GLOBAL JOURNAL OF ACCOUNTING AND FINANCE

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TABLE OF CONTENTS

DOES GOOD STEWARDSHIP REDUCE AGENCY COSTS IN THE IT SECTOR? EVIDENCE FROM DIVIDEND POLICY AND ESG RATINGS

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ABSTRACT

The link between corporate social responsibility, firm performance and various discretionary managerial decisions is widely documented in the academic literature. Recently, ESG ratings emerged as one metric that quantifies components of social responsibility. ESG (environment, social and governance) ratings enable researchers to evaluate the firm's overall social responsibility and then to parse that measure into its individual components to identify specific social responsibility decisions that may have greater impact on the firm. Recently, Yahoo! finance added a series of sustainability metrics that provide scores for a firm's "environmental, social and governance issues" (ESG). The ESG data focuses on issues that are most likely to affect the firm and assesses the firm's "ability to mitigate ESG risks." This study obtained current 2019 data from Yahoo! finance for firms in the information technology (IT) sector. The sample size includes 50 firms with sufficient data to run the models. The positive relationship between ESG rating and dividend yield suggests that firms with higher (better) ESG percentile rankings have higher dividend yields. Overall, the results provide additional evidence that firms consider several social and environmental factors when establishing dividend policy.

INTRODUCTION

The link between corporate social responsibility, firm performance and various discretionary managerial decisions is widely documented in the academic literature. Galbreath (2010) shows a link between social responsibility and strategic orientation. Hsu (2018) shows that firms that are better corporate stewards tend to make better financial decisions and do a better job of allocating capital to positive net present value projects. Olowokudejo, Aduloju and Oke (2011), in their study of Nigerian insurance companies, show that organizational effectiveness improves as firms become more socially responsible. Numerous other studies show similar linkages between social responsibilities and various measures of performance, including Buallay (2019) and Feng, Wang and Kreuze (2017). Still other studies document a linkage between dividend payout and corporate social responsibility. Examples include Casey, Ellis, Casey (2019) and Samet and Jarboui (2017).

Recently, ESG ratings emerged as one metric that quantifies components of social responsibility. ESG (environment, social and governance) ratings enable researchers to evaluate the firm's overall social responsibility and then to parse that measure into its individual

components to identify specific social responsibility decisions that may have greater impact on the firm. Given that industry differences do exist, as shown by Feng et al. (2017) and Nyeadi, Ibrahim and Sare (2018), it is appropriate to study the impact of ESG ratings on firms in a specific industry. In this paper we focus on the information technology (IT) sector given its recent prominence in the popular press with regard to privacy and data usage issues. We also evaluate the impact on dividend policy since dividend payout is often used as to mitigate agency issues and push the firm to show greater transparency. The rest of this paper is organized as follows. Section II contains a brief review of the relevant literature. Section III contains a presentation of the data and methodology, section IV presents the results, and Section V provides some concluding remarks and directions for future research.

LITERATURE REVIEW

Jensen and Meckling's (1976) paper on agency theory shows that problems emerge when you separate a firm's ownership and management. These two disparate groups often have different goals. For this reason, academics and practitioners alike have focused research efforts on ways to align the goals of these two divergent groups. Costs incurred to align these goals are known as agency costs. Various oversight and internal control techniques attempt to reduce agency costs by monitoring management to ensure management behavior is consistent with the primary goal of the owners, which is shareholder wealth maximization.

Dividend payment is one common technique firms use to reduce agency costs. Paying dividends depletes cash and forces the firm into the external capital markets to acquire necessary financial capital for operations and/or expansion. Investor bankers, analysts, potential investors and any external stakeholder evaluates the firm's financial condition, recent managerial actions, corporate governance mechanisms, and other factors prior to providing external capital. This review process uncovers any relevant external or internal issues that will negatively impact the firm and future cash flows. Social responsibility issues fall into this category. Dividend payment is therefore an agency cost since retaining dividends for internal financing would be an easier option for firms seeking expansion capital or firms needing capital for existing operations. Given this relationship exists we can evaluate the linkage between dividend payment and social responsibility to determine whether firms that are more socially responsible pay more or less in dividends.

Rozeff's (1982) agency cost and transaction cost tradeoff model postulates that firms adopt a dividend policy that minimizes their overall costs. When firms issue dividends and are forced to the external markets the firms incur issuance costs associated with raising new debt or equity. Firms must balance the costs of dividend payment and the cost of raising external capital with the value of the information disseminated in that process. The dividend payment must convey relevant information that reduces agency costs or the firm's best decision would be retention of that cash dividend for other uses. Rozeff (1982) maintains that firms will adopt a dividend payment policy that minimizes these overall costs. Easterbrook (1984) and Dempsey and Laber (1992) both support Rozeff's model and an agency explanation of dividend payment.

Several studies, including Noronha, Shome, and Morgan (1996), use adaptations of Rozeff's (1982) model. Moh'd, Perry, and Rimbey (1995) provide strong support for the model over time and across various industries. Casey et al. (1999) extends Rozeff's model to investigate the relationship between payout policy and changes in the tax law. This study notes that industry differences exist with regard to payout policy. Other studies support industry differences. Dickens, Casey, and Newman (2002) study banking while Puleo, Smith, and Casey (2009) focus on the insurance industry. Both use variations of Rozeff's (1982) model to evaluate dividend decisions.

The relationship between corporate governance and dividend payout is also documented in the literature. For example, Puleo, Smith, and Casey (2009) find that regulated firms in the insurance industry have a lessor need to pay dividends and subject the firm to the scrutiny of the external capital markets. Regulators appear to perform that function to the satisfaction of market participants. In a separate study, Smith, Puleo, and Casey (2008) show that non-regulated firms with higher corporate governance quotients also pay lower dividends. A higher corporate governance quotient indicates the firm is a better steward and less likely to engage in inappropriate actions. It appears that firms recognized externally as better stewards can lower dividend payout since they have a lessor need to convey governance information via dividend payment and forcing firms into the external capital markets.

Recently, Yahoo! finance added a series of sustainability metrics that provide scores for a firm's "environmental, social and governance issues" (ESG). The ESG data focuses on issues that are most likely to affect the firm and assesses the firm's "ability to mitigate ESG risks." Casey, Casey and He (2018) use this data source and study the relationship between dividend policy and ESG factors in the utility industry. Their study did not find a relationship between dividend policy and the ESG factors in the utility industry. However, the utility industry is highly regulated, and regulation could reduce the need for firms to mitigate ESG risks. Other research, such as Casey, Smith and Puleo (2010), finds that firms in the oil and gas industry with stronger corporate governance structures paid lower dividends. This finding suggests that dividends do convey information and dividend payment does subject the firm to greater external scrutiny.

In this paper we focus on the relationship between dividend policy and ESG factors in an industry that is often in the press for data stewardship and other social responsibility issues, the IT sector. We evaluate the impact on dividend yield using an overall ESG percentile score and then look at the individual components of ESG. The ESG factor is split into governance, environmental and social affects with distinct numerical values. The addition of the controversy variable provides even more detailed information about the public perception of the firm. Casey, Casey and He (2018) note that today's investors are more interested in socially responsible investing and are willing to reward firms that possess the desired socially responsible characteristics and punish firms that do not possess these traits. For this reason, we expect to see a strong link between ESG ratings and dividend policy.

DATA AND METHODOLOGY

This study obtains current 2019 data from Yahoo! finance for firms in the information technology (IT) sector. The data was collected in July of 2019. The sample size includes 50 firms with sufficient data to run the models (Appendix A). We estimate the following version of Rozeff's (1982) model consistent with Casey, Ellis and Casey (2019) and Casey, Smith and Puleo (2010) who both use a similar model in the oil and gas industry.

$DY_j = \alpha + \sum B_i X_{ij} + \mathcal{E}$,

Where:

DY = dividend yield as reported by Yahoo! finance
X_{ij} represents each independent variable I, for each firm j. These variables are:
INSTIT = percentage of institutional ownership,
BETA = each firm's beta,
DEBT = total debt/equity ratio,
GROW   = next year's percentage forecast growth rate in revenues,
ESG   = Sustainalytics total ESG percentile rating,
CONT = controversy rating assigned by Sustainalytics.

The ESG rating can be split into its three components of Environment rating (ENV), Social rating (SOC) and Governance rating (GOV). Each of these ESG ratings can fall between 1-100. The ratings are calculated using a proprietary balanced scorecard system. Percentile rankings are also reported for these individual components. Justification for the included variables follows.

CONT, or the controversy rating computed by Sustainalytics, assumes a value between 1 and 5 and is assigned based on recent controversies involving the specific firm. A value of 5 is assigned to the most serious controversies that could negatively impact stakeholders, the environment, or the firm's operations. Firms with higher controversy ratings will likely need to increase dividend payout and subject the firm to the scrutiny of the financial markets with greater frequency.

Justification for the other included control variables follows:

Instit, defined as the percentage of institutional equity ownership, could have a positive or negative relationship to dividend yield. Depending on the overall faith in management and fund goals, institutional owners may desire to have dividends retained and invested or paid out to shareholders. Institutional ownership can exceed 100% in rare situations where one institution borrows shares from another institution to short stock. If both institutions report the stock as "owned" then the percentage can exceed 100%.

Beta, the firm's beta computed and reported by Yahoo! finance, serves as a measure of market risk. Investors with higher risk tolerances should prefer firms that reinvest earnings instead of paying cash dividend. Beta should be negatively related to dividend payment and therefore dividend yield.

Debt represents the firm's use of leverage. We use the total debt to equity ratio provided by Yahoo!. Debt could also be positively or negatively related to dividend payout. As debt increases firms often opt to retain funds for debt service in lieu of paying out cash dividends. However, an opposing position suggests that firms paying higher dividends could be forced to incur more debt for capital budgeting and operations. Therefore, debt could have either a positive or a negative sign.

Growth, or next year's forecast revenue growth rate, serves as a proxy for the firm's immediate future cash needs. Higher growth rates indicate the firm may need more cash to support that growth. For this reason, we expect to see a negative relationship between growth rates and dividend yields.

RESULTS

Table 1 contains the descriptive statistics for the variables included in this study. Many of the variables have a wide variation. For example, beta falls between 0.280 and 2.520 which indicates a large variation in market risk in this sample. Future growth rates exhibit an even greater variation and range from -28.2% to 34.3%. It is also worth mentioning again that Institutional Ownership can exceed 100% since one institution can borrow shares from another to short. If both institutions report the ownership the total can exceed 100% in rare situations. Institutional ownership ranges between 0.00% and 117.58%.

