I have a wide range of possible returns. The low end of the range of possible return is much lower than that of the CD, the high end is much higher, and the expected average return on the stock will be higher due to the variance. When looking at investments in the stock market, the risk-return relation is usually illustrated with the following equation

$$E(RM) = Rf + RPM \qquad \text{(equation 1)}$$

Where E(RM) is the expected return of the stock market (represented by an index)
Rf is the risk free rate of return (usually the return on short term Treasury bills)
RPM is the risk premium of the market

Since risk is measured by variance and investors' level of risk aversion changes over time, the above formula is often modified as follows:

$$E(RM) = Rf + A*\sigma^2M \quad \text{(equation 2)}$$

Where A is a scale factor representing the degree of risk aversion of the average investor
σ^2M is the variance of market return

As equation 2 shows, the risk premium of the market is a function of two variables: the variance (or riskiness) of the market and investors' risk aversion. This market risk premium represents the "extra" return required by investors to move from a riskless investment to the risky stock market. If either riskiness of the market or risk aversion changes over time, it would follow that the risk premium would change as well.

Issues in Using the Models

There are three significant issues in testing or using the models above to explain equity market returns. First, as equations 1 and 2 illustrate, as risk increases, expected return should increase. However, the future increase in return is accomplished by prices falling today. For example, if a stock is expected to be priced at $50 in one year, I earn a 10% return by buying it at $45.45 today. If riskiness and/or risk aversion increase, and my required return increases to 20% as a result, I will be willing to pay only $41.67. So an increase in riskiness will cause stock prices to fall, which will cause *current* period stock returns to fall while *future expected* returns will increase. An investor who bought the stock at $45.45 loses 8.3% due to increased risk. So in this case, increased risk causes a decrease in return for investors already holding the stock. This may cause a lag between increased risk and increased return as equity prices adjust lower during the lag period.

The second issue with the models is that variance and standard deviation measure variation between the realized return and the mean return over time. However, investors generally see risk as only the possibly of negative returns, not unexpectedly high returns. An unusually good year actually increases risk. This may cause investors to act differently during periods of higher risk caused by generally higher returns.

The third issue is that when making investment decisions, individuals must estimate both expected risk and expected return. Often, investors are incorrect with both estimates. By definition, a risky investment has variation in return, which makes expected return more difficult to estimate. Also, investors never anticipate a negative return, but know it is a possibility.

Changes in Investing and Investors Over Time

More data is currently available through the internet and financial news networks than at any time in history. Technology allows for faster and cheaper trades by both institutions and

individuals. The volume of trading has also risen dramatically. This increasing trading activity may lead to greater or less market volatility or reactions to changing market conditions. Investors may acquire and act upon information more quickly, leading to small, but more frequent changes to equity pricing. Another view is that since there is more data available, and trades are less costly, investors may tend to over-react to new information and drive up volatility.

Research Question

The main research question addressed in this paper is as follows: Given that stock market variance changes over time, do investors respond to those changes in risk by requiring (and earning) a higher return, and has this process changed over time?

PRIOR RESEARCH

Several papers have examined the risk-return relationship in the equity markets. French, Schwert, & Stambaugh (1987) use daily returns of the S&P 500 index to compute estimates of monthly volatility. They find that in periods of high volatility, returns are lower than average. Their evidence suggests a positive relation between the expected risk premium on individual common stocks and the predictable level of volatility.

Haugen, Talmor, & Torous (1991) examine daily changes in the Dow Jones Industrial Average from 1897 through 1988, and find increasing volatility leads to subsequent decreases in return. They conclude that investors revise risk premiums frequently and significantly.

Schwert (1989) explains stock market volatility by relating it to the volatility of economic data. In examining monthly data from 1857 to 1987, he finds the standard deviation of monthly stock return varied from 2% to 20% per month over the period. There was a noted increase from 1929 to 1939, caused by inflation, money growth, industrial production, and economic activity. Generally, volatility increases during recessions.

Whitelaw (1994) finds that volatility leads the expected return. He analyzes daily return data to compute estimates of the standard deviation of return for monthly, quarterly, and annual holding periods. He stated that researchers have searched for both a positive relation between expected returns and the conditional volatility of returns and a negative relation between unanticipated volatility and realized returns.

DATA

Data for this study include daily returns of the S&P 500 index from 1950 through 2012. I also gathered monthly short term Treasury bill rates from the same period to calculate excess return and variance of excess return. I did this for four time intervals: daily, weekly, monthly, and annually.

The first step in the process was to look at the daily returns and daily standard deviation of return. These daily results were averaged for each year and reported by decade in Figure 1. No clear pattern emerged from this preliminary analysis, as some decades appear to have high standard deviation and low return (2000s), while the 1950s and 1980s seem to show higher returns with higher volatility.

The weekly return and standard deviation data presented in Figure 2 are very similar patterns to the daily date shown in figure1. This does not necessarily suggest that risk and return are related, just that the patterns are similar over time.

Figure 3 shows the averages of monthly return and standard deviation. The monthly standard deviation pattern is similar to the daily and weekly, but monthly return jumped in the 1960's compared to weekly and daily.

Figure 4 shows the averages of the annual returns and stand deviation of return. The standard deviation pattern not as much of an upward trend over the period, but the annual return averages are similar to the daily and weekly results.

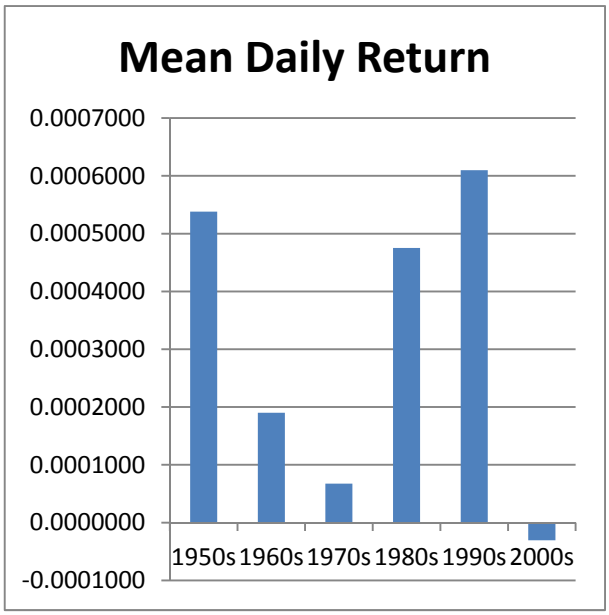
The average of daily, weekly, monthly, and annual return did not reveal any well-defined patterns, but the data was grouped by decade and may be too general to reveal any pattern. To drill-down to possible changes in the risk-return relation over time, I next look at each year individually and look at patterns for each decade. Figures 5 through 10 report the average monthly return and the standard deviation of monthly returns for each year of the decade presented in the figure.

For the decade of the 1950's, the mean annual return was 15.0% and the average standard deviation of monthly returns was 18.7%. Standard deviation was rather flat for the period, with returns changing over time: For example, in period 8 (1957), the average monthly return was (1.27%) while standard deviation of monthly return was 30.79%. For 1958, risk decreased to 2.105% while return was increased to 3.74%.

This chart provides some preliminary evidence that at the end of 1957 or during 1958, investors anticipated decreased risk, which caused expected return to fall, which then lead to higher prices. There are obviously a multitude of other factors, but a "simultaneous" negative relation of risk and return seems intuitive. This would produce a "mirror image" of risk and return for the same period. This relation is more pronounced during the latter years of the decade.

For the decade of the 1960's, the mean annual return was 5.3% and the average standard deviation of monthly returns was 14.3%. The "mirror image" of risk and return discussed for Figure 5 is more pronounced in the 1960's. Results are similar for the remaining decades. Again, this "simultaneous" negative relation between risk and return suggests that investors bid down prices as volatility increases, thus producing lower current-period return. In later periods, however the process appears to reverse as lower risk leading to higher prices and higher same-period return.

Figure 1: Daily Data



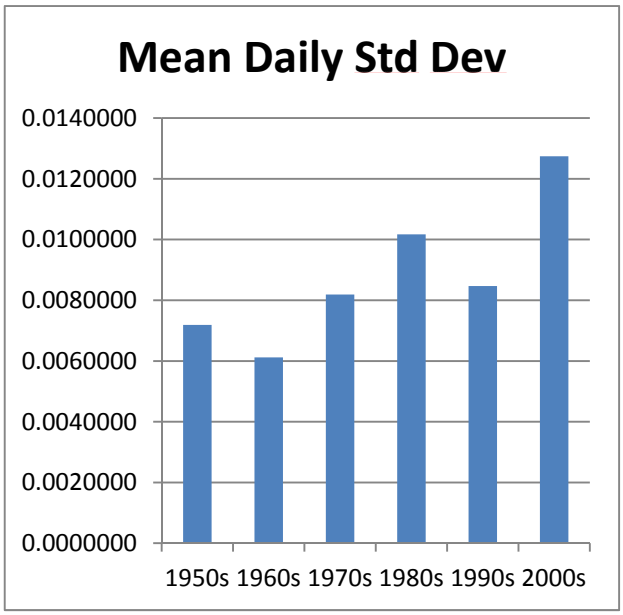
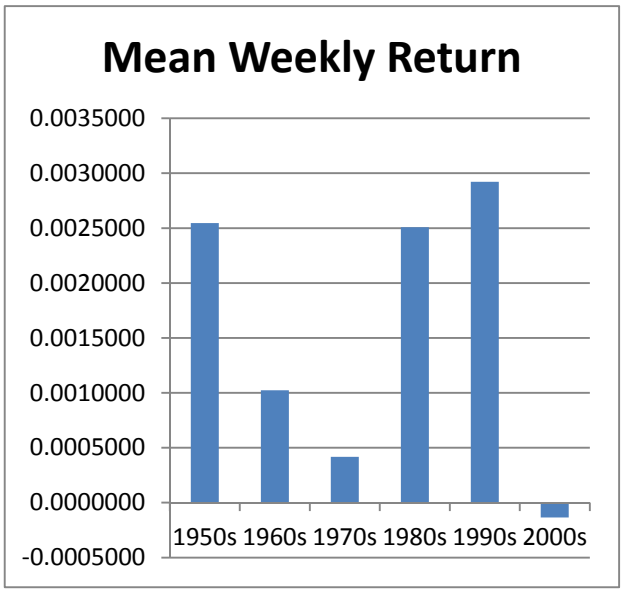