Table 1
Descriptive Statistics – Firms in the IT Sector

Variable	Minimum	Maximum	Mean	Std. Deviation
Dividend Yield	0.350	4.620	1.858	0.982
Beta	0.280	2.520	1.254	0.452
Debt	0.010	426.350	101.736	112.073
Institutional Own.	0.000	117.580	83.685	18.367
Next Year's Growth	-28.200	34.300	10.510	8.742
ESG Rating	43.000	87.000	64.420	10.912
ENV Rating	42.000	96.000	66.380	14.890
SOC Rating	38.000	88.000	62.780	12.565
GOV Rating	54.000	87.000	64.720	6.606
CONT	0.000	4.000	1.360	1.025

The ESG rating ranges 43 to 87 for the IT firms included in this study. We see similar variation when we split ESG percentiles into its three components. ENV ranges between 42.0 and 96.0 and SOC has a range of 38.0 to 88.0. The last component, GOV, has a percentile range from 54.0 to 87.0. Each of these variables should measure a slightly different aspect of corporate governance and stewardship. Controversy level (CONT) has a mean of 1.36 and ranges between

0.0 and 4.0. Table 1 also shows that dividend yields also vary quite a bit. Dividend yields have a mean of 1.858% with a low of 0.35% and a high dividend yield of 4.62%.

In Table 2 we report the variable correlations.

Table 2 **Correlation Matrix**									
	Beta	Debt	Instit	Growth	ESG	ENV	SOC	GOV	CONT
Beta	1								
Debt	0.031	1							
Instit	0.087	0.131	1						
Growth	0.010	0.087	0.058	1					
ESG Rating	0.266	-0.209	-0.108	-0.017	1				
ENV Rating	0.223	-0.171	-0.116	-0.042	NA	1			
SOC Rating	0.306	-0.171	-0.084	-0.003	NA	0.834	1		
GOV Rating	0.105	-0.215	-0.143	-0.009	NA	0.524	0.488	1	
CONT	-0.055	0.093	-0.260	0.207	0.207	0.262	0.163	0.103	1

The correlation coefficients indicate there are no variables that are highly correlated and there are no serious multicollinearity problems with the model. The exception is that ENV and SOC are highly correlated. White's (1980) test indicates there is no serious problem with heteroskedasticity.

Table 3 contains a presentation of the OLS regression results from four different regression models. All four models do a good job of explaining the variation in dividend yields with adjusted R^2's ranging from 0.268 to 0.300. Two of the control variables are significant in every model. Debt is positively related to dividend yield and significant at the 0.05 level in all four models. Growth rates are also significant at the 0.005 level in all four models. The relationship is negative in all models.

Table 3				
Regression Results for Dividend Yield for 50 Firms in the IT Sector (t-value in parenthesis)				
Independent Variables	Regression Model 1 (n = 50)	Regression Model 2 (n = 50)	Regression Model 3 (n = 50)	Regression Model 4 (n = 50)
Constant	0.303 (0.314)	1.315 (0.924)	0.289 (0.294)	1.307 (0.897)
Beta	0.040 (0.144)	0.012 (0.041)	0.043 (0.152)	0.012 (0.044)
Debt	0.003* (2.600)	0.003* (2.400)	0.003* (2.533)	0.003* (2.346)
Institutional	-0.006 (-0.939)	-0.007 (-0.977)	-0.006 (-0.860)	-0.006 (-0.917)
Growth	-0.046** (-3.321)	-0.045** (-3.251)	- 0.046** (-3.218)	-0.045** (-3.120)
ESG Rating	0.034** (2.927)		0.034* (2.772)	
ENV Rating		0.013 (0.815)		0.012 (0.775)
SOC Rating		0.021 (1.145)		0.021 (1.131)
GOV Rating		-0.014 (-0.646)		-0.014 (-0.636)
CONT			0.014 (0.111)	0.005 (0.037)
R^2	0.372	0.390	0.373	0.390
Adjusted R^2	0.300	0.286	0.283	0.268

*Significant at .05 level or better
** Significant at .005 level or better

The four models that include various combinations of the ESG and CONT variables are all significant. These adjusted R^2s indicate that the regressions explain between 26.8% and 30.0% of the variation in dividend yields. In the four significant regression models, the only significant social responsibility variable was the composite ESG rating used in Model 1 and Model 3. When the ESG variable was split into individual components in Model 2 and Model 4 there were no significant social responsibility variables. CONT was insignificant in both models that included this variable.

CONCLUSIONS

The four regressions help explain a large part of the variation in dividend yields. However, the only significant explanatory variables are the control variables Debt and Growth in all four models and the overall ESG rating in Model 2 and Model 4. ESG rating was positively related to dividend yield and in both cases and highly significant.

Debt is significant and positive suggesting that firms paying higher dividends also incur more debt as one would expect since it is not uncommon for firms to incur more debt to pay dividends while also engaging in capital spending. This finding suggests that managers do opt to pay dividends knowing they will need additional capital from the financial markets. The negative relationship between growth rates and dividend yield suggests that managers do tend to retain dividends to fund growth when possible. As growth opportunities increase managers will reduce dividends to fund all, or at least a portion, of that growth.

The positive relationship between ESG rating and dividend yield suggests that firms with higher (better) ESG percentile rankings have higher dividend yields. This increase in dividend yield could result from higher dividends or declines in stock price. Either change will result in a lower dividend yield. This finding suggests that firms that are better overall stewards likely convey that information via dividend distributions forcing them into the scrutiny of the external markets. This explanation seems likely given previous research on corporate governance and performance suggests better corporate stewards outperform firms with lower governance standards in most industries, although the impact is greater in large firms (Nyeadi, Ibrahim and Sare; 2018). Lower governance standards would also tend to be penalized by investors selling stock when issues become public. Firms that do not exhibit good governance or good stewardship are penalized by investor selling activity.

Overall, the results provide additional evidence that firms consider several social and environmental factors when establishing dividend policy. As we would expect in the current investing climate, technology firms are affected by environmental factors. Somewhat surprising is that these firms do not appear to be affected by Controversy levels. Managers of these firms should focus some effort on the prevention of issues resulting in negative publicity and being better corporate citizens. Future research should focus on the impact of ESG ratings on other managerial decision variables and performance metrics. Other industries may show completely different results so this analysis should be conducted on an industry-specific basis.

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APPENDIX

Appendix A: Firms Used in Study

International Business Machines Corp. (IBM)	Cognizant Technology Solutions Corp. (CTSH)
CDW Corp. (CDW)	DXC Technology Co. (DXC)
Leidos Holdings Inc. (LDOS)	Xerox Holdings Corp. (XRX)
Microsoft Corp. (MSFT)	Apple Inc. (AAPL)
Cisco Systems Inc. (CSCO)	Intel Corp (INTC)
Oracle Corp (ORCL)	Texas Instruments Inc. (TXN)
Broadcom Inc. (AVGO)	NVIDIA Corp. (NVDA)
Qualcomm Inc. (QCOM)	Intuit Inc. (INTU)
Accenture PLC Cl A (ACN)	Hubbell Inc. (HUBB)
Sabre Corp. (SABR)	CDK Global Inc. (CDK)
Acuity Brands Inc. (AYI)	Avnet Inc. (AVT)
Applied Materials Inc. (AMAT)	Analog Devices Inc. (ADI)
Activision Blizzard Inc. (ATVI)	Netease Inc. ADR (NTES)
HP Inc. (HPQ)	TE Connectivity Ltd. (TEL)
Xilinx Inc. (XLNX)	Amphenol Corp. Cl A (APH)
Motorola Solutions Inc. (MSI)	Lam Research Corp. (LRCX)
NXP Semiconductors N.V. (NXPI)	Fortive Corp. (FTV)
Corning Inc. (GLW)	Tessco Technologies Inc. (TESS)
Microchip Technology Inc. (MCHP)	KLA Corp. (KLAC)
Juniper Networks Inc. (JNPR)	Amdocs Ltd. (DOX)
Teradyne Inc. (TER)	Western Digital Corp. (WDC)
Maxim Integrated Products Inc. (MXIM)	LifeLoc Inc. (NLOC)
Garmin Ltd. (GRMN)	NetApp Inc. (NTAP)
Skyworks Solutions Inc. (SWKS)	SS&C Technologies Holdings, Inc. (SSNC)
Citrix Systems, Inc. (CTXS)	Open Text Corp. (OTEX)

THE ACCEPTABILITY OF ONLINE DEGREES FOR OBTAINING ENTRY-LEVEL EMPLOYMENT IN THE ACCOUNTING PROFESSION: A KANSAS STUDY

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ABSTRACT

The increased demand for and access to online learning is evident when examining the escalating number of online courses now available. Institutions offering online degrees claim their programs are viable routes to employment, career advancement, pay increases, and other job-related rewards. Current research shows that employers at the pinnacle of the accounting profession, certified public firms, show a disinclination to hire graduates of online programs, even when they possess the Certified Public Accountant (CPA) credential. However, employment at CPA firms is but one option for accounting graduates. Employers at CPA firms may have a reluctance to hire graduates of online programs, but existing research is limited given it has not addressed the full range of employment settings. The purpose of this quantitative descriptive and comparative research study was to investigate CPAs' reported likelihood of recruiting an accounting student for entry-level employment and whether this likelihood differs when based on education mode (i.e., online or traditional) or employment setting (i.e., public or private) and if any interaction exists between these two variables. The sample was drawn from licensed CPAs working in public or private practice in Kansas who are involved in the hiring process at their company. Results for the two-way independent factorial ANOVA indicated a significant main effect for education mode, $F(1, 204) = 83.90$, $p < .001$, partial $\eta2 = .29$, a significant main effect for employment setting, $F(1, 204) = 5.76$, $p = .017$, partial $\eta2 = .03$, and a non-significant interaction effect among education mode and employment setting, $F(1, 204) = 2.36$, $p = .126$, partial $\eta2 = .01$. This study extended institutional theory by adding consideration of hiring decisions in the accounting profession as an element of public and private sectors and confirmed previous findings that online degrees are less acceptable than traditional degrees for obtaining entry-level employment in the accounting profession. Additionally, this study indicated that differentiation exists in the accounting profession in Kansas when considering only employment setting and provided support for the system theory of professions. Future research is warranted to investigate if differences exist in other jurisdictions, employment settings, or education modes.

INTRODUCTION

The increased demand for and access to online learning is evident when examining the escalating number of online courses now offered at institutions of higher learning across the United States (Allen & Seaman, 2015). Traditional classroom enrollments are declining and online learning is experiencing strong growth (Tabatabaei & Gardiner, 2012; Tate, Reinstein, &

Churyk, 2017). Every year since 2003, when the Babson Survey Research Group first began tracking online education in the United States, the number of students taking at least one online course has grown at a rate higher than that of the overall higher education student body. The proportion of academic leaders who report that online learning is critical to their institution's long-term strategy has grown from 48.8% in 2002 to 70.8% in 2014, an all-time high. When asked about what will drive the future of higher education, academic leaders selected workforce development and gainful employment second most often, with 20.4% picking it as the most important factor and 64.4% as one of their top three factors (Allen & Seaman, 2015). In the context of high-demand professional fields with a chronic shortage of qualified applicants, online programs have the potential to play a variety of important roles (Adams, Lee, & Cortese, 2012).

Institutions offering online degrees claim their programs are viable routes to employment, career advancement, pay increases, and other job-related rewards. Accordingly, an increasing number of job applicants now earn their degrees online and compete against other applicants with traditional degrees (Tabatabaei & Gardiner, 2012). As a result, it is increasingly important to identify the perceptions of potential employers regarding the acceptability of online degree programs (Bristow, Shepherd, Humphreys, & Ziebell, 2011). Accounting is a degree program area for which online offerings are increasing and students are now preparing themselves for entry into the accounting profession through online degree programs (Kohlmeyer, Seese, & Sincich, 2011; Tate et al., 2017). The question now surfacing is if and how the accounting profession will accept individuals who graduate from these programs (Grossman & Johnson, 2016; Grossman & Johnson, 2017; Kohlmeyer et al., 2011; Metrejean & Noland, 2011; Tabatabaei, Solomon, Strickland, & Metrejean, 2014).

Current research shows that employers at the pinnacle of the accounting profession, certified public firms, show a disinclination to hire graduates of online programs, even when they possess the Certified Public Accountant (CPA) credential (Kohlmeyer et al., 2011; Tabatabaei et al., 2014). Institutional theory supports this disinclination by employers at certified public firms because it suggests that the survival and success of organizations depends on adhering to the rules and norms that facilitate its interaction with other organizations and gives legitimacy to its operations (Kilfoyle & Richardson, 2011). However, employment at certified public firms is but one option for accounting graduates. The accounting profession is not homogenous, as its members are employed in public accounting (i.e., public accounting professionals), business and industry (i.e., private accounting professionals), government, education, and not-for-profit organizations of various sizes. Unique clients with needs distinct to their particular trades compose each of these employment settings (American Accounting Association [AAA], 2012). The system theory of professions is the structure that links professions with specific work tasks. The classic study on the system theory of professions by Abbott (1988) supports the hypothesis that there will be differentiation within any given profession, such as accounting.

Background

An extensive discussion exists in the literature regarding online degree programs (e.g., Adams et al., 2012; Cai, 2013; Fogle & Elliott, 2013; Kohlmeyer et al., 2011; Linardopoulos,

2012; Metrejean and Noland, 2011; Tabatabaei & Gardiner, 2012; Tabatabaei et al., 2014). Much of the existing literature about online learning focuses on student and faculty perceptions and satisfaction with online education delivery, but does not focus on the employer or their perceptions (Bristow et al., 2011; Metrejean & Noland, 2011). The online delivery of higher education has generated questions regarding the acceptance, employability, and credibility from the perspective of external stakeholders of online education (Fogle & Elliott, 2013; Richards, Stevens, Silver, & Metts, 2018). Consequently, when it comes to the transition from higher education to the workplace, employer perceptions are critical (Cai, 2013). The literature is limited regarding the acceptability of online degrees when used as credentials for obtaining employment, especially in the accounting profession (Kohlmeyer et al., 2011; Metrejean & Noland, 2011; Tabatabaei et al., 2014). While debate continues regarding the comparative quality of online learning and traditional face-to-face learning, little is known about the perceptions of practicing CPAs regarding the acceptability of online degrees for obtaining entry-level employment across various positions in the accounting profession (Metrejean & Noland, 2011). As institutions of higher learning enroll an increasing number of students in online degree programs, a key question is whether recruiters will view degrees earned online as comparable to those earned in traditional face-to-face programs (Adams et al., 2012; Cai, 2013; Linardopoulos, 2012; Richards et al., 2018).

Although the number of students taking online courses has grown by the millions over the past decade, faculty acceptance has lagged, student retention concerns linger, and academic leaders continue to worry that online courses require more faculty effort and institutional resources than traditional face-to-face instruction (Allen & Seaman, 2015). Contrary to popular opinion, research suggests that developing online courses often requires a greater investment of time and money than traditional face-to-face courses (Bonvillian & Singer, 2013; Thomas, 2011), which provides support for further research regarding employers' acceptance of online learning as a legitimate education mode. The 2014 Survey of Online Learning conducted by the Babson Survey Research Group revealed that the percent of academic leaders rating the learning outcomes in online education the same or superior to those in face-to-face instruction grew from 57.2% in 2003 to 74.1% in 2014. In contrast, only 28% of academic leaders reported that their faculty accept the value and legitimacy of online education, a rate substantially the same as it was in 2003 (Allen & Seaman, 2015).

Despite the fact that concerns still exist in the educational community, online learning has enhanced its position over the last five to ten years. The Internet has provided a platform for the standardized delivery of online courses, which has allowed strategic importance, popularity, and perceived quality of online learning to improve (Thomas, 2011). The proportion of academic leaders who report that online learning is critical to their institution's long-term strategy has grown from 48.8% in 2002 to 70.8% in 2014, an all-time high (Allen & Seaman, 2015). However, significant challenges remain in that many still regard it as a second-class mode of study (Bristow et al., 2011; Grossman & Johnson, 2016; Grossman & Johnson, 2017; Kohlmeyer et al., 2011; Metrejean & Noland, 2011; Tabatabaei et al., 2014). Nevertheless, online learners claim they increasingly benefit from opportunities to enhance their learning through more flexible modes of course delivery (Thomas, 2011).

Institutions of higher education are becoming increasingly interested in the opportunities provided by online learning. Reasons for this increased interest include the enhancement of student achievement, increased internationalization, improved access, greater flexibility among educational providers, and the ability for students to move between institutions (Thomas, 2011). Additionally, online learning opens up new opportunities for various types of active learning in which the learner has increased control over the course materials, which allows the learner to better participate in the active construction of knowledge. Researchers often refer to these active learning environments as learner-centered instruction and/or problem-based learning (Thomas, 2011).

Accounting is a service profession devoted to helping people by creating and reporting the financial information they need to make good business decisions. In a survey of small business owners, respondents viewed accountants as among the most trusted business advisors. Additionally, many corporate executives are placing increasing importance on accounting skills in their training programs and are emphasizing these skills in their employee searches (American Institute of Certified Public Accountants [AICPA], 2013). The ongoing growth in hiring individuals with strong accounting skills is likely to continue. According to data from the United States Department of Labor Bureau of Labor Statistics (BLS), accountants and auditors will experience faster than average employment growth through 2022. The overall health of the economy and business growth, changing financial laws and corporate governance regulations, and increased accountability for protecting an organization's stakeholders and the general public interest will drive job growth (BLS, 2012).

Statement of the Problem

Employers at certified public accounting firms may have a reluctance to hire graduates of online programs but existing research is limited given it has not addressed the full range of employment settings (Bristow et al., 2011; Metrejean & Noland, 2011) even with the increasing numbers of students pursuing online accounting degrees (Kohlmeyer et al., 2011; Sellers et al., 2012; Tabatabaei et al., 2014). While debate continues regarding the comparative quality of online and traditional learning, not enough is known about the likelihood of being recruited for entry-level employment based on education mode (i.e., online or traditional) (Bristow et al., 2011) and whether this likelihood differs based on employment setting (i.e., public or private) (Metrejean & Noland, 2011) and if any interaction exists between these two variables. Institutional theory is ideally suited to explain this tendency of accountants to restrict hiring to graduates of traditional face-to-face programs rather than online programs because of its consideration of legitimacy concerns and normative pressures to do things in an accepted and traditional fashion (Sellers et al., 2012). Nevertheless, accountants fill a wide range of positions across all employment settings and the desired qualifications differ across these roles (AAA, 2012). Such differences among employment settings, as supported by the system theory of professions (Abbott, 1988), may determine whether job applicants are scrutinized differently during the hiring process, particularly with regard to education mode (i.e., online or traditional). Due to increased demands by employers seeking accounting graduates and the continued growth

of online programs, identification of the employment settings favorable to graduates with online accounting degrees is needed (Kohlmeyer et al., 2011; Metrejean & Noland, 2011; Tabatabaei et al., 2014) and can serve to examine internal differentiation within the profession. Without this study, previous findings that online degrees may be unacceptable for obtaining entry-level employment in the accounting profession would have remained unchallenged and unconfirmed across multiple employment settings (Kohlmeyer et al., 2011; Tabatabaei et al., 2014).

RESEARCH METHOD

The purpose of this quantitative descriptive and comparative research study was to investigate CPAs' reported likelihood of recruiting an accounting student for entry-level employment and whether this likelihood differs when based on education mode (i.e., online or traditional) or employment setting (i.e., public or private) and if any interaction exists between these two variables. The study answered the following questions.

Q1. What difference, if any, exists in Kansas CPAs' reported likelihood to recruit an accounting student based on education mode (i.e., online or traditional)?

Q2. What difference, if any, exists in Kansas CPAs' reported likelihood to recruit an accounting student based on employment setting (i.e., public or private)?

Q3. What interaction, if any, exists among Kansas CPAs' reported likelihood to recruit an accounting student based on education mode (i.e., online or traditional) and employment setting (i.e., public or private)?

H1$_0$. There is no statistically significant difference in Kansas CPAs' reported likelihood to recruit an accounting student based on education mode (i.e., online or traditional).

H1$_a$. There is a statistically significant difference in Kansas CPAs' reported likelihood to recruit an accounting student based on education mode (i.e., online or traditional).

H2$_0$. There is no statistically significant difference in Kansas CPAs' reported likelihood to recruit an accounting student based on employment setting (i.e., public or private).

H2$_a$. There is a statistically significant difference in Kansas CPAs' reported likelihood to recruit an accounting student based on employment setting (i.e., public or private).

H3$_0$. There is no statistically significant interaction among Kansas CPAs' reported likelihood to recruit an accounting student based on education mode (i.e., online or traditional) and employment setting (i.e., public or private).

H3$_a$. There is a statistically significant interaction among Kansas CPAs' reported likelihood to recruit an accounting student based on education mode (i.e., online or traditional) and employment setting (i.e., public or private).

Research Method and Design

A quantitative descriptive and comparative research study was conducted to answer the research questions in this study. The study neither focused on nor took a position on the educational merits or quality of online learning. Instead, the study began to address questions that remain unanswered in the literature concerning the acceptability of online degrees for

obtaining entry-level employment across various employment settings in the accounting profession. Two independent variables and one dependent variable were used in this study. The independent variables were education mode (i.e., online or traditional) and employment setting (i.e., public or private). The dependent variable was CPAs' reported likelihood to recruit, operationally defined as the probability of how actively an accounting student would be recruited. Data were analyzed using both descriptive and inferential statistics. Descriptive statistics were reported for participant demographics and inferential statistics were used to test the null hypotheses.