Figure 2: Weekly Data



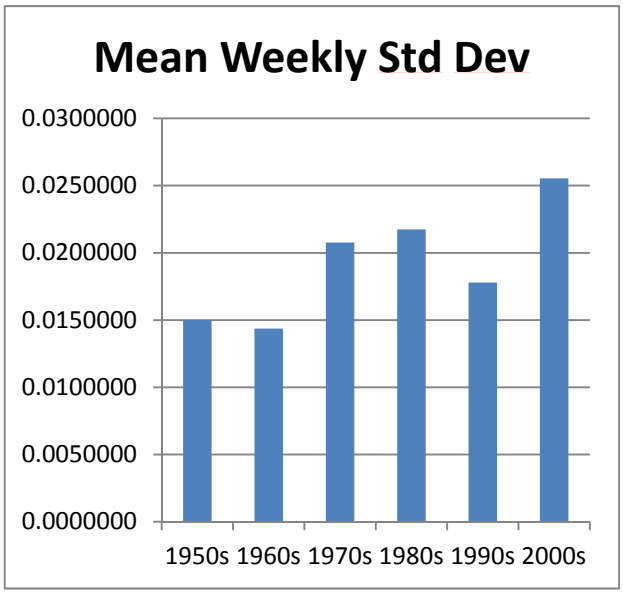
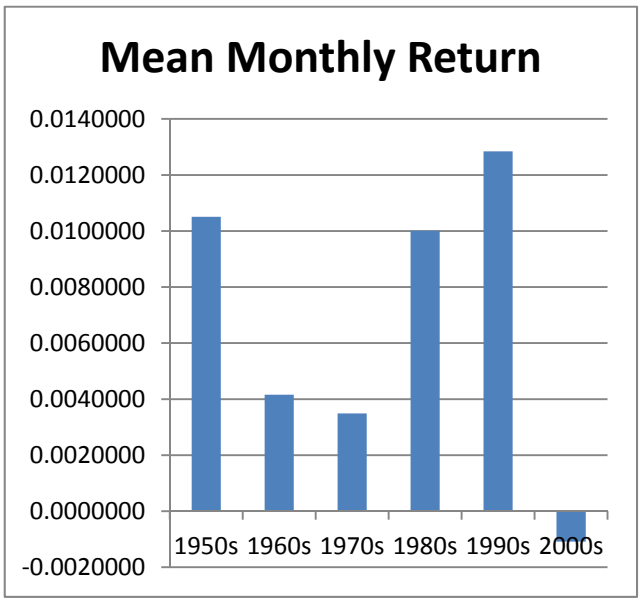


Figure 3: Monthly Data



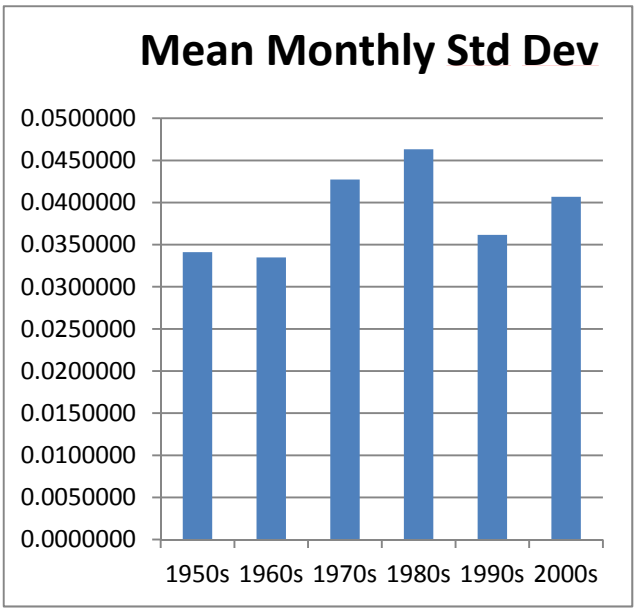
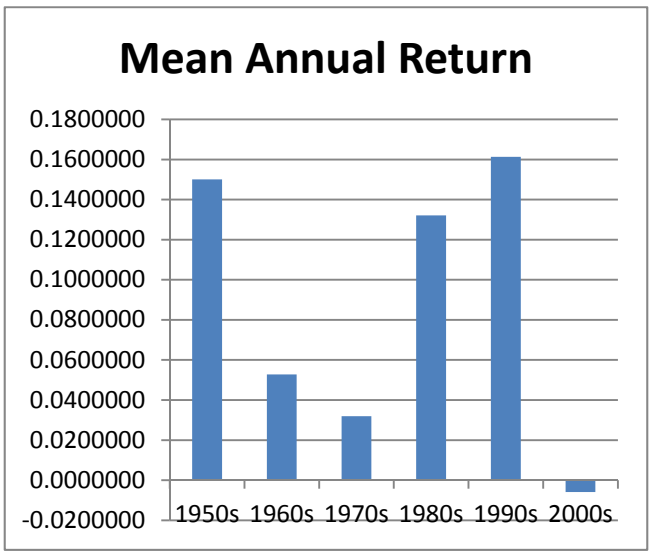