Population and Sample

The population under study included all members of the Kansas Society of CPAs (KSCPA) who are licensed CPAs working in public or private practice in Kansas and are involved in the hiring process at their company. Previous studies have employed CPA societies as the target population, which provides justification for this study (Tabatabaei et al., 2014). A CPA is an individual who has demonstrated proficiency by passing a uniform national examination and meeting other requirements of the applicable state board of accountancy (Kansas Board of Accountancy [KSBOA], 2012). In Kansas, an individual must meet educational, examination, and experience requirements before practicing as a CPA (KSBOA, 2012). Because the CPA is a state license and requirements vary in each state, it is important to restrict the population under study to a single jurisdiction.

The sample included members of the KSCPA who are licensed CPAs working in public or private practice in Kansas and are involved in the hiring process at their company that volunteered to participate in the study. A census sampling was employed with a potential pool of 2,002 participants. An invitation to participate in an online survey was sent to all licensed CPA members of the KSCPA working in public or private practice in Kansas. Therefore, all members of the target population had the opportunity to participate. However, only CPAs who are involved in the hiring process at their company were included in the sample for analysis. Any participant in the pool who indicated they do not hold a license to practice public accountancy in Kansas or are not involved in the hiring process at their company were automatically excluded from further consideration.

Materials/Instruments

The research instrument is a slightly modified survey previously used and extended in three published studies examining the perceptions of recruiters regarding the attractiveness of student applicants for entry-level employment across various positions in the accounting profession (Hardin & Stocks, 1995; Metrejean et al., 2008; Metrejean & Noland, 2011). The instrument includes several characteristics of a hypothetical entry-level accounting recruit that were developed in previous literature examining the factors that recruiters feel are most important in their new hires (Hardin & Stocks, 1995). Participants were asked to assume they

are recruiting to hire an entry-level accountant to fill a position in their company and that the hypothetical recruit described on the instrument had been interviewed briefly by the respondent.

The survey collected data useful in assessing the acceptability of online degrees for obtaining entry-level employment across various positions in the accounting profession aimed at answering the stated research questions. The survey also collected demographic information to group according to the independent variables and to describe the sample. Survey questions were adapted as needed to align them with the research problem, purpose, questions, and hypotheses in this study. The characteristic regarding education mode (i.e., online or traditional) is the primary manipulation in the research instrument.

In this study, a Likert scale was used to measure CPAs' likelihood to recruit an accounting student for entry-level employment across various positions in the accounting profession. The scale was a seven-point Likert scale. Two bipolar adjectives anchored the poles of the scale. Because there were seven options, the scale allowed a middle choice for a neutral position on each statement. A neutral position was included in this study based on a previously published instrument most recently used in a study by Metrejean and Noland (2011).

Operational Definition of Variables

Two independent variables and one dependent variable were used in this study. The independent variables were education mode (i.e., online or traditional) and employment setting (i.e., public or private). The dependent variable was CPAs' reported likelihood to recruit (i.e., probability of how actively an accounting student would be recruited). The following operational definitions of variables were used in this study.

Education mode. Education mode was operationally defined as the type of degree earned by the student applicant. This construct was a nominal independent variable having two possible values: online degree (code=1) and traditional degree (code=2) (Kohlmeyer et al., 2011; Tabatabaei & Gardiner, 2012). Education mode was provided to participants in the survey instrument as a characteristic of the student applicant.

Employment setting. Employment setting was operationally defined as the participant's current workplace. This construct was a nominal independent variable having two possible values: public accounting (code=1) or private accounting (code=2) (Metrejean et al., 2008). Employment setting was obtained from participants in the demographic portion of the survey instrument.

CPAs' reported likelihood to recruit. CPAs' reported likelihood to recruit was operationally defined as the probability of how actively an accounting student would be recruited by the participant for entry-level employment across various positions in the accounting profession. This construct was an interval dependent variable that sought to determine if CPAs express a preference for hiring students who earned their accounting degree through one education mode (i.e., online or traditional) over the other (Kohlmeyer et al., 2011; Tabatabaei & Gardiner, 2012). This variable was operationalized through survey questions in which potential accounting graduates for hire are described and participants were then asked, "How actively would you recruit this student?" Participants were asked to respond using a Likert scale ranging

from one (not at all) to seven (very actively). This construct was measured using answers to questions on the survey instrument.

Data Collection, Processing, and Analysis

Each null hypothesis was tested using inferential statistics. A two-way analysis of variance (ANOVA) F-test tested each hypothesis and drew conclusions. More specifically, the ANOVA was independent (i.e., between-groups) factorial in design because the study grouped participants into two different employment settings (i.e., public or private) and included two independent variables (i.e., education mode and employment setting). Using factorial ANOVA, researchers can test a null hypothesis for each of the independent variables and one for their interaction. An interaction occurs when the effect of one independent variable on the dependent variable is not the same under all of the conditions of the other independent variable (Burns & Burns, 2012).

Data were gathered from practicing CPAs in Kansas regarding their likelihood to recruit an accounting student for entry-level employment across various positions in the accounting profession. A structured survey instrument was administered via the Internet. The survey was cross-sectional with data collected at a single point in time. Each potential participant received an e-mail with a hyperlink to access the survey. The survey was open for two weeks to ensure that a reasonable amount of time was provided to allow for maximum participation. A reminder e-mail was sent after one week asking participants to complete the survey if they have not done so already. A second reminder e-mail was sent at the end of the second week to boost participation. An introductory screen explained to participants the purpose of the study and any potential risks and benefits of participating. Participants were informed that participation is voluntary, that they could withdraw at any time, and that their responses will remain anonymous and confidential. After agreeing to participate and acknowledging informed consent, each participant was asked to indicate how actively he or she would recruit the student described in the research instrument. This rating served as the dependent variable in the ANOVA model. The independent variables in the analysis were education mode and employment setting, each with two levels.

The first hypothesis was tested by considering the education mode main effect. An education mode main effect suggests that the type of degree (i.e., online or traditional) the accounting graduate earned affected how actively the participant would recruit the graduate. The second hypothesis was tested by considering the employment setting main effect. An employment setting main effect suggests that the participant's type of employment (i.e., public or private) affected how actively he or she would recruit the graduate. The third hypothesis was tested by considering the education mode and employment setting interaction effect. An education mode and employment setting interaction effect suggests that how actively the participant would recruit the student differs according to the education mode in which the student earned his or her degree and the employment setting of the participant.

Limitations and Delimitations

The purpose of this quantitative descriptive and comparative research study was not to establish causality between the variables. Therefore, the constraint of not being able to determine causality between the variables represents a limitation of the study. A second limitation of the design in this study was the use of a one-time survey. This type of survey is generally the least informative. Because researchers obtain information from a single sample at a given point in time, comparisons with other groups is not possible. Findings are therefore limited to the population under study (Eysenck, 2004). Additionally, nonresponse (i.e., the failure to get a valid response from every sampled respondent) weakens a survey. If a high proportion of the sampled respondents do not respond, results may not be generalizable, especially if those who do not respond differ from those who do. A third limitation of the study is that the survey was conducted using only Kansas CPAs. Because the CPA is a state license and requirements vary in each state, it is important to restrict the population under study to a single jurisdiction. Therefore, care should be exercised in generalizing the findings to other professional fields and geographic regions.

Delimitations relate to specific choices made by the researcher to limit the scope of the study. Though listed as a limitation of the study, limiting the study to licensed CPAs working in public or private practice in Kansas who are involved in the hiring process at their company is also a delimiter. The results of this study could be generalized to other states that have similar CPA licensure requirements; however, generalizing the results to all CPAs across the United States is not advised. Because the regulatory environment in Kansas may be different from that in other states, the ability to generalize the findings of this study beyond CPAs in Kansas is uncertain. Delimiting to CPAs in Kansas could allow for the establishment of a baseline in terms of findings from which additional studies of other states may commence. Second, the researcher chose to restrict education mode to purely online or purely traditional, therefore not including blended education modes. Third, the researcher chose to restrict employment setting to public accounting or private accounting, therefore not including CPAs working in government, education, not-for-profit, or other employment settings.

FINDINGS

Results

Sample. The sample included members of the KSCPA who are licensed CPAs working in public or private practice in Kansas and are involved in the hiring process at their company that volunteered to participate in the study. A total of 121 respondents completed the survey, of which 104 were useable. Public accounting professionals returned 71 (68%) useable surveys and private accounting professionals returned 33 (32%) useable surveys.

Descriptive statistics. Measures of central tendency were examined prior to testing the hypotheses. Descriptive statistics for the dependent variable are shown in Table 1. Responses for likelihood to recruit for public accounting professionals were somewhat high with a mean of

6.01 ($SD = 1.24$). Responses for likelihood to recruit for private accounting professionals were somewhat lower with a mean of 5.61 ($SD = 1.59$). Responses for likelihood to recruit for online degrees were the lowest reported, with a mean of 5.15 ($SD = 1.51$). Responses for likelihood to recruit for traditional degrees were the highest overall with a mean of 6.62 ($SD = 0.63$).

Table 1

Descriptive Statistics for the Dependent Variable

	M (SD)	Mdn	Minimum	Maximum
Public Accounting	6.01 (1.24)	6.00	1.00	7.00
Private Accounting	5.61 (1.59)	6.00	1.00	7.00
Online Degree	5.15 (1.51)	5.00	1.00	7.00
Traditional Degree	6.62 (0.63)	7.00	4.00	7.00

RQ1. What difference, if any, exists in Kansas CPAs' reported likelihood to recruit an accounting student based on education mode (i.e., online or traditional)?

H1$_0$. There is no statistically significant difference in Kansas CPAs' reported likelihood to recruit an accounting student based on education mode (i.e., online or traditional).

H1$_a$. There is a statistically significant difference in Kansas CPAs' reported likelihood to recruit an accounting student based on education mode (i.e., online or traditional).

The results for the factorial ANOVA indicated a significant main effect for education mode, $F(1, 204) = 83.90$, $p < .001$, partial $\eta^2 = .29$, indicating a statistically significant difference in Kansas CPAs' reported likelihood to recruit an accounting student based on education mode (i.e., online or traditional). Overall, Kansas CPAs' reported their likelihood to recruit was different between online degree candidates ($M = 5.15$, $SD = 1.51$) and traditional degree candidates ($M = 6.62$, $SD = 0.63$), $p < .001$. Additionally, the partial eta squared effect size of .29 and observed power of 1.00 indicated practical significance of the results. The null hypothesis was rejected.

RQ2. What difference, if any, exists in Kansas CPAs' reported likelihood to recruit an accounting student based on employment setting (i.e., public or private)?

H2$_0$. There is no statistically significant difference in Kansas CPAs' reported likelihood to recruit an accounting student based on employment setting (i.e., public or private).

H2$_a$. There is a statistically significant difference in Kansas CPAs' reported likelihood to recruit an accounting student based on employment setting (i.e., public or private).

The results for the factorial ANOVA indicated a significant main effect for employment setting, $F(1, 204) = 5.76$, $p = .017$, partial $\eta^2 = .03$, indicating a statistically significant difference in Kansas CPAs' reported likelihood to recruit an accounting student based on employment setting (i.e., public or private). Kansas CPAs' reported their likelihood to recruit was different

for public accounting professionals ($M = 6.01$, $SD = 1.24$) and private accounting professionals ($M = 5.61$, $SD = 1.59$), $p = .045$. The null hypothesis was rejected. However, the partial eta squared effect size of .03 and observed power of 0.67 indicated a lack of practical significance of the results.

RQ3. What interaction, if any, exists among Kansas CPAs' reported likelihood to recruit an accounting student based on education mode (i.e., online or traditional) and employment setting (i.e., public or private)?

H3$_0$. There is no statistically significant interaction among Kansas CPAs' reported likelihood to recruit an accounting student based on education mode (i.e., online or traditional) and employment setting (i.e., public or private).

H3$_a$. There is a statistically significant interaction among Kansas CPAs' reported likelihood to recruit an accounting student based on education mode (i.e., online or traditional) and employment setting (i.e., public or private).

The results for the factorial ANOVA indicated a non-significant interaction effect among education mode and employment setting, $F(1, 204) = 2.36$, $p = .126$, partial $\eta^2 = .01$, indicating no statistically significant interaction among Kansas CPAs' reported likelihood to recruit an accounting student based on education mode (i.e., online or traditional) and employment setting (i.e., public or private). There is no significant difference in recruiting online versus traditional graduates that is dependent on public or private accounting settings. This lack of interaction is demonstrated graphically in Figure 1. Non-parallel lines usually indicate a significant interaction effect. If the lines actually cross, a fairly large interaction between the independent variables exists. The lines in Figure 1 do not cross; therefore, a significant interaction effect does not exist (Burns & Burns, 2012). The null hypothesis was not rejected.

Kansas CPAs' reported likelihood to recruit was significantly different ($p = .003$) between public accounting professionals ($M = 5.37$, $SD = 1.38$) and private accounting professionals ($M = 4.70$, $SD = 1.70$) for online degree candidates. However, Kansas CPAs' reported likelihood to recruit was not significantly different ($p = .116$) between public accounting professionals ($M = 6.66$, $SD = 0.58$) and private accounting professionals ($M = 6.52$, $SD = 0.71$) for traditional degree candidates. Additionally, the partial eta squared effect size of .01 and observed power of 0.33 indicated a lack of practical significance of the interaction results.

Figure 1
Estimated Marginal Means of the Dependent Variable
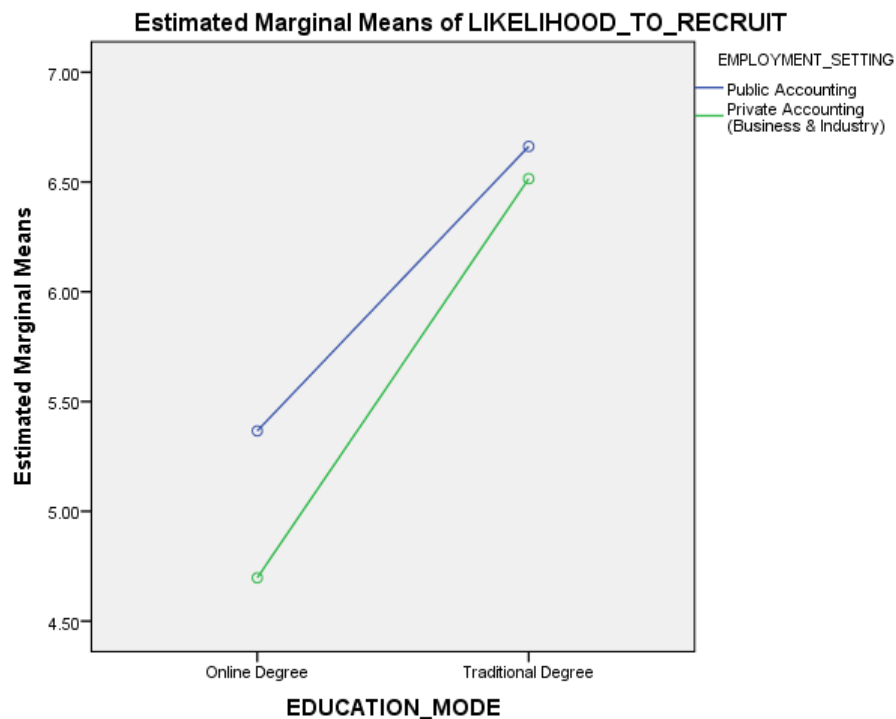
Evaluation of Findings

This study investigated the accounting profession through two lenses, institutional theory and the system theory of professions from the sociology of professions literature, to gain insight into the educational preparation issues facing the profession. Institutional theory is a popular theory for explaining choices based on institutional pressures experienced by organizations. Institutionalism ties the practices of organization leaders, such as accounting practitioner hiring decisions, to social norms and their need to interact successfully with other entities in society (Guerreiro, Rodrigues, & Craig, 2012). Institutional theory supports the hypothesis that the survival and success of organizations depends on adhering to the rules and norms that facilitate its interaction with other organizations and gives legitimacy to its operations (Kilfoyle & Richardson, 2011). The system theory of professions is the structure that links professions with specific work tasks. The distinguishing characteristic of a profession is that its members possess a body of knowledge that establishes them as qualified to control a particular area of work tasks (Abbott, 1988). The classic study on the system theory of professions by Abbott (1988) supported the hypothesis that there will be differentiation within any given profession, such as accounting. Given the findings in previous studies (e.g. Adams & DeFleur, 2006; Columbaro & Monaghan, 2009; Kohlmeyer et al., 2011; Tabatabaei et al., 2014), it was possible that completion of traditional versus online degree programs constitutes a differentiation within the

accounting profession. Varying levels of willingness to hire traditional versus online degree program graduates could establish evidence of this differentiation. The following discussion evaluates the findings of this study in light of the established theoretical framework.

RQ1. The results of the ANOVA supported rejecting the null hypothesis for RQ1, indicating a statistically significant difference in Kansas CPAs' reported likelihood to recruit an accounting student based on education mode (i.e., online or traditional). Regardless of employment setting, Kansas CPAs reported they would recruit the traditional degree candidate more actively than they would recruit the online degree candidate. This finding is consistent with what other researchers have found and lends support for institutional theory in action within the accounting profession regarding hiring practices. Existing research indicates that employers in the accounting profession show a disinclination to hire graduates of online programs (Kohlmeyer et al., 2011; Tabatabaei et al., 2014) and the present findings align with this notion. Institutional theory supports this disinclination by employers in the accounting profession because it suggests that the survival and success of organizations depends on adhering to the rules and norms that facilitate its interaction with other organizations and gives legitimacy to its operations (Kilfoyle & Richardson, 2011). While the fact that the offering of online accounting degrees is increasing could indicate decreasing bias against online degrees in the profession, the findings of this study do not bear this out.

RQ2. The results of the ANOVA supported rejecting the null hypothesis for RQ2, indicating a statistically significant difference in Kansas CPAs' reported likelihood to recruit an accounting student based on employment setting (i.e., public or private). Regardless of education mode, Kansas CPAs working in public accounting reported they would recruit candidates more actively than those working in private accounting would recruit candidates. As indicated by a significant main effect for employment setting, the results show that, in Kansas, public accounting professionals would recruit candidates more actively than private accounting professionals, regardless of the method by which they obtained their degree. This finding possibly suggests that public accounting firms have a higher need for entry-level professionals than do private business and industry groups and are therefore less picky overall when considering possible hires. This indicates that differentiation exists in the accounting profession in Kansas when considering only employment setting and provides support for the system theory of professions. The United States Department of Labor Bureau of Labor Statistics (BLS) expects employment of accountants and auditors to grow 13% by 2022, faster than the average for all occupations. The public accounting profession will see an increase of about 166,700 new jobs over the next decade and over 500,000 job openings (BLS, 2012), which provides a possible explanation for why public accounting firms in Kansas are recruiting more actively. Consistent with Kohlmeyer et al. (2011), despite reservations, study participants appear to understand that accepting job candidates with online accounting degrees might be necessary to meet the demand to fill public accounting positions.

**RQ3.** The results of the ANOVA did not support rejecting the null hypothesis for RQ3, indicating no statistically significant interaction among Kansas CPAs' reported likelihood to recruit an accounting student based on education mode (i.e., online or traditional) that is dependent on the CPAs' employment setting (i.e., public or private). While Kansas CPAs'

reported likelihood to recruit was different for public accounting professionals and private accounting professionals for online degree candidates, a difference was not revealed for traditional degree candidates. Kansas CPAs working in public accounting reported they would recruit online candidates more actively than those working in private accounting would recruit online candidates. However, Kansas CPAs working in public accounting reported they would recruit traditional degree candidates just as actively as those working in private accounting would recruit traditional degree candidates. Although the mean for likelihood to recruit traditional degree candidates for public accounting professionals ($M = 6.66$, $SD = 0.58$) was slightly higher than the mean for private accounting professionals ($M = 6.52$, $SD = 0.71$), the difference was not statistically significant ($p = .116$). As indicated by a lack of an interaction effect, this study suggests that differentiation does not exist in the accounting profession in Kansas when considering both education mode and employment setting. This finding is inconsistent with existing research given that multiple studies indicate that online degrees are more acceptable in corporate settings and some corporate employers now accept online degrees from institutions with an established history of providing quality education (Adams & DeFleur, 2006; Bristow et al., 2011). Furthermore, a number of corporations now promote online learning for training and continuing education as part of their human resource practices. Studies have shown that firms are supportive of online continuing professional education training (Adams et al., 2012; Nelis, 2014; Tabatabaei et al., 2014). It is possible that private business and industry groups in Kansas have a lower need for entry-level professionals than do public accounting firms and are therefore more picky overall when considering possible hires.

IMPLICATIONS AND RECOMMENDATIONS

Implications

The online delivery of higher education has generated questions regarding the acceptance, employability, and credibility from the perspective of external stakeholders of online education (Fogle & Elliott, 2013). Due to increased demands by employers seeking accounting graduates and the continued growth of online programs, identification of the employment settings favorable to graduates with online accounting degrees was needed (Kohlmeyer et al., 2011; Metrejean & Noland, 2011; Tabatabaei et al., 2014) and served to examine internal differentiation within the profession. Additionally, the study sought to extend institutional theory by adding consideration of hiring decisions in the accounting profession as an element of public and private sectors and to provide additional evidence to the existing system theory of professions regarding whether differentiation within the accounting profession exists when considering education mode (i.e., online or traditional) and employment setting (i.e., public or private).

If employers are skeptical about entry-level job candidates that received their education online, then they are not likely to hire these individuals. This has implications for both the job candidates and the institutions that graduate them. The individuals that earn their degrees online will be less competitive in the job market and institutions that offer online degree programs may

be considered inferior by important stakeholders (e.g., employers and students). Implications of the results are discussed in the context of each research question answered in this study.