Figure 4: Annual Data



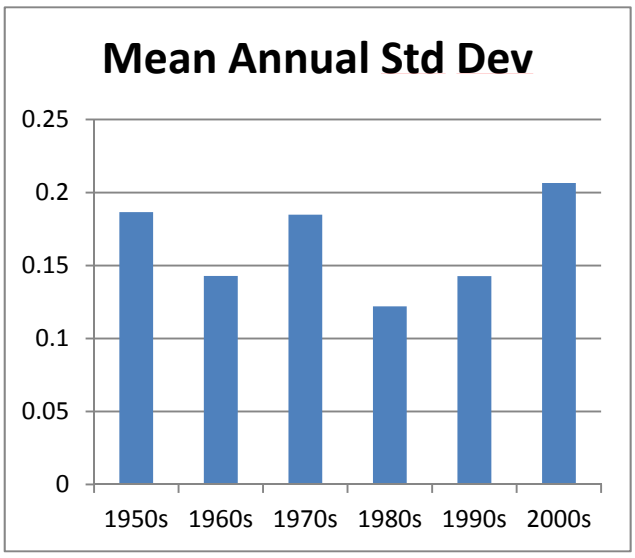


Figure 5: 1950's

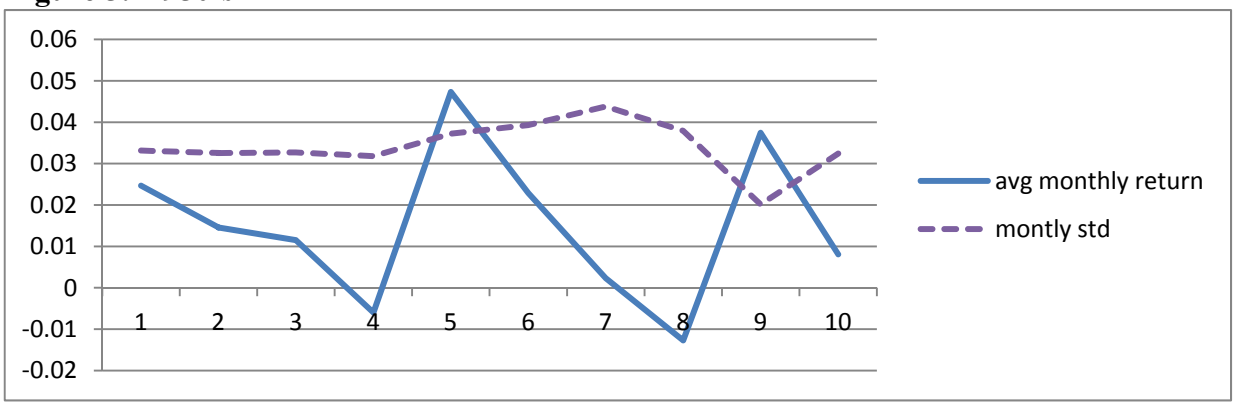


Figure 6: 1960's

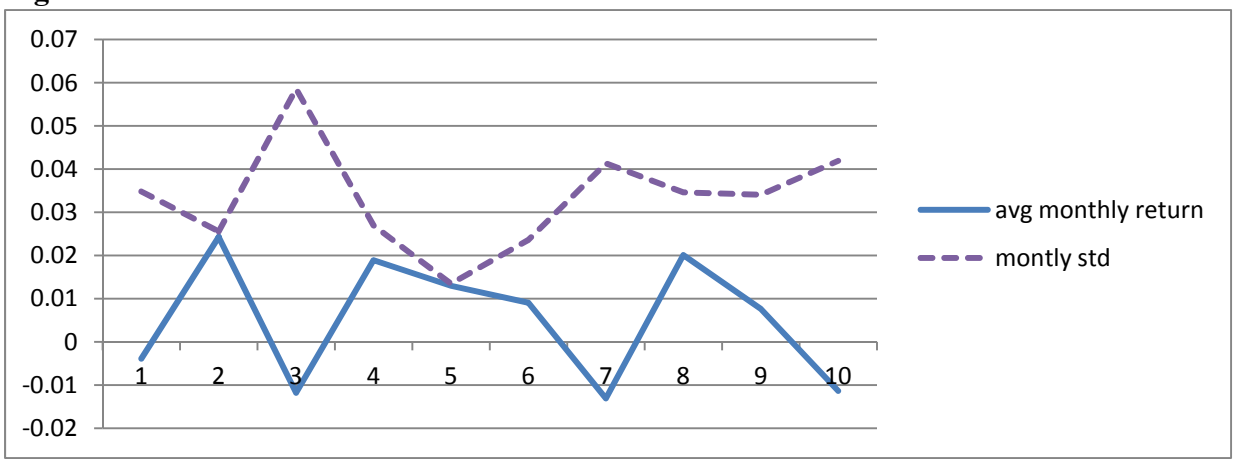


Figure 7: 1970's

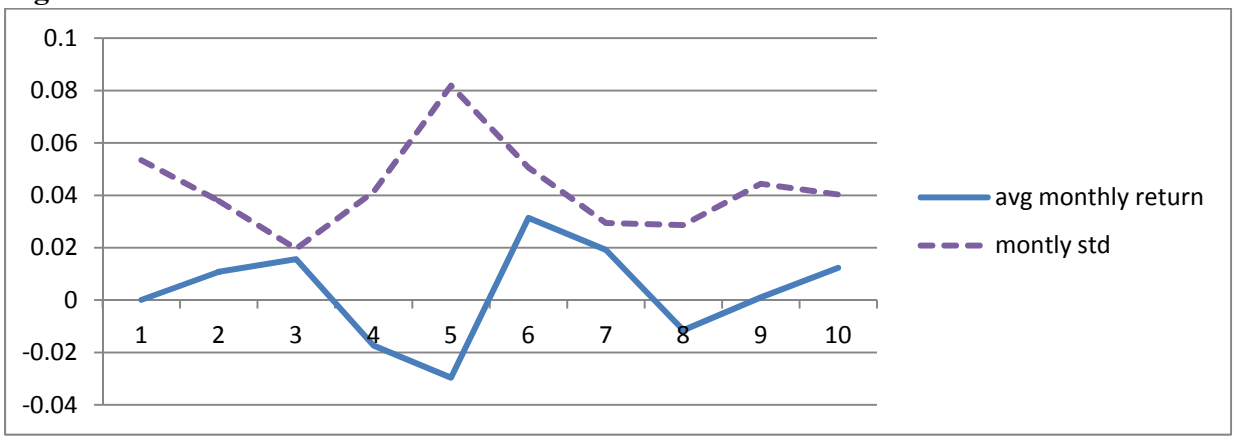


Figure 8: 1980's

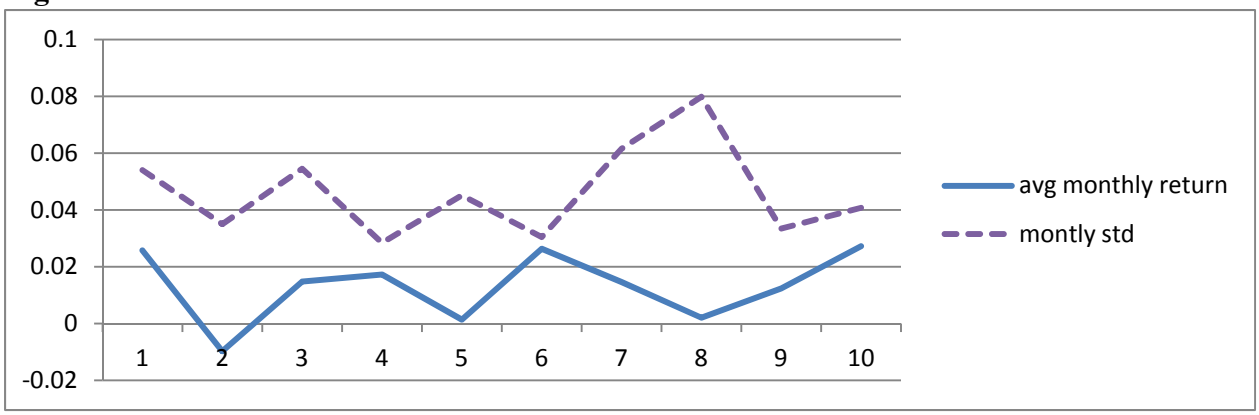


Figure 9: 1990's

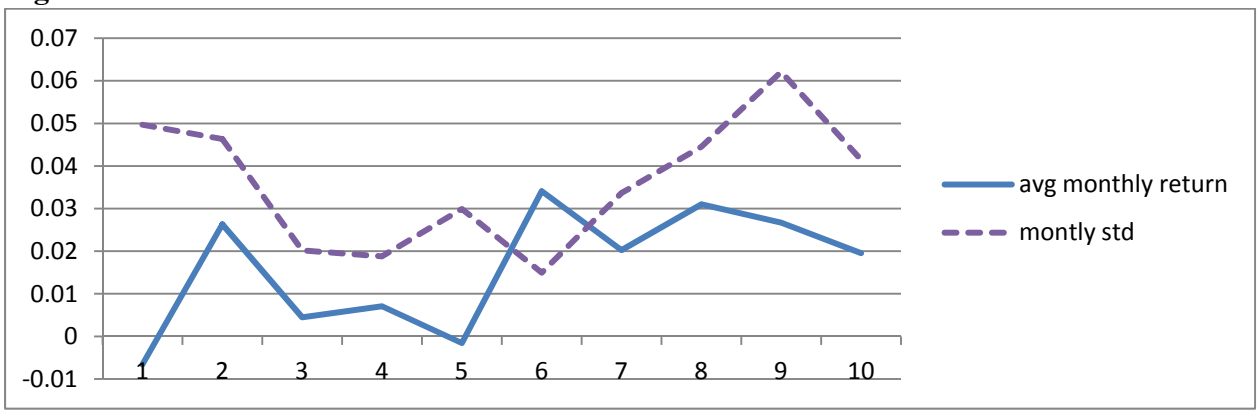
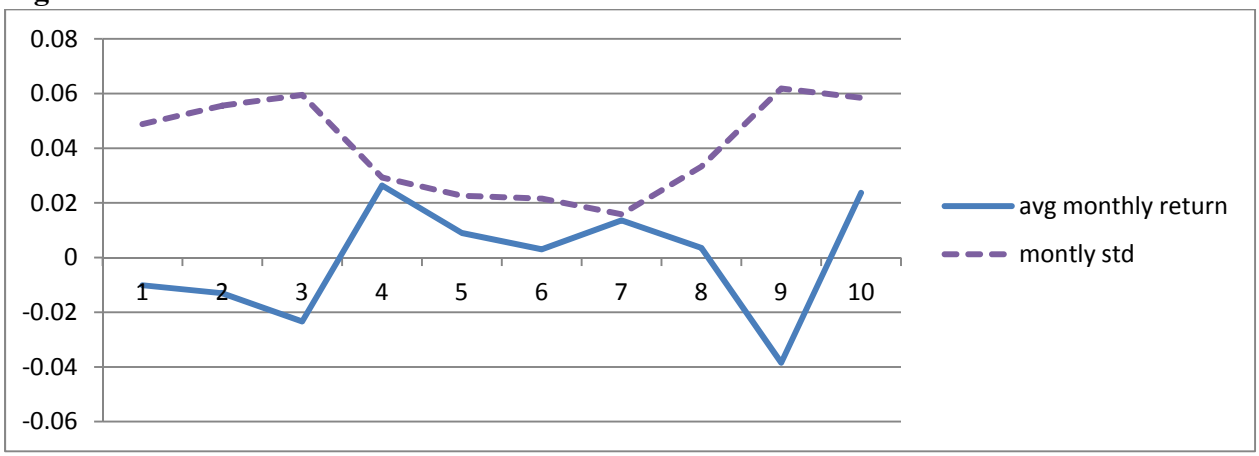


Figure 10: 2000's



SUGGESTIONS FOR FURTHER RESEARCH

This paper presents some basic ideas of the relation between risk and return for US equities since 1950. There is evidence of patterns suggesting investors do adjust stock prices down (up) in periods of increasing (decreasing) risk. Further analysis is necessary to more fully explore this relationship and potential changes over time. These more detailed tests may include testing for "concurrent" negative relation between risk and return, testing for positive relation between lagged risk and return, and determining the appropriate period to measure (daily, monthly, quarterly or annually, etc.), and whether there is a difference between individual and institutional investors.

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ANALYZING SUPERVISORY COMMUNICATION COMPETENCY: AN APPLICATION OF MESSAGE DESIGN LOGICS THEORY

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ABSTRACT

This paper applies O'Keefe's theory of Message Design Logics in an attempt to analyze supervisors' ability to deliver corrective feedback. A sample of supervisors working in a manufacturing environment was asked to compose a message that would correct their subordinate's chronic tardiness. The messages were evaluated to determine which of O'Keefe's message design logic levels they exemplified: Expressive, Conventional, or Rhetorical. Results show that the corrective feedback formed by the most experienced supervisors was more likely to be at the Rhetorical level. That is, the supervisors created messages that placed primary importance on consensus and interpersonal harmony. Their messages incorporated characteristics of the subordinate so that change could be accomplished with minimal damage to self-esteem and relationships. Because the theory posits that the Rhetorical level is most likely to achieve the communicator's goals, these findings have implications for pre-supervisory screening strategies as well as for supervisory communication training.

BACKGROUND

Organizations in the U.S. invest billions every year in training supervisors to work effectively with their direct reports (ASTD, 2012). Because so much of management consists of talk, most of this training centers on improving communication. Often, organizations promote those who are best at their work into positions of overseeing the work of others, expecting that they will be able to transfer their knowledge and skill to their direct reports. To accomplish this transfer, however, requires skill and ability in delivering feedback, both reinforcing and corrective. Most of us understand how to deliver a reinforcing statement that compliments performance, but performance and effectiveness vary widely when it comes to corrective feedback designed to achieve a change in someone else's behavior. If organizations have a way to determine at a pre-supervisory stage which of their candidates is already skilled as a communicator of corrective feedback, likelihood increases of improved performance and productivity.

LITERATURE REVIEW

Feedback of performance results is a critical phenomenon in all work settings because it affects the course and success of organizations. Scholars have noted its effectiveness in producing improvements in a number of organizational areas, including tardiness and absenteeism, customer service, safety (Balcazar, Hopkins & Suarez, 1986), productivity increases (Wilk & Redmond, 1990), quality control processes (Henry & Redmon, 1991), and job performance in general (DeGregorio & Fisher, 1988; Davenport, 1985). No organization can survive and prosper with below par job performance, and feedback is essential to maintaining satisfactory performance (Barry & Watson, 1996).

In general, the position of the supervisor as a primary and important source of feedback is well established by research (Vecchio & Sussman, 1991; Becker & Klimoski, 1989). Sullivan (1988) asserted that language and speech acts are the heart of motivating employees, and previous research substantiates that good communication is essential to managing people well (Penley, Alexander, Jernigan & Henwood, 1991; Luthans and Larson, 1986; Wodarski and Palmer, 1985). Communication scholars define corrective feedback as a "regulative message," delivered with the object of changing behavior versus changing attitudes, opinions, or beliefs (O'Keefe & McCornack, 1987; Seibold, Cantrill & Meyers, 1985). Feedback given by a supervisor to a subordinate is, thus, goal-oriented communication.

Both communication (O'Keefe & McCornack, 1987) and management and organizational behavior scholars (Dugan, 1989; Podsakoff & Farh, 1989; Liden, Ferris & Dienesch, 1988) note that giving corrective feedback poses more problems to the supervisor than reinforcing feedback. In so critical an area of supervisory competence, then, having an explanation and a methodology to assess the abilities of the communicator could improve outcomes for job incumbents, their direct reports, and the organization.

THEORETICAL FRAMEWORK

O'Keefe and McCornack's (1987) theory of Message Design Logics seek to answer the question of why some situations, such as regulative messages, elicit enormous variations in messages. O'Keefe and Delia (1988) agree with other scholars that successful communicators form messages using skills associated with the task at hand. They further state that, as communicators become more sophisticated about the ways in which they communicate, they begin to appreciate that they may call upon characteristics of the audience to accomplish their purposes. In a corrective feedback situation, the desire to improve performance would motivate the supervisor to compose and deliver a message, but this goal does not automatically specify the form of the message. The supervisor would make choices about message formation dictated by his/her communication skill level. This skill level is, in turn, bound up with individual concepts of how communication processes operate, including specific problems posed by specific targets.

O'Keefe (1988) proposed that messages arise from three fundamental premises in reasoning about communication and called them Message Design Logics. Communicators use these premises to reason from goals to message, that is, to consider what they wish their communication to accomplish and to form a suitable message. She theorized three levels of premises, Expressive, Conventional and Rhetorical, and asserted that they formed a developmental progression with each level a prerequisite to the next. Communicators at the Rhetorical level will thus have progressed developmentally through the Expressive and Conventional levels.

The fundamental premise at the Expressive level is that language is a medium for expressing thoughts and feelings. As defined by O'Keefe (1988), "the idea that messages might be systematically designed to cause particular reactions is alien (and possibly reprehensible) to the Expressive communicator—messages are understood as simple expressions of beliefs." Thus, an example of a message at the Expressive design logic level is, "It's important to me that you do your best, but lately your work has been substandard. I'm disappointed in you!"

At the Conventional level, the source conceives communication as "a game played cooperatively, according to socially conventional rules and procedures" (O'Keefe, 1988). Conventional communicators equate communication competence with appropriateness, and consider communication useful "when it is a conventionally defined means to achieve one's ends" (O'Keefe, 1988). O'Keefe (1988) further notes that messages formed from Conventional logic are identifiable by typical content and structure, such as "mentions of felicity conditions in the core speech act, the structure of rights and obligations that give force to the speech act being performed or the mitigating circumstances or conditions that would bear on the structure of rights and obligations within the situation." Thus, an example of a message at the Conventional design logic level is, "You must wear safety goggles while working in this area. That's the rule."

At the Rhetorical level, communication is "the creation and negotiation of social selves and situations" (O'Keefe, 1988; O'Keefe and Delia, 1988; O'Keefe and McCornack, 1987). Within Rhetorical Message Design Logic, "knowledge of conventional social forms and relations is subsumed within a view of selves and situations as mutable rather than fixed" (O'Keefe, 1988). Rather than seeing individuals and situations boxed in by a conventional system of rules, and rather than seeing meaning in messages as fixed, Rhetorical communicators regard all meaning as a matter of social negotiation and of role play in which they may rehearse themselves. Within this view, the process of communication consists of coordination and negotiation. O'Keefe (1988) notes that Rhetorical communicators place primary importance on consensus and interpersonal harmony. For supervisors communicating at the Rhetorical level of Message Design Logic, achieving behavior change is a process of incorporating characteristics of the subordinate so that change is accomplished with minimal damage to self-esteem and relationship. An example of a message at the Rhetorical design logic level is, "I'd like to sit down with you and go over your project. I hope that through discussing it, I might get a better idea about exactly what it is that you expected it to look like."

PURPOSE

O'Keefe (1988) tested Message Design Logics and related theory regarding multi-functional goals with students by posing a situation in which the respondents produced a message to change the behavior of an under-performing group member in a class project. Most recently, researchers in the healthcare field have used the theory to explore message formation and effectiveness (Caughlin, Brashers, Ramey, Kosenko, Donovan-Kicken & Bute, 2008; Peters, 2005), but no previous research has tested the theory with supervisors in the workplace. This gap is a significant omission, considering the potential advantage to improving selection, training, and results.

Thus, the purpose of the current research project was to apply O'Keefe's theory to workplace interactions between supervisors and subordinates. This paper reports the results of a pilot study of Message Design Logics used by supervisors in a manufacturing environment. The study collected messages in response to a typical corrective feedback situation centered on tardiness to work. The design of the study followed O'Keefe's and McCornack's (1987) design, and the analysis classified messages collected for level of premises.

RESEARCH METHODS

The purpose of this pilot study was to apply the principles of Message Design Logics when analyzing messages generated by a group of working supervisors. The supervisors composed messages in response to a typical corrective feedback situation centered on tardiness to work.

Sample

The subjects of this pilot study were supervisors participating in communication training programs at their workplace. The supervisors were employed at two manufacturing companies. One company is a leading provider of AC and DC drive systems and custom control systems for oil and gas and related industries. The other company is one of North America's leading producers of corrugated and consumer packaging and recycling solutions. The worksites at which the training took place are located in major cities in the southwestern and southeastern U.S. The supervisors were both male and female, of various ethnicities and ages, and they represented a wide range of supervisory experience. The purpose of the training sessions in both companies was to enhance supervisors' interpersonal communication skills with their managers, peers and subordinates.

Task

The prompt was a case that was designed to be a typical corrective feedback situation (Appendix 1). The case described an employee who was chronically tardy to work. The supervisors who were the subjects of this study were asked to take on the role of team leader. They were asked to imagine that one of their direct reports had been late to work on three occasions. In the case, the tardy team member's performance was not yet a problem, but other team members had complained. The supervisors of this study were asked to write exactly what they would say to this imaginary employee, with a goal of eliminating the tardiness. A copy of the company policy on tardiness for salaried employees was included in the case materials, but the case stated that the supervisor was not to formally discipline this subordinate, but simply "talk to him."

Procedures

The supervisors of this study attended training programs that consisted of several consecutive sessions. The participants were asked to complete an exercise during one of the sessions. They were given as much time as they needed to individually compose a message to their imaginary, chronically tardy subordinate. No identifying demographic information was collected except for gender and length of time as a supervisor. Results were collected by the trainer in each program without comment – there were no evaluations or consequences for the messages' authors. The writing samples became the data for this study.

Analysis

A total of fourteen messages were analyzed for this pilot study. Three responses were incomplete or unusable (for example, one participant wrote simply, "I would talk to him"). The authors of this study analyzed each message using a rubric that they had collaboratively developed, based on O'Keefe's categories (Appendix 2). Each rater read hardcopies of the handwritten messages and, using the rubric, independently classified each message according to its level of design logic -- Expressive, Conventional, or Rhetorical.

RESULTS

Results of the ratings of each supervisor's message appear in Table I below. Inter-rater reliability was defined as level of agreement among the raters; that is, the degree of consistency among the independent observations about each message's design logic level. All three researchers independently assessed the message for each response before coming to consensus on the appropriate classification. As shown in Table 1, the percentage of agreement was 100

percent, well above the 85 percent that is considered an acceptable level of agreement for applied behavior analysis designs (Huck, Cormier, & Bounds, 1974; Mertens, 2010). The sample message ratings are listed in descending order of Rhetorical, Conventional, and Expressive message design logics.

As Table 1 shows, the majority of the supervisors' messages fell into the Conventional category. That is, most of the supervisors attempted not only to correct the imaginary subordinate's behavior but also to discuss the rules and policies set in place for such occurrences in a polite and professional manner.

Table 1
Classifications of Supervisors' Corrective Feedback

Supervisor	Message	Years of Experience
1	R	5
8	R	5
9	R	20
3	C	1
4	C	1.5
5	C	5
6	C	1
7	C	5
10	C	2
11	C	12
13	C	6+
14	C	10
2	E	1
12	E	unknown

O'Keefe (1988) explained that *Expressive* Design Logic focuses on the sender's thoughts and feelings. It is reactive, subjective, and personal, and simply tells the receiver what is on the sender's mind. One message that all three raters identified as an example of Expressive Logic was: "The reason tardy—making by himself—punish [sic]." O'Keefe's (1988) description of *Conventional* Design Logic focuses on the context of the interaction. An "appropriate" message is determined by the sender's following the rules of social convention. Such a message is determined by circumstances and conditions, and is pragmatic in nature. One message that all the raters identified as an example of Conventional Logic is, "End the conversation by asking him to work on his tardiness or I would have to result by going to disciplinary action." The third message design category, *Rhetorical* Logic, is described by O'Keefe as focusing on social negotiation. The sender's goal is consensus and interpersonal harmony, with an emphasis on effects rather than on consequences of actions. A message that all three raters identified as an

example of Rhetorical Logic is, "I need to find out how I can help you with this problem. Because your tardiness just does not efect [sic] me but every one else that work a long side [sic] of you."