RQ1. Regardless of employment setting of the participant, Kansas CPAs reported they would recruit the traditional degree candidate more actively than they would recruit the online degree candidate. Institutional theory contends that to interact successfully with industry peers, firms must maintain a status of legitimacy (DiMaggio & Powell, 1983). Firms may be wary of hiring online accounting graduates because of the fear that their legitimacy may experience negative affects by having graduates of online schools with little prestige representing the firm to its customers and suppliers. Institutional theory is ideally suited to explain the tendency of accountants to more likely recruit graduates of traditional face-to-face programs in contrast to graduates of online programs given the theory's consideration of legitimacy concerns and normative pressures to do things in an accepted and traditional fashion.

Existing research indicates that employers in the accounting profession show a disinclination to hire graduates of online programs (Kohlmeyer et al., 2011; Tabatabaei et al., 2014) and the results here confirm these same findings. Institutional theory supports this disinclination by employers in the accounting profession because it suggests that the survival and success of organizations depends on adhering to the rules and norms that facilitate its interaction with other organizations and gives legitimacy to its operations (Kilfoyle & Richardson, 2011). As indicated by a significant main effect and practical significance for education mode, Kansas CPAs confirmed the existing research and supported the application of institutional theory to the accounting profession.

The implication of this finding for online degree program graduates is that their applications for entry-level employment in the accounting profession in Kansas are not likely to be as well received as applications from traditional degree program graduates. The same employment opportunities may not be available to online degree candidates in Kansas that are available to students earning traditional face-to-face degrees. Higher education institutions, especially those serving Kansans, must consider that online degree graduates are not as attractive to employers as traditional face-to-face graduates. It may not be the right time for academic leaders in Kansas to allocate resources to develop online degree programs in accounting.

RQ2. Regardless of education mode of the candidate, Kansas CPAs working in public accounting reported they would recruit any candidate more actively than CPAs working in private accounting reported they would. The classic study on the system theory of professions by Abbott (1988) supported the hypothesis that there will be differentiation within any given profession, such as accounting. Varying levels of willingness to hire traditional versus online degree program graduates established evidence of this differentiation. This study indicated that differentiation exists in the accounting profession in Kansas when considering only employment setting and provided support for the system theory of professions.

Given the particularly rural nature of the Kansas population, a finding by Tabatabaei et al. (2014) was significant to this study. These researchers found that respondents from rural firms were more accepting of online education than respondents from metropolitan firms. They suggested that rural firms often better relate to a lack of access to traditional education and therefore understood the need to pursue online education as an alternative. This also

demonstrates differentiation in the accounting profession and supports the system theory of professions. As indicated by a significant main effect for employment setting, Kansas CPAs participating in this study provided data to support the application of the system theory of professions to the accounting profession. The implication of this finding for online degree program graduates is that their applications for entry-level employment in the accounting profession in Kansas are likely to receive more consideration from public accounting professionals than private accounting professionals. However, a lack of practical significance limits the implication of this finding.

  RQ3. Given a non-significant interaction effect, implications can only be drawn from the simple main effects that Kansas CPAs working in public accounting reported they would recruit online candidates more actively than CPAs working in private accounting reported they would; however, Kansas CPAs working in public accounting reported they would recruit traditional candidates just as actively as CPAs working in private accounting reported they would. The mean for public accounting professionals ($M = 5.37$, $SD = 1.38$) was much higher than the mean for private accounting professionals ($M = 4.70$, $SD = 1.70$) for online degree candidates and the difference was statistically significant ($p = .003$). However, the mean for public accounting professionals ($M = 6.66$, $SD = 0.58$) was only slightly higher than the mean for private accounting professionals ($M = 6.52$, $SD = 0.71$) for traditional degree candidates and the difference was not statistically significant ($p = .116$). Thus, while public accounting professionals do not report recruiting traditional degree candidates more actively than private accounting professionals do, indicating a somewhat equal likelihood of possible employment for these students, public accounting professionals do report that they would more actively recruit online degree candidates than would private accounting professionals, indicating that online degree candidates have a better opportunity to be hired at public firms in comparison with private business and industry groups.

  Existing research shows a reluctance of employers in the accounting profession to hire graduates of online programs (Kohlmeyer et al., 2011; Tabatabaei et al., 2014) as supported by institutional theory (Sellers et al., 2012). This study was aimed at filling the gap in the literature by testing if this reluctance exists when employment settings outside of certified public firms are considered (Bristow et al., 2011; Metrejean & Noland, 2011). This study extended institutional theory by adding consideration of hiring decisions in the accounting profession as an element of public and private sectors and confirmed previous findings that online degrees are less acceptable than traditional degrees for obtaining entry-level employment in the accounting profession.

  The classic study on the system theory of professions by Abbott (1988) supported the hypothesis that there will be differentiation within any given profession, such as accounting. The system theory of professions advocates that systems are dynamic and existing biases may eventually disappear. Therefore, it was important to test if differentiation exists within other areas of the accounting profession with an updated study. This study indicated that differentiation exists in the accounting profession in Kansas when considering only employment setting and provided support for the system theory of professions.

Recommendations

As previously noted, accounting is a degree program area for which online offerings are increasing and students are now preparing themselves for entry into the accounting profession through online degree programs (Kohlmeyer et al., 2011; Sellers et al., 2012; Tabatabaei et al., 2014). However, current research shows that employers at the pinnacle of the accounting profession, certified public firms, show a disinclination to hire graduates of online programs, even when they possess the CPA credential (Kohlmeyer et al., 2011; Tabatabaei et al., 2014). Given several consistent studies in recent years, it is conceivable that the bias for traditional education delivery modes may result from cultural preferences that are specific to particular fields, general resistance to change, or that online education is not yet recognized as a viable alternative for traditional practices (Adams et al., 2012). The literature still demonstrates a distinct limit to how much employers and other stakeholders in higher education are willing to accept online learning (DePriest & Absher, 2013). Individuals with online degrees are still facing a perceptual uphill battle regarding hiring and promotion decisions (Kaupins et al., 2014). The findings of this study, using a sample of CPAs in Kansas, confirmed existing research regarding the acceptability of online degrees for entry-level employment in the accounting profession. That is, Kansas CPAs will more actively recruit traditional degree program graduates over those with online degrees.

Recommendations for practice. The findings of this study suggest there is still a reluctance to hire job candidates with online degrees for entry-level employment in the accounting profession. Institutions that offer online degrees can either discontinue these programs due to employer concerns or make concerted efforts to improve the quality and reputation of these programs. Given the need to meet student and employer demand for educated professionals, academic administrators are not likely to discontinue their online offerings. However, academic administrators should exercise extreme caution if they decide to enter or continue to participate in the online education market, especially in the accounting discipline. They must continue to work to improve the credibility of their programs.

Students are another key stakeholder in online education. Students earning online degrees are interested in knowing if the same employment opportunities are available to them that are available to students earning traditional face-to-face degrees (Bristow et al., 2011; Columbaro & Monaghan, 2009; Tabatabaei & Gardiner, 2012). Additionally, educators are interested in knowing more about the attractiveness of online degrees to employers because the success of their students in terms of job placement is very important to the reputation of their programs. Educators are also interested in evaluating, improving, and redesigning curriculum to prepare graduates for career success (Tabatabaei & Gardiner, 2012). What remains unknown for job candidates is whether online degrees are becoming more accepted in the job market (Fogle & Elliott, 2013; Kohlmeyer et al., 2011; Metrejean & Noland, 2011). This study confirmed that, in Kansas, students who graduate from traditional degree programs will be more actively recruited and, thus, likely have more job opportunities than those who graduate from online degree programs. Therefore, students should exercise extreme caution if they decide to pursue an online

accounting degree, especially if they are looking for entry-level employment in the accounting profession.

Recommendations for future research. As online course offerings and degree programs continue to grow in higher education, it only makes sense to continue investigating aspects of the delivery modality and the impact modality has on hiring decisions. Future research is warranted to investigate if differences exist in other jurisdictions (i.e., states). Because the CPA is a state license and requirements vary in each state, it is important to restrict the population under study to a single jurisdiction. Therefore, care should be exercised in generalizing the findings to other geographic regions. The results of this study could be generalized to other states that have similar CPA licensure requirements; however, generalizing the results to all CPAs across the United States is not advised. Because the regulatory environment in Kansas may be different from that in other states, the ability to generalize the findings of this study beyond CPAs in Kansas is uncertain. Additionally, states with more or less rural populations may have different perceptions regarding the acceptability of online degrees. Delimiting to CPAs in Kansas could allow for the establishment of a baseline in terms of findings from which additional studies of other states may commence. Therefore, replication studies in other jurisdictions are recommended.

For this study, the researcher chose to restrict employment setting to public accounting or private accounting, therefore not including CPAs working in government, education, not-for-profit, or other employment settings. Additionally, the researcher chose to restrict education mode to purely online or purely traditional, therefore not including blended education modes. Future research is warranted to investigate if differences exist in other employment settings in the accounting profession or in blended learning modalities. The current study could be replicated with inclusion of additional levels for employment setting and education mode.

Given the findings of this study, several questions arise that should be addressed with additional research. It is now known that Kansas CPAs report a reluctance to hire online degree program graduates; however, what remains unknown is why this is the case. Public accounting professionals in Kansas reported they will recruit online students more actively than private accounting professionals will; however, outside of information regarding supply and demand for public accounting professionals, stakeholders can only speculate as to why this is true. Educators must certainly be interested in knowing more about the attractiveness of online degrees to employers as they consider offering initial or additional online programs and because the success of their students in terms of job placement is very important to the reputation of their programs. Educators are also interested in evaluating, improving, and redesigning curriculum to prepare graduates for career success (Tabatabaei & Gardiner, 2012). In order for educators to improve their programs, they must know how or why their programs are not meeting the needs of employers or if other perceptions regarding online degrees are where the bias is originating. Future studies could collect qualitative data to answer these questions. Personally interviewing Kansas CPAs could answer why they have a reluctance to hire online degree program graduates. More specifically, interviewers could ask what it is about online graduates that make them less desirable than traditional graduates. For example, do Kansas CPAs perceive online graduates to be less prepared, less professional, or less polished than their traditional counterparts?

Additionally, do Kansas CPAs perceive the technical competence of online graduates to be inferior? Researchers could identify employers who have hired both online and traditional graduates and ask them to compare and contrast their preparation, professionalism, polish, and technical competence. Furthermore, interviewers could ask what, if anything, Kansas CPAs believe higher education institutions could do to improve their online programs and reduce bias against their online graduates.

Future research could also investigate whether the age of the participant affects their perception of the acceptability of online degrees. The system theory of professions advocates that systems are dynamic and existing biases may eventually disappear. Therefore, online degrees may gain acceptance as older generations retire and younger generations move into upper-management positions and become responsible for hiring decisions. The current study could be replicated with inclusion of participant age as an additional variable. A multiple regression analysis could be conducted to investigate if this additional variable affects perceptions.