A second interesting finding is that length of experience as a supervisor appears to have an effect on the type of corrective feedback given. The supervisors' messages classified as using Rhetorical Logic when dealing with the employee's issue had all had at least five years of experience in supervision. This finding supports O'Keefe's (1988) assertion that the levels are developmentally "stepped." Additional time and experience on the job would equate to learning and skill development leading to skills at the Rhetorical level. Less experienced supervisors' feedback tended to focus on reactionary responses (Expressive Logic) and rule-based responses (Conventional Logic). The researchers conclude from these results that newer supervisors may not understand the dynamics of the work environment yet, which limits their ability to create context with the subordinates that is necessary for Rhetorical Logic.

Although the sample of data is small and does not extensively reflect these theories, there is enough evidence to support further investigation that will expand on these results. The possibility of other variables that could account for the results, such as previous formal training in corrective feedback or supervisory communication, was not measured in this pilot study, but will be included as factors to be considered in further studies.

DISCUSSION AND IMPLICATIONS

The purpose of this research project was to apply O'Keefe's theory of Message Design Logics to actual workplace communication between supervisors and subordinates. A pilot study conducted in a manufacturing environment provided evidence that supervisors do, in fact, design messages directed at correcting subordinates' performance at all three levels – Expressive, Conventional, and Rhetorical. There is also some evidence that the supervisors' decision to design corrective feedback at a certain level may be related to their years of supervisory experience. These results are consistent with O'Keefe's (1988) and others' results that examined college students' messages.

The next step in this research project is to expand the study to include supervisors in multiple industry settings. Additional demographic factors (other than years of experience) will also be examined to determine possible effects on supervisors' message design logics. For instance, it is possible that gender, age, and cultural differences may play a role in supervisors' decisions about corrective feedback design.

Additionally, we would want to test the perceived effectiveness of Rhetorical approaches versus Expressive or Conventional in achieving the goal of performance change. Some evidence exists in the literature that willingness to include the subordinate in the feedback discussion leads to better results. DeGregorio and Fisher (1988) asked "how performance feedback from the supervisor can be conveyed to a subordinate in a manner that ensures the subordinate will be

satisfied with the process and will be motivated to act on the feedback." Using performance appraisal as the setting for research versus an on-the-job scenario, they found that subordinate participation in the discussion adds to the effectiveness of the feedback.

Results may vary widely for many reasons when it comes to corrective feedback designed to achieve a change in someone else's behavior. After all, the impact of supervisory messages on employee behavior is the ultimate success measure. Although the wide range of variables poses many challenges, making a clear connection between supervisory communication and employee performance is a worthy research goal.

One important implication of this study's results is that formal training in interpersonal communication skills, particularly in corrective feedback, may have an impact on supervisory effectiveness. It may be possible to augment the learning that evolves from years of on-the-job experience with formal training programs that introduce concepts such as Message Design Logics. Indeed, recent research indicates that effective interpersonal communication may cause positive relationships among employees, leading to productivity, profits and/or growth (Ahmed, et al., 2010; Mathews & Edwards, 2005). Yet, organizations have not often developed methods for measuring the long-term impact of training in interpersonal communication (DeKay, 2012). The complex relationships between training in interpersonal communication and employee effectiveness are emerging as a critical topic in contemporary scholarly literature (Hynes, 2012).

A second implication of this study's findings is that case-based exercises similar to the one used in this pilot may be a valuable tool for predicting supervisor performance. If organizations have a way to determine at a pre-supervisory stage which of their candidates is already skilled as a communicator of corrective feedback, the likelihood increases of improved performance and productivity.

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APPENDIX 1 – CORRECTIVE FEEDBACK CASE

You manage a group of five employees. The productivity of your group is important to the success of the company, and your managers regularly review the performance of your group against goals. It's important to you and to your career progress that everyone performs well. Your prospect for a promotion may depend on the overall performance of your group.

Imagine that you have a direct report employee who has been late to work on three occasions. This employee is not the best of your group, but, when he's there, he makes a solid contribution to results. He's the only one in the group with attendance problems, and two of the other four employees have spoken to you about this person's tardiness. Everyone works together to get the results expected from your group, and, when one person isn't there, the group gets off to a slow start for the day. This employee has offered some explanation to the group for his late arrival, but you have not yet spoken to him about his behavior.

The company policy on tardiness for salaried employees is the following:

"Employees who do not punch a time clock are considered late or left early if they are not at the work area and ready to work at the designated start and dismissal times. A tardy or leave early will count as one half (1/2) occurrence.

After an employee incurs 3 occurrences in a rolling 90-day period, the following disciplinary procedure will be enforced. Each subsequent occurrence will result in the next disciplinary step.

Fourth occurrence = Verbal Warning

Fifth occurrence = Written Warning

Sixth occurrence = Final Written Warning and 3-day suspension without pay

Seventh occurrence = Termination"

You don't want to be in a position to administer formal discipline to this employee, nor do you want to assign him less satisfactory ratings at the end of the performance year. You have decided that you must talk to this employee to eliminate the tardiness.

Respond to this hypothetical situation by writing exactly what you would say to this employee on the back of this page. Provide a message and not just a general description of the approach you would take.

APPENDIX 2

Rubric for Rating Supervisors' Messages			
	Expressive	**Conventional**	**Rhetorical**
Fundamental Idea	Straight-forward	Distinguishes between thought and expression	Designed to portray what the speaker wants reality to reflect
Central Dimensions of Communication Evaluation	Clarity of expression; openness and honesty; unimpeded signaling	Appropriateness; control of resources; cooperativeness	Flexibility; symbolic sophistication; depth of interpretation
Key Message	Self-expression	Secure desired response	Negotiate social consensus
Organization	Reaction to prior event	Response specified by present context	Initiate movement toward desired context
Message/Context Relation	Little attention to context	Action and meaning context-determined	Communication process creates context
Internal Message Coherence	Subjective and associative	Intersubjective and rule-focused	Intersubjective and style-centered
Diagnostic Message Elements	Pragmatically pointless content	Mentions of role- and communication-based rights and obligations	Explicit context defining clauses and phrases
Method of Managing Face Wants	Editing	Politeness forms	Context redefinition

TERRORISM AND ECONOMIC GROWTH: LESSONS FOR EGYPT AND THE ARAB SPRING ECONOMIES

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ABSTRACT

This paper explores recent findings on the effect of terrorism on economic growth and the techniques used to explore such effect. The literature extensively covers the effect of terrorism on economic variables such as tourism, foreign direct investment and financial markets with several attempts made to quantify such impact. Recent research explores the effect of terrorism on economic growth in general. There is evidence that terrorism can reduce economic growth rates on cross country studies, with the impact varying from one nation to another due to different economic, political, demographic, and cultural conditions. There is also evidence that economic growth itself has the ability to reduce terror incidences. Recent findings in this area stresses that each country is unique in its conditions and in designing a comprehensive strategy to attack domestic terrorism, directing funds and policies towards improving economic performance as well as the social and political environment can be of equal importance to directing it to fight terrorism.

Keywords: Economic Growth, Terrorism.

INTRODUCTION

The Arab spring revolutions have brought about serious divisions among its countries' populations. Tunisia, Yemen, Libya, Iraq and Egypt have been witnessing an ever rising threat of terrorist activities and sporadic terrorist attacks. Egypt in the 1990s experienced a series of attacks that aimed at its tourism industry with an obvious purpose of crippling the economy. Today the frequency of terror attacks has dramatically increased, those attacks usually stem from fundamentalists trying to weaken or overthrow the government as different factions are trying to dominate the political scene. The Sinai Peninsula in Egypt has been witnessing an increased amount of violence, and a lot of rhetoric from some Islamist factions carries out the threat of using violence to halt the liberal movement. In designing a comprehensive strategy to fight terrorism one has to resort to research findings of the economic effects and roots of terrorism.

The purpose of this paper is to explore the recent literature analyzing the effect of terrorism on economic growth and the bidirectional relation between growth and terrorism.

TERRORISM AND ECONOMIC GROWTH

Terrorism has a direct impact on growth by destroying physical capital, and an indirect impact through affecting investment and government consumption patterns and other variables. Literature exploring the economic effects of terrorism largely agree that terror incidences slows down economic growth through various channels; it may divert foreign direct investment, cause a reallocation of investment funds, hinder international trade, and damage the tourism revenues in which many developing nations may depend on.

The effect of terrorism on different economic variables has been studied extensively in the literature. For example, Drakos and Kutan (2003) investigated the effect of terrorism on tourism some Mediterranean countries. Chen and Siems (2004), Johnston and Nedelescu (2005), and Eldor and Melnick (2004) explored the effect of terrorism on financial markets, international trade, consumption and savings and other variables that are directly or indirectly related to economic growth. The negative effect of terrorism on all of the previously mentioned variables was established with many attempts to quantify it. In addition, the overall effect of terrorism on growth itself was subject to many empirical studies.

Abadie and Gardeazabal (2003) explored the effects of conflict using the terrorist conflict in the Basque country as a case study. In evaluating the impact of terrorism on that region Abadie and Gardeazabal used other regions with similar economic characteristics prior to the Basque's political terrorism of the 1970's as a reference point. They created a vector of economic indicators for both the controlled regions and the Basque region prior to and after the political terrorism period and compared the divergence of the per capita GDP of the Basque region to that of the controlled regions using statistical interference methods to analyze the effect of terrorism. Their findings indicate a significant average gap of per capita GDP of around 10% for the Basque people relative to the controlled regions due to terrorism; a gap that was slightly bigger during the periods of intensified terrorist acts. In addition, Abadie and Gardeazabal were able to demonstrate the negative effect of terrorism on the stock value of the Basque's stock assets and illustrated that the growth of value of those assets surpassed that of the controlled regions at times where the violence ceased and truce was established. Enders and Sandler (1996) investigated the effect of terrorism on net foreign direct investment in both Spain and Greece. They utilized time-series analysis, transfer function modeling, and vector auto regression analysis to quantify how terror incidences transfer overtime to the time-series of net foreign direct investment flow in both the short and long run. To represent terrorist activities they used a terror incident count with ascending weights according to the severity of the incident computed quarterly to correspond with investment flows data. Enders and Sandler findings indicate that terror incidents on average decreased Spain's net foreign direct investment flows by 13.5% and

that of Greece by 11.9% which given the importance of FDI for both nations has had negative consequences on growth.

Blomberg et al. (2004) utilized panel data set with yearly observations for 177 countries covering the period from 1968 to 2000. Their findings indicate that on average terror incidences has a significant negative impact on economic growth. Abadie and Gardeazabal (2008) attempted to analyze the effect of terror incidences on the world economy. They introduced a model that encompassed two countries; a domestic and a foreign, with full capital mobility and a population of identical and infinitely lived agents that are equally distributed between the two countries; agents determine how much to consume, how much goes into capital goods and how much goes outside the country in the form of foreign direct investment. In addition, the model assumes constant returns to scale which may be consistent with long term allocation of capital. They utilized a stochastic AK technology model to capture domestic production and innovation shocks, and reflected terror incidences as innovations from a Poisson process that destroys a fraction of capital stock. With the negative direct impact of terrorism taken into account, the variance of the expectation of the return to capital would increase according to the intensity of the terror incidences. Subjecting the solution of the maximization problem of the agents, the authors demonstrate that terrorism induces large movements of capital across countries. In addition, and in order to quantify the impact of terror incidences, empirical application of the model suggested that a one standard deviation in increase in the intensity of terrorism produces a 5% fall in the net position of foreign direct investment that is normalized by GDP.

The causal relationship direction between economic growth and terrorism has had its share in research; while terrorism is harmful to economic growth, can economic growth decrease terrorism? Several empirical studies have tried to investigate the later question. Krueger & Maleckova (2003), Abadie (2006), Piazza (2008) and Krueger & laitin (2008) have tried to average the effect of economic growth on terror incidences but found no significant connection. Most of their findings point out to the weakness of political institutions and political repression as more causes of terrorism. Krieger & Meierricks (2011) reviewed many studies in that area that all point out to the more significance of non economic factors such as ethnic conflicts and foreign policy than economic conditions. Those studies however, do not rule out the effect of economic growth in reducing terrorism at a country level.

Meierricks and Gries (2012) analyzed the causal relationship between terrorism and economic growth. Utilizing a panel data on economic growth, political and economic development, population, geographical and cultural affiliation and terror incidences for 160 countries during the period from 1970 to 2007 they ran a series of tests for Granger non–causality. They tested for several hypotheses; a homogenous causality in which terrorism reduces growth across all nations, a heterogeneous causality in which terrorism reduces growth for some nations, and on the other side, they tested a homogenous causality in which economic growth reduces terror incidences across all nations and heterogeneous causality in which it reduces such incidences across some nations and other hypotheses. Their findings indicate a

causal relationship between terrorism and growth that is heterogeneous over time and across space. They attributed the temporal causal heterogeneity to shifting geographical and ideological patterns and that the causal mechanics across the nations arise from country specific factors such as the stage of political and economic development, cultural affiliation and the severity of terror incidences. Their findings indicate that economic growth in some Latin American countries managed to suppress terror incidences; these countries include Argentina, El Salvador and Guatemala. On the other hand, their findings also indicate that terrorism had the largest impact on growth in Islamic and African countries with weak political institutions, low political stability, and persistent terror incidences such as Algeria, Angola, Afghanistan, Egypt and Somalia.

Shahbaz (2013) investigated the linkages between inflation, economic growth and terrorism in Pakistan over the period 1971-2010. Shahbaz applied ARDL bounds testing approach to cointegration as well as a rolling window approach and VECM Granger causality tests, his findings indicate a conitegration between inflation, economic growth and terrorism in Pakistan and bidirectional causality between inflation and terrorism. The results though confusing, indicate that economic growth in Pakistan, associated with inflation has lead to an increase in terror incidences, and the author recommends the government to follow policies that directs the benefits of growth to the poor, and to fight inflation. Hye and Khan (2012) established that tourism had a role in the positive economic growth in Pakistan. They used annual time series data for Pakistan from 1971-1008 to estimate the long-run relationship between income from tourism and the economic growth. They utilized Johansen Juselius cointegration and autoregressive distributed lag model and rolling windows bounds testing approach and confirmed a long-run relationship between tourism and growth that point out that tourism led economic growth for the majority of the sample period. Such findings highlight the damaging role of terrorism on growth through directly affecting tourism. Raza & Jawaid (2013) used Pakistani annual time series data from the period of 1980 to 2010 and applied Johansen and Jeuuselius and ARDL bound testing cointegration approach to explore the impact of terrorism incidences on tourism in Pakistan. Their findings indicate a negative significant effect of terrorism on tourism in the short as well as the long run. Their findings were confirmed to have negative coefficients throughout the sampled period by using rolling window estimation method. In addition, the authors confirmed the unidirectional causal relationship between terrorism and tourism where causality runs from terrorism to tourism through using a Granger causality, Toda and Yamamoto Modified Wald causality and variance decomposition tests.

Gries et al (2011) used Hsiao–Granger method to test for terrorism–growth causality for seven Western European countries; France (1951–2004), Germany (1971–2004), Greece (1952–2004), Italy (1951–2004), Portugal (1951–2004), Spain (1951–2004) and the UK (1951–2004). The causality tests were ran between domestic terrorism and real GDP per capita growth. There results point out that the effect of economic performance on domestic terrorism is very strong in bivariate settings but diminishes in trivariate settings that included trade openness dynamics.

Their findings also indicate that economic performance leads terrorist violence in robust ways only for three out of seven countries; economic growth robustly decreases the terror incidences for Germany, Portugal and Spain, but not for France, Greece, Italy and the United Kingdom. The authors conclude that consistent economic growth in some countries may raise the opportunity costs of terror and thus discourages violent behavior as individuals find more economic opportunities. Hence, they recommend that policymakers should not underestimate the role of economic factors and that of the opportunity costs of violence in reducing domestic terrorism. They also note that other factors should also be considered when explaining terrorism dynamics when the ties between economic growth and domestic terrorism are not found to be robust.

Yang et al. (2012) investigated the effects of increasing anti-terrorism expenditure on economic growth rate and social welfare. They constructed a closed economy consisting of a household and a government where the household produces a single composite commodity that can be consumed, accumulated as capital, and paid for as an income tax. The government collects income tax to finance public spending on infrastructure and anti-terrorism expenditure that can increase the protection and security of residents. In their model, government's anti-terrorism spending enters into the social welfare utility function due to the fact that it reduces the probability of terror attacks and increases the safety of the residents. Hence, the representative household's objective is to maximize the discounted sum of future instantaneous utilities.

Ocal & Yildirim (2010) argue that empirical studies investigating the economic impact of terrorism usually use traditional cross-sectional analysis that implicitly assumes that sampled countries share the same economic, social, and political environments which may result in a heterogeneity bias. They argued that the attitudes and behavior of people vary across regions of a same country as well as from one country to another as well as the economic, social and political conditions and that global estimation tools would ignore such heterogeneity producing autocorrelation and bias. To overcome such bias they emphasize the importance of focusing on country research rather than cross-country. They proposed the employment of geographically weighted regressions instead of global ones. The authors applied their methodology to analyze the economic impact of terrorism in Turkey by using provincial-level annual data covering the time period 1987–2001 and utilizing local and global estimation methods. Their findings indicate that terrorism negatively impacts economic growth across Turkey but its impact is sounder in South Eastern provinces where terror incidences were of higher frequency. Their findings also indicate that the benefit impact of real per capita government expenditures is stronger in the more developed western and central provinces and that higher education levels contributed to growth across all provinces.

Another effect of terrorism on growth was pointed out by Koh (2007) who emphasized the role technology plays in growth and how innovation may be affected by terrorism. He argued that the diversion of funds to compact terrorism might not only be a burden on growth, but the human capital drain that occurs when shifting talented individuals into producing terror

fighting technology might slow down innovation in the private sector resulting in slower growth rates.

One major problem associated with the investigation of the effect of terrorism on economic variables lies in the data. Most empirical research in this area relies on the Global Terrorism Database GTD compiled by the National Consortium for the Study of Terrorism and Responses to Terrorism of the University of Maryland. The database provides date, country, city, perpetrator (if known), fatalities, number of injured, weapons used, and target type information about terror incidences worldwide from 1970 to 2011. Sandler (2011) notes some shortfalls of the GTD database. Sandler argues that GTD does not distinguish in an explicit way whether the terrorists is domestic or transnational, a distinction that was highlighted by the findings of Gaibulloev & Sandler (2011) which concluded that only transnational terrorism harmed income per capita growth in Africa, a conclusion that points out that the roots of domestic terrorism may differ from that of the transnational.

In an attempt to investigate the role that social and economic conditions play in inducing terrorism, Freytag at al. (2011) introduced a theoretical model in which the predisposition of a person to become a terrorist or support terrorism depends on the opportunity cost of terror. Thus a person's consumption choices are between becoming terrorist and consuming mental rewards such as status and supreme values, or the non violence approach and thus the consumption of regular goods and services; whenever the peaceful path is more rewarding the opportunity cost of becoming a terrorist increases. They then tested their model by running a series of negative binomial regressions for 110 countries between 1971 and 2007 to test the hypothesis that poor social and economic conditions are conducive to terrorism. Their data set accounted only for domestic terror incidences, in addition, it included GDP per capita, Consumption relative GDP, the level of trade openness, investment relative to GDP, rate of economic growth, and proxies from databases that reflect the level of political development, regime stability, government size, population, degree of religious fractionalization, military spending and other variables. Their findings indicate that socio-economic conditions are conducive for terrorist activity; a better economy reduces terror incidences, so does more trade openness.