Finally, to continue to further inform both institutional theory and the system theory of professions, future research could investigate differences in other professions beyond accounting. This study addressed the accounting profession, but online degree offerings also exist for other professions (e.g., management, marketing, information systems). This study confirmed that institutional theory and the system theory of professions are active in the accounting profession, but other professions may not operate under the same conditions. Therefore, institutional theory might be further extended by adding consideration of hiring decisions in other professions and the system theory of professions might be further extended by testing if differentiation exists in other professions. The divide between the growing popularity of online degree programs and less than favorable employer perceptions of online degree recipients is an area of research that continues to be ripe for additional study.

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INVESTORS' RISK PERCEPTION OF AUTOMOBILE ABS AFTER IMPLEMENTATION OF MAJOR ACCOUNTING DISCLOSURE REQUIREMENTS

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ABSTRACT

The purpose of this research paper is to analyze risk perceptions related to newly issued ABS (Asset Backed Securities) specifically Automobile loans after adoptions of accounting disclosures regulations. We focused to examine the impact of SFAS (Statement of Financial Accounting Standard) 140 on newly issued ABS Auto loan to assess whether the spreads were lower after SFAS 140 adoption. In this study we regressed the Auto loan ABS spread before and after implementation of SFAS 140 against disclosure variables (Weighted average life and projected loss disclosures) and several control variables. The results suggest that the required disclosures provide useful information to investors in evaluating risks associated with ABS automobile loan as reflected in lower spreads after SFAS 140 adoption. The results further suggest that investors ascribe more importance to the disclosure of weighted average life as compared to projected losses.

INTRODUCTION

At the end of 2018, there was $1.69 trillion ABS outstanding. Of the $1.69 trillion ABS outstanding, automobile loan ABS comprise $222.8 billion. (Securities Industry and Financial Markets Association) This asset class is one of the largest distinct segments of the non-mortgage related ABS markets. They comprise approximately 27 percent of the non-mortgage related non-collateralized debt obligation (CDO) ABS market. These securities are primarily highly-rated instruments with approximately 78 percent of automobile loan ABS issued with AAA credit ratings. From the forgoing, it can be ascertained that these market segments are important components of the US bond market.

SFAS 140 became effective for all securitizations transactions as of April 1, 2001. The requirements it mandated were intended to provide information useful to investors in assessing the value of the servicing assets and liabilities associated with a securitization as well as the value of the retained interest of the securitization sponsors and information about the pool of assets that underlie the securitization transaction. Academic research that has looked at SFAS 140 has primarily focused on firm-level considerations such as comparing and contrasting accounting for securitizations under US GAAP (SFAS 140) versus IFRS (IAS 39) Adjikari and Betancourt (2008), examining accounting for securitizations from a standard-setting perspective Schipper and Yohn (2007) and entering the debate on securitization accounting issues focusing

on the two standard-setting approaches namely: control and components (IFRS) versus the risks and rewards (FASB), Niu and Richardson (2006).

This study extends the findings of Wharton et al (2018) by examining the effect of SFAS 140 on the spreads of newly issued automobile loan asset-backed securities (ABS). These are one of the largest distinct non-mortgage related asset classes within the securitizations market. The findings of Vink and Thibeault (2008) has suggested that MBS and ABS are different financial instruments, so it should not be taken for granted that the spreads of both MBS and ABS will respond similarly to the adoption of SFAS 140. Additionally, this study examines the effectiveness of disclosures required by SFAS 140 in better informing investors of some of the risks associated with investing in automobile loan ABS issues. While the SFAS 140 disclosures are specifically targeted at providing information to assess the value of servicing assets and liabilities as well as retained interests of the securitization sponsors, these disclosures also provide information that is potentially value relevant in assessing the value of the securitization issue.

The results of this study demonstrate that the mean spreads of automobile loan ABS issues decreased after the adoption of SFAS 140 while mean spreads for non-securitization bonds increased. Additionally, the results suggest that the SFAS 140 disclosures show a very strong statistical association with the spreads of newly issued ABS and provide relevant information to investors in assessing risk. The rest of the paper proceeds as follows. Section 2 reviews prior literature, explains data/sample selection and develops the research hypotheses. Section 3 presents the methodology. Section 4 provides the empirical results and Section 5 presents the conclusion.

LITERATURE REVIEW

Vink and Thibeault (2008) examines the common pricing factors for European ABS, MBS and CDOs to determine whether the behavior of these pricing factors is different in the determination of the spread in primary markets. The study concluded that the ABS, MBS and CDOs are different financial instruments. Vink and Fabozzi (2009) investigates the factors that affect the spread of non-US asset-backed securities in a primary market setting. In addition, they test the notion whether asset-backed securities investors rely solely on credit ratings for their assessment of risk of an issue. The study reveals using testing the over-reliance theory that while investors rely very heavily on credit ratings, they also consider other additional factors that rating agencies consider for assigning credit ratings. The study concluded the notion of investors' reliance solely on credit ratings may be overstated. Mahlmann (2011) tests the ratings overdependence hypothesis, ("the ratings of structured products are a sufficient statistic in terms of predicting of future credit performance") using a US sample of ABS-CDOs, (Collateralized Debt Obligations backed by tranches of Asset-Backed Securities). The results suggest (i) investors do not rely solely on credit ratings when pricing CDO tranches at origination; (ii) yield spreads at issuance have some predictive ability of future performance even after taking into account credit ratings, but this is primarily for non-AAA rated tranches; (iii) the information content of spreads decreases over time and for lower rated tranches in complex CDO deals; and (iv) the correlation between credit ratings and spread increases over time. These findings conclude that rethinking the overdependence hypothesis may be warranted.

Puskar and Gottesman (2009) examine the relationship of underwriting fees charged to ABS issuers with (i) underwriter prestige; and (ii) underwriter loyalty, using a proprietary

database of US ABS. The results suggest a positive relationship existed in both cases, namely, issuers pay higher underwriting fees to have their issues brought to market by more prestigious underwriters measured by percentage of total market share. He, Quian and Strahan (2012) examines whether issuer size affects the pricing of MBS issues, thereby calling into question the objectivity of the credit ratings process. The study examined the spreads of similarly rated MBS issues from large and small issuers. The study finds that yields were higher for large issuer tranches than similarly rated small issuer tranches. These findings also suggest that the market realizes and adjusts in the pricing of similarly rated tranches of small versus large MBS issuers. The study further suggests that ratings-based regulation and regulatory arbitrage distort the ratings process.

Gurtler and Hibbeln (2013) examine whether investors consider lack of screening and monitoring incentives in the pricing of securitization issues as measured by spread. Using a European sample of ABS and MBS partitioned as being information sensitive (lower rated) or information insensitive (higher rated) results suggests that the type of retention employed by the issuer plays a role in the pricing of securitization tranches. Investors demanded higher spreads for vertical slice retention than equity tranche retention for information sensitive lower rated tranches. Investors of information insensitive (AAA-rated) tranches demanded lower spreads for vertical slice retention than equity tranche retention. The results suggest investors of higher rated tranches consider information asymmetry when pricing securitizations.

Jackson (2010) examines the notion of mandated securitization disclosures as part of the debate on how to reform the securitization market. The study focuses on loan-level disclosures as part of the Dodd-Frank mandated securitization disclosures with the intent to increase transparency. The study makes a case for loan-level disclosures because there would be other public policy benefits as well. However, the additional public policy benefits of policing the Equal Credit Opportunity Act, facilitating renegotiation of troubled mortgages and regulating financial institutional solvency would make the mandated disclosures worthwhile.

Wharton et al (2018) examines the effect of the disclosures required by SFAS 140 on the spreads of mortgage-backed securities (MBS) in a primary market setting. SFAS 140 required disclosures, weighted-average life and project losses are the SFAS 140 disclosures applicable to newly issued securitization issues. The results suggest that the disclosures contributed to reducing MBS spreads required by investors. The results also suggest investors attribute more importance to weighted-average life than project losses in pricing newly issued MBS.

RESEARH METHODOLOGY

3.1 Data and Sample Selection

The sample is drawn from automobile loan asset-backed securities issued between 1999 and 2003 listed in the Thomson SDC new issue database. This asset class, auto loans, were during the sample period of this study the largest non-mortgage related ABS (nearly 43 percent of the non-mortgage related ABS) in terms of dollar amount issued. The principal value of the sample totals $115.8 billion, which comprises nearly 1/3 (~ 31%) of the newly issued auto loan ABS ($379.2 billion) brought to market during the years 1999 through 2003. The sample was divided into two subsamples— (i) pre- SFAS 140 and (ii) post- SFAS 140.

The relevant data such as disclosure variables and control variables were collected from prospectuses filed by ABS issuers with the SEC and reported in the SEC Edgar Central Index Key

Table 1: Rating Distribution and Transactions					
Securities Rating Distribution					Number of Transactions
Before SFAS 140	AAA	AA	A	BBB	
Security Tranches	114	4	23	7	32
After SFAS 140					
Security Tranches	207	5	64	10	31

(CIK) Lookup website. The sample includes a total of 484 individual tranches from 63 ABS transactions (32-pre and 31-post) from 1999 to 2003. The pre- SFAS 140 data contains 148 tranches. The post- SFAS 140 data contains 286 tranches. The timeframe for the sample period coincides with a window of roughly 2 years before and after the SFAS 140 effective date, April 1, 2001.

The characteristics of the sample are given in Table 2. Fixed coupon issues were the predominant coupon type for both pre- and post- datasets.

Table 2: Sample Characteristics						
	Before SFAS 140		Total	After SFAS 140		Total
	Year	Number		Year	Number	
Fixed Rate Coupon	1999	82		2001A	41	
	2000	46		2002	49	
	4/1/2001	13	141	2003	145	235
Floating Rate Coupon	1999	0		4/1/2001	6	
	2000	2		2002	20	
	4/1/2001	5	7	2003	25	51
Total			148			286

3.2 Hypothesis Development

The Securities Act of 1933 requires that issuers provide potential investors information relevant to weighing the risks of a given securities issue in an offering document known as a prospectus. Securitizations have more potential layers of asymmetric information than traditional fixed income securities including originators and offerors where both can be the same or different entities. The offeror, typically an investment bank, designs the ABS by determining the structure, i.e. how many tranches and the levels and sizes of the tranches, the nature and extent of credit enhancement, etc. and possesses an information advantage over the eventual investors of an ABS issue. As potential ABS investors are provided more information about the projected performance of the automobile loans which make up the ABS pool, the information asymmetry is reduced and investors are exposed to less risk. We hypothesize that the information disclosures required by SFAS 140 about the projected performance of the underlying assets of an ABS issue will reduce the information asymmetry that exists between the issuer and investors. This reduction in information asymmetry should be reflected in the narrower launch spreads after the implementation date of SFAS 140, March 31, 2001.

H1: The yield spreads of post- SFAS 140 automobile loan ABS will be narrower than the yield spreads of pre- SFAS 140 automobile loan ABS.