CONCLUSION

The effect of terrorism on economic growth has been extensively studied in the literature. There are a lot of methodological and data issues to be resolved. However, there is a lot that can be learned through analyzing country data or cross country data. The wave of terrorism that affected Italy, Germany, Spain, Greece, Argentina, and others many years ago can provide some explanation to events ongoing today. There is evidence in the literature that point out to the bidirectional relationship between economic growth and terrorism. Terrorism would decrease economic growth through by decreasing tourism, FDI, scaring the financial markets, diverting capital and human capital to fighting terrorism. On the other side, an increase in growth may

reduce terror incidences and increase the opportunity cost of terrorism. In designing a comprehensive strategy to fight terrorism each country is different. For the Arab Spring countries, targeting the poor may be as important as allocating funds to fight terrorism. Social and Economic conditions play an important role in inducing terrorist. Fractionalization of the society, cultural and religious affiliation, education as well as per capita GDP seem all to play an important role.

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LINKING IS AUDIT CONCEPTS TO THE REAL WORLD VIA AN EXPERIENTIAL LEARNING EXERCISE

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ABSTRACT

In many companies, accounting departments deal with downloaded data that is analyzed using worksheet software. Many firms allow employee reporting that bypasses formal IS standards and is not subjected to formal IS audit controls. By neglecting to follow IS controls, end user created reports may not include complete or accurate data or formulae. This paper discusses an experiential learning case analysis to link IS audit concepts to the real world. The exercise emphasizes the importance of implementing and following good practice relating to data management: confidentiality, integrity and availability (CIA), separation of duties and controls, all of which IS audits find are often violated.

Key Words: IS audit, experiential learning, data integrity, auditability

INTRODUCTION

Forty years ago, the issue of computers being used to provide information to unauthorized users was unheard of. The computer was well protected and only authorized users could enter the "glass room" to access the computer system. Data was protected as a result of the physical and authorized access controls provided by the centralized computing environment.

Today the computing environment is distributed and data may be accessed and stored by end users on personal computers, iPads, iPhones, USBs, external hard drives and other devices. End users create software applications and spreadsheet reports bypassing formal IS standards and audit controls, thus increasing the risk of lost data confidentiality, integrity, and availability (EMC2, 2013).

The purpose of this research is to discuss an experiential learning exercise and how it links IS audit concepts to the real world. It is important because pedagogy, while presenting concepts accurately, does not provide a sense of problem complexity that auditors face in real-world situations. A case provides context and scope of issues as a basis for a wide-reaching discussion of audit, ethical and managerial issues.

BACKGROUND

Audits

An audit is an independent review and examination of an organization, systems, processes, activities, project, products or records to assess the adequacy of system controls, to ensure compliance with established policies and operational procedures, and to recommend necessary changes in controls, policies or procedures (ITGI, 2007). Included are formal inspections and analyses to check whether a standard or set of guidelines is being followed, that records are accurate and that efficiency and effectiveness targets are being met.

IS Audits

Information Systems Audits (IS Audits) are a special form of audit that relate to work performed by the IS function within organizations. Virtually every audit performed has some IS element that must be considered.

Some twenty plus years ago the issue of computers being used to provide information to unauthorized users was totally foreign. The computer was well protected and only those authorized users could enter the "glass room" to access the computer system. Going forward some twenty years, there are many ways to accomplish computing tasks including distributed computing with the personal computer, iPads, iPhones, USB devices, user created applications, user created reports and other examples, and it is now much more complex to protect and management information. The dynamics have changed, the requirements have changed and the IT world is now extremely complex. The need to ensure that data can be maintained in a confidential manner, that data is reliable and has integrity, and is available to authorized users, has never been more important or complex.

A partial list of IS audit types is provided in Table 1 to show the diversity and complexity of IS and related audits.

Table 1
Example List of IS Audit Types

Enterprise Architecture	Help Desk	SAS 70 (outsourcers)
Infrastructure	Continuity	Management
Security	Applications	Logical and Physical Access
Network: Client/server, telecomm, intranets, extranets	Systems Development	Data & Reporting Management

There are key concepts which relate to IS audit performance. These include audit trails, access controls and separation of duties.

Audit Trails

An audit trail is the trail of evidence that permits a transaction or event to be evaluated moving either forward from its inception to the appropriate general ledger accounts or backward from the general ledger to the transaction. The provision of an audit trail for fiduciary and compliance activities is required in the U.S.

Access Controls

Access controls are constraints placed on data and applications functions (read/write) to control who has what types of access. Access rights are also auditable and must be owned by user. Other important issues are security and privacy, which are restrictions to or camouflaging of data to prevent its inadvertent disclosure.

A control provides reasonable assurance of the secure, reliable and resilient performance of hardware, software, processes and personnel, as well as the reliability of the organization's information. There are three classes of controls: preventive, detective and corrective. Preventive controls are designed into infrastructure objects to prevent violation by unauthorized access. Detective controls are designed into infrastructure objects, as well, to provide a trail of access such that finding unauthorized activities and all actions taken by an unauthorized user can be traced. Corrective controls are the actions taken after a breach of some kind. These would include changes to infrastructure objects, policies, procedures and so on, as needed to ensure that the breach type never recurs. In addition to these classes of controls, eight key areas of controls are evaluated in relation to access management. For each, their ability to provide prevention, detection and correction are evaluated. Other evaluations are included in the discussion below. Each of the eight types of controls are described here.

An audit must evaluate the need for business access controls. Once controls are deemed to be needed for e.g., fiduciary or compliance responsibilities, the business requirements for access control should be documented in an access policy statement, including e.g., job/role-based access profiles, who is affected, policy contents, non-compliance penalties and emergency procedures, as needed.

Then, user access management is evaluated. User access management is the control over access right allocations to users through user registration and administration procedures, including special restrictions over the allocation of privileges and passwords, and regular access rights reviews (ITGI, 2007).

Next, user responsibilities to ensure that users are aware of their responsibilities, for instance, towards choosing strong passwords and keeping them confidential, are evaluated. Real-world practices must also be evaluated, for instance, that systems are locked (using password protected screensavers or key locks) or shut down when PCs are left unattended for any reason.

Network access control to determine adequacy of secure network control access is evaluated. This access is to network services, both within the organization and between organizations. Enforced paths and network segregation may be appropriate (e.g. using fixed/predefined network routes, firewalls and proxy servers). Remote users of the network and network nodes should be suitably authenticated. Remote diagnostic ports should be securely controlled. Security attributes of all network services should be clearly described. An audit must pass both the adequacy of the method choice and also the adequacy of the implemented choice.

Operating system access controls are next. This is evaluation of the operating system and security facilities and utilities used. Both method of control and adequacy of the implemented security and access controls are performed.

Application access management is next. These controls relate to design of application systems such that security controls to restrict unauthorized access to application functionality is provided. Often this is created and monitored through the database and is related to database controls. So, these two types of controls might be combined for an audit.

Next monitoring of accesses to systems hardware, software and data are evaluated. CyberSecurity in education and CyberSecurity positions in government and industry address the need to maintain confidentiality, integrity and availability (CIA) of systems.

Confidentiality as a security principle is to ensure that information is not disclosed to unauthorized individuals (Harris, 2010). When unauthorized users access systems they are not authorized to access this creates vulnerability and places the organization and its stakeholders at risk. A review and audit of system access logs may assist the auditor in determining unauthorized access and a breach of confidentiality of information.

Integrity of information is another critical concept of information security. Integrity is upheld when the assurance of accuracy and reliability of information is provided and unauthorized modification is prevented (Harris, 2010). Loss of integrity will severely affect the accuracy of reporting information. The major problem is that once data integrity is lost even for only one record, there is no way to trust any of the information in the system (Landry & Blanke, 2011).

Availability ensures reliability and timely access to the data and resources to authorized individuals (Harris, 2010). System availability may be adversely affected by employee mistake or on purpose, equipment failure, network capacity issues and natural or manmade disasters. Denial of service (DoS) attacks are a common type of attack that a hacker may use to overwhelm the system and cause it to freeze, continually reboot or slow to the point where the system cannot complete its tasks. When a system is not available for whatever reason, the organization is not functioning properly, and productivity and profits are at risk (Landry & Blanke, 2011).

Separation of Duties

Also very important to an IS audit is the concept of separation of duties. This means is that more than one person is required to complete a task that has fiduciary or auditable control requirements. Typically, the tasks that need separation include authorization, application design, document or code preparation, management of the code (or data) in production and reconciliation and correction of errors. There are three basic methods of separation when it is desired. Each is discussed in this section.

Sequential and individual separation are related techniques that require two individuals. In sequential separation, two different people perform parts of a task, for instance, one person designs a control change, and other person codes the program to implement the change. This type of separation often is extended to include different people for approval, design, coding, testing, operations implementation and user signoff. Individual separation uses two individuals who may sign off their approvals to independently evaluate and approve of a change. This might be two designers, two coders or one each designer and coder. The point is that four eyes have seen the changes and approved of them.

The technique of spatial separation is similar to sequential separation but the two individuals are also located in two separated locations. Typically, this would be two geographically separated locations, for instance, a coder in New York might have her code evaluated by a coder (or designer) in Dallas.

Factorial separation is a technique that uses combinations of the other two or other factors for separation of duties. For instance, the tasks – design, program, test, implement, manage – may be each assigned to different individuals, or to two individuals in different parts of the world. This type of separation is a burden, especially for small organizations that may employ only one programmer and one or two operations staff as the skills may not be available to enforce separation. In this case, the audit requires evidence that outsiders were used to perform some of the functions.

To solve the problems with separation of duties, often a process or task needs to be redesigned. The function is decomposed into constituent steps and each step or group of steps is assigned to a different individual. An audit might recommend such design as part of audit findings.

Finally, in addition to the methods of separating work, control mechanisms relating to separation of duties are required. These might include an audit trail to manager or auditor, reconciliation of applications by outside person, exception handling by supervisors, manual or automate system or application logs record all transactions and/or review – supervisory or independent.

Database Audits

With the tools available today, a savvy end user may create a database, access a database, manipulate data (Cunningham, 2012) and create spreadsheet reports that may be accurate or may not be accurate. Financial analysts see spreadsheets as a powerful tool of choice for financial reporting. "Ad hoc, uncontrolled end-user applications that source and manipulate sensitive enterprise data to report financial results and generate analyses that inform million-and even billion-dollar decisions – spreadsheets are also a source of great risk (Improving financial integrity, p.3)." Gartner (2009) reports there are thousands of uncontrolled spreadsheets used by enterprises every day which constitutes a significant risk. Poorly managed spreadsheets whether through negligence, incompetence, or deliberate criminal conduct – result in business losses, potential legal liability, reputation concerns and possibly unwanted regulatory focus. Financial Executives reported in their top five processes that require technology improvements is the need to improve the quality of data used for business information (Gartner, 2012).

A database audit should be performed to ensure recorded legality of all actions by database users. Typically this requires evaluation of security, accessibility and accuracy of the data. Since all data are unlikely to be audited due to volume of organizational activity, key critical applications and databases are usually chosen for an audit.

This paper specifically addresses the issue of data being obtained from a database and used to compile further reports, via spreadsheet applications, which bypass normal IS audit controls. Typically IT does not support spreadsheet applications. These applications exist under-the-radar and are difficult to control. More and more IT has little to do with directly processing and managing an organization's information. To add to this complexity, the end user is now not solely interfacing with the company's IT resources. They may be entering data into a system or retrieving data from a system that may be managed by an IT outsourcer or third party provider (Cunningham, 2012).

METHOD (EXPERIENTIAL EXERCISE)

The experiential learning exercise provided in the appendix links IS audit concepts to the real world. The exercise emphasizes the importance of implementing and following good practices relating to data management. Included in the discussion are confidentiality, integrity and availability (CIA), separation of duties and controls that often are violated in IS audits.

The exercise involves a company that installed an enterprise planning software (ERP) to manage its business. While the ERP lived up to many expectations, the applications developers could not keep up with demand for reports from the ERP so that many managers and most accounting and finance staff found themselves downloading data from the ERP and creating spreadsheets for data analysis. About 100 of the 500 total employees used spreadsheet analysis

of downloaded data on a regular basis. The external auditor has to decide the best approach to auditing these spreadsheets.

The students are asked to define the issues involved with conducting the spreadsheet audit. They are also asked to consider any related ethical issues and laws that are applicable to the audit.

DISCUSSION

The case is used to supplement chapter readings relating to data accuracy, ethicality of data management, IS audit and key IS audit concepts. How each of these relate to the case provide the basis for case discussion, which is described in this section.

User-prepared spreadsheets are an IS audit concern. Some issues deal with individuals creating their own analyses; others relate to business requirements and risks related to spreadsheet report use. The concerns relate to missing quality assurance, testing and auditing of "off the books" spreadsheets that are being actively used in the decision making process at the company.

Another issue relates to business requirements and risks in the use of user generated spreadsheets if the company makes decisions based on incorrect spreadsheets. In addition to decision risks, there are also risks of data leakage if the spreadsheets are not properly protected. Data must be available only through proper channels and only to approved parties. These should be identified in corporate policies regarding downloading of data and how it is used in company decision making.

Other audit issues relate to individuals creating their own analyses using spreadsheets. The individuals could select incorrect data, asking for "New York," for instance without differentiating New York City, country or state. Data could be inaccurate due to being modified deliberately or accidentally, or could be incomplete or unauthenticated. Spreadsheet formulae might be incorrect and cause data inaccuracy. Formulae could be incomplete, inaccurate, include wrong data, be performed at the wrong time in the data life cycle or the output could be defined incorrectly. Graphics, pie charts, etc. should also be verified to make sure they are accurate and do not mislead users in information presentation.

There might be little testing conducted on the spreadsheets. There also may be no controls for quality, usage, data type, use in decision making, nor for the security and privacy of the information contained in the spreadsheets. These are all concerns since confidentiality, integrity and availability are key components of good data management.

In deciding the extent of an IS audit scope, the auditors should consider how critical the data being audited is to the company as a going concern. For instance, if it is accounting data which is subject to external auditing and will be reported to the SEC, that is very critical. If it is data on the level of education of the personnel of the company, it is probably not nearly so critical. One way the auditors might look at this is to sort the data being analyzed via user

prepared spreadsheets into categories of usage and criticality to determine the scope of the issue. If the auditors find that the company has already identified critical data for itself, they can verify this criticality analysis. If the company has not identified critical data and made sure it is being prepared properly, that would entail an audit finding being reported.

The IS auditors should also ask about practices and controls in the company for quality assurance and testing of spreadsheets, double checking via walkthrough or reviews for formulae and data accuracy or other items of this nature. The auditors will also want to evaluate who has responsibility for these actions. Companies should use tools for forensic tracing (or the audit trail) for all data, to make sure that downloaded data has a defined life cycle, that copies do not proliferate and that proper controls are exercised at the shared-disk and personal computer level.

To the extent that the company does have quality control and testing of spreadsheets, the auditors should review company procedures and match them to data criticality to ensure their sufficiency. If testing procedures are not conducted, or they are insufficient, an audit finding should be reported.

In choosing what to audit, all spreadsheets that contain company critical data should be audited, or a strategy for auditing should be developed that provides at least 95% confidence that errors relating to critical data will be found. Depending on the number of people and spreadsheets involved, the IS auditors may not audit spreadsheets that contain non-critical data .

The following list summarizes the issues discussed with students on what is involved with an IS audit of user prepared spreadsheets. Spreadsheets need to be verified as having:

1. Correct, accurate, complete data
2. Correct, accurate, complete formulae
3. Correct, accurate, complete reports and graphs
4. Testing and quality assurance
5. Controls (quality, usage, data type, security and privacy)

There are numerous laws that might possibly be related to spreadsheets that are prepared using data downloaded from a company's main information system. Table 2 is a partial list of the varied regulations that may need to be considered during IT audits. The list provides students with some appreciation for the complexity of knowledge and possible conflicting regulations that may regulate IT audits.

Legal requirements not withstanding, ethical issues are also of concern when data is downloaded. It would be very unethical to mismanage customer, employee, financial or other data critical to the company's functioning. Principles of equity and fairness require that accurate data be provided for all decisions. Properly computed spreadsheets and properly executed controls are also ethical matters as it is company responsibility to give correct data to shareholders, vendors, the government, employees and other stakeholders.

Table 2 **Partial List of Laws Guiding IT Audits**
Freedom of Information – FOIA (5 U.S.C. 552)
Privacy Act of 1974 (5 U.S.C. 552a)
Health Insurance Portability and Accountability Act – HIPAA Privacy Rule (45 CFR Parts 160 and 164)
Clinger-Cohen Act -- Federal agencies require CIO and NIST to develop general privacy/security guidelines
Computer Matching and Privacy Protection Act, 1996 -- Federal agencies SLAs and OLAs for data sharing
The E-Government Act of 2002 -- Requires privacy impact analysis to determine impact of data use, life, sharing
Federal Information Security Management Act – FISMA -- 2002, government data protection
Government Paperwork Elimination Act -- Requests for info need to be in writing and auditable, also electronic signature management
Gramm-Leach-Bliley Act -- SOX, 1999
OMB Circular A-130 – Management of Federal Information Resources -- Record keeping of data about individuals
OMB Memorandum M-03-22 -- How to e-Government privacy
OMB Memorandum M-99-18 -- Web site privacy mgmt.
OMB Memorandum M-00-13 -- Guidance on cookies
OMB Memorandum M-01-05 -- Relates to data matching
Paperwork Reduction Act -- Efficient, effective paper management

Thus, a single case can be used to raise issues of accuracy, security, controls, management policy, processes and ethics. Cases such as this are useful in providing students a taste of the complexities of IS audit and the issues with which they will be grappling in audit careers.

CONCLUSION

Today's computing environment is distributed with data accessed and stored by end users on numerous types of personal and corporate devices. End users often create software applications and spreadsheet reports, bypassing formal IS standards and audit controls, thus increasing the risk and probability of lost data confidentiality, integrity and availability.

An experiential learning exercise can aid students in linking IT audit concepts to the real world. The exercise presented in this paper emphasizes the importance of implementing and following good practices relating to data management, accountability and accessibility. Also

included in the discussion are confidentiality, integrity and availability (CIA), separation of duties and other controls, all of which are often violated when end users prepare spreadsheets.

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APPENDIX A
FANCY PANTS CORPORATION
SPREADSHEET AUDIT

In 2007, Fancy Pants Corporation (FPC) of New York City, installed SAP to manage its growing $6 billion manufacturing business. While SAP lived up to many expectations, the FPC applications developers could not keep up with demand for reports from SAP so that many managers and most accounting and finance staff found themselves downloading data from SAP and creating spreadsheets for data analysis. Today, in 2012, of the 500 employees, it is estimated that 100+ of them use spreadsheet analysis of downloaded data on a regular basis.
EYAudit is auditing FPC and needs to do something with the spreadsheets. EYAudit is having a meeting of the audit team to decide the best approach to spreadsheet auditing.

Student Tasks:

1. Define the issues involved with this part of the audit. Define how to go about auditing these spreadsheets.

2. What laws are applicable to this audit issue?

3. Are there any ethical issues relating to this audit issue?