The ability of a given ABS issues to make timely principal and interest payments to investors is directly linked to the performance of the underlying assets, automobile loans. Providing information on the projected losses expected on the underlying assets of a securitization issue will be valued by the marketplace in assessing the risk of an ABS. The projected losses disclosure is a measure of the total losses the asset pool is projected to experience over the life of the ABS issue at the time the ABS is issued. Projected losses is measured as a percentage of the total asset pool that serves as the underlying collateral of the ABS issue.

H2: The projected losses (*ProjLoss*) disclosure required by SFAS 140 will exhibit a positive association to the automobile loan ABS yield spreads.

Prepayments can dramatically alter the return profile of an investment. Information disclosed about the proposed prepayment behavior under various scenarios will provide the marketplace with important and valuable information about the risk(s) associated with an investment. Weighted average life (WAL) is the expected amount of time between issuance of the security and the final settlement. This amount of time will be influenced by individual loans within the pool being paid-off early.

H3: The prepayment stress test weighted-average life (*WAL*) disclosure required by SFAS 140 will exhibit a positive association to the launch spreads of automobile loan securitizations.

3.3. Model Development and Methodology

We will use a difference of means t-test methodology to test the hypothesis H1. We will then test hypotheses H2 and H3 using OLS regressions to determine whether and to what extent the SFAS 140 disclosures affect the spreads of the securitizations issues.

Model 1: $SPREAD = \beta_0 + \beta_1 ProjLoss + \beta_2\ WAL + \beta_3 YldSlope + \beta_4 Princpl + \beta_5 FxFlt + \beta_6 Maturity + \beta_7 Rating + \beta_8 BSpread + \beta_9 Period + \varepsilon$

Table 3A reports the descriptive statistics of pre and post subsamples for the sample.

Table 3A: Descriptive Statistics					
	Before SFAS 140 (n=148)			After SFAS 140 (n=286)		
Variable	Mean	Median	Std. Dev	Mean	Median	Std. Dev
Coupon	6.1835	6.0250	0.8028	2.4754	2.1600	1.1538
Maturity	4.0818	4.0569	2.1563	4.1238	4.0194	2.0979
Principal	270.0718	169.5000	292.2650	270.4103	225.0000	219.0889
Launch Yield	6.1849	6.0475	0.8031	2.4756	2.1604	1.1540
Relative Spread	0.1288	0.1321	0.0827	-0.0324	-0.0779	0.3150
Spread	0.6959	0.7453	0.4366	-0.0847	-0.1649	0.7884
Relative Spread**	0.1259	0.1315	0.0828	0.0110	-0.0043	0.3250
Spread**	0.6834	0.7400	0.4417	0.03010	-0.0099	0.7986
Yld Slope	0.7597	1.0000	0.4764	3.4333	3.5100	0.4746
Proj Loss	1.9183	1.1300	1.5714	2.5027	1.5400	2.2060
Weighted Ave Life	0.4952	0.4974	0.1498	0.4708	0.4717	0.1272
Bspread	1.5537	1.4800	0.2205	1.8217	1.6800	0.3501
** Floating rate coupon issues removed from sample.						

SPREAD = the difference between the securitization's yield and the yield of the Treasury security of comparable maturity.

ProjLoss = the losses projected to occur on the assets underlying a securitization issue.

WAL = weighted average life, which is the expected time to maturity of the securitization issue.

YldSlope = *slope of the Treasury yield curve on a given date.*

Princpl = original principal amount borrowed

FxFlt = coupon type which is either fixed or floating rate.

Maturity = stated time to maturity of the securitization issue

Rating = credit rating, assigned to the issue by Standard & Poors.

BSpread = AAA bond spread for 10-year Treasury Bonds

Period = Time period, period before or after the SFAS 140 effective date (April 1, 2001).

We will use a Chow test to determine if SFAS 140 implementation resulted in a structural change in the relationship between automobile loan ABS yields and other variables in the model

RESULTS

Performing the Chow test for a structural break between the two time periods, pre-and post- SFAS 140, demonstrated that there was a structural break between the pre- and post- time periods. The test yielded an F value of 12.78 and a p-value = <<0.001. These results suggest that the relationship between spread and the model variables changes as a result of the adoption of SFAS 140 and its related disclosures. The univariate results (See Table 3B) provide strong support for H1.

Table 3B: Difference of Mean Tests (Spread)				
	Before	After	T-Statistic	P-Value
Mean Launch Spread	0.6959	-0.0847	13.2696	<< 0.0001
Mean Launch Spread (Without Floating)	0.6834	0.0301	10.2057	<< 0.0001
AAA Corporate Bond Spread	1.5537	1.8217	-9.7412	<< 0.0001

The mean spread of the automobile loan ABS for the pre- subsample is 0.6959 and the mean spread for the post- subsample is -0.0847. When the floating rate issues were removed, the mean spread for the pre- subsample is 0.6834 and the mean spread for the post- subsample is 0.0301. The differences of means t-test results were very strong with a t-statistic and p-value of 13.2696 and <<0.0001 respectively for the partitioned automobile loan ABS subsamples. When the floating rate issues were removed, the differences of means t-test results were comparable. To test whether the lower yield spreads for ABS were just due to declining spreads overall in the market during the sample period, we collected the spreads of AAA-rated traditional bonds issued on the same days as the sample automobile loan ABS issues for the entire sample period, before and after SFAS 140 implementation. For the traditional AAA-rated corporate bond yield spreads matched with the automobile loan ABS, the spreads for the before and after are 1.5537 and 1.8217 respectively. For traditional AAA corporate bonds, the spreads actually increase.

Taken together, these univariate findings provide strong support to suggest that the disclosures required by SFAS 140 have contributed to the reduction of information asymmetry as proxied by the mean yield spreads for automobile loan securitizations. These findings are strengthened by the data showing that the mean yield spreads on AAA-rated corporate bonds actually *increased* by statistically significant margins in the time period after the effective date of SFAS 140. We used an OLS regression model to examine the multivariate relationship between the dependent variable, spread, and the independent variables SFAS 140 disclosures, WAL and ProjLoss, as well as several control variables. For the automobile loan ABS full sample (See Table 4) the simple model, with only the SFAS 140 disclosure variables, WAL and ProjLoss, reveals that only the WAL disclosure has a strong statistically significant association with spread. The projected losses variable is neither statistically significant nor has the expected sign. This model's adjusted R square is 13.78 percent.

Table 4: Analysis of Results for Combined Period				
(N=434)	Basic Model 1	Basic Model 1+ Enhance*Projloss Interaction	Full Model w/ Controls	Basic Model + Period + Interaction	Basic Model + Period + Interactions
Intercept	-0.78856***	-.27598**	-0.18995	-0.44419*	-0.43541*
	(-5.54)	(-2.07)	(-1.31)	(-1.94)	(-1.91)
ProjLoss	-0.01745	0.00415	-0.04101	0.02127**	0.0219**
	(-1.00)	(0.27)	(-1.22))	(2.18)	(2.26)
WAL	2.10839***	1.94664***	1.94784***	1.20075***	1.21324***
	(8.07)	(8.45)	(8.47)	(8.57)	(8.71)
Period		-0.73571***	-0.85192***	-0.33718**	-0.26247**
		(-11.25)	(-8.46)	(-2.58)	(-1.97)
YldSlope				-0.1541***	-0.17308***
				(-3.52)	(-3.92)
Princpl				-0.0001*	-0.00014*
				(-1.76)	(-1.76)
FxFloat				0.641***	0.66485***
				(11.24)	(11.58)
Maturity				0.15648***	0.15521***
				(15.49)	(15.45)
Rating				-0.19972***	-0.20344***
				(-8.59)	(-8.79)
Enhance				0.00167	0.53223**
				(0.02)	(2.42)
Bspread				0.3566***	0.35087***
				(5.43)	(5.37)
Enhance*Period					-0.59563**
					(-2.57)
ProjLoss*Period			0.05699		
			(1.52)		
Adj R-Sq	0.138	0.332	0.334	0.776	0.7789

The sample consists of 434 separate ABS issues, 148 (before) and 286 (after). The dependent variable is Spread. ProjLoss is projected losses. WAL is weighted-average-life. YldSlope is yield slope. Princpl is principle amount of the issue. FxFlt is a dichotomous variable 1=fixed coupon, 0=floating coupon. Maturity is the maturity of the issue. Ratings is a categorical variable credit ratings 1=BBB, 2=A, 3=AA, 4=AAA, . Enhance is credit enhancement a dichotomous variable 1=internal, 0=external. Period is dichotomous variable 1=Pre, 0=Post. Bspread is the spread to treasuries of non-securitization bonds. ***, **, * represent significance at the 1%, 5% and 10% levels respectively.

When the period variable is added to the basic model, it has the expected negative (-) sign and has a strong statistically significant association with spread. These results suggest that, all else being equal, investors demand lower yields (narrower spreads) in the period after the implementation of SFAS 140 and its required disclosures. The results also suggest that investors attribute much more significance to the projected prepayments stress test disclosure, WAL, of automobile loan ABS in the spreads they demand of issuers. The relative insignificance of the projected losses disclosure is likely due to the vast majority of the issues in the sample (98 percent in the before subsample and 88 percent in the after subsample) employing external credit enhancement methods. With these external credit enhancement methods, investors very likely assume that the external credit enhancement methods will be used to ensure the timely payment of principal and interest and hence the projected losses disclosure does not figure prominently in their determination of the yield spreads demanded of automobile loan ABS issuers.

When the full sample model adds all of the control variables, both of the main variables, projloss and WAL have the expected sign and are statistically significant. Projloss at the 5% level and WAL <0.0001. The full model's adjusted R-Square is 0.776 which suggests the model is strong at capturing the variation in yield spread. As stated earlier, the Chow test indicated a structural break within the automobile loan ABS full sample based on the implementation date of SFAS 140. Accordingly, we separated the full automobile loan ABS sample into before and after subsamples and used the same OLS regression model as above for each subsample. The results for the before subsample (See Table 5) are similar with those outlined above with some notable exceptions. The simple main variable only model has the projloss variable is statistically significant but not the expected sign. The projected prepayment stress test variable, WAL, possesses the expected sign and is strongly statistically significant with a p-value <0.0001. However, with the full model including controls, the projloss variable has the expected sign but does not demonstrate a statistically significant association. The projected prepayments stress test variable, WAL, possesses the expected sign and has a p-value <0.0001.

The post subsample results (See Table 5) with the simple main variables only model have both variables with the expected signs. However, projloss is still not statistically significant. WAL has a very strong statistical association with spread as seen throughout the analysis. With the full model, including control variables, both projloss and WAL have strong statistical associations with projloss and WAL having p-values of 0.013 and <0.0001 respectively. The parameter estimate of WAL suggests that WAL is associated with 153 basis points for a given change in spread. The parameter estimate of Projloss suggests that projloss is associated with a 2 basis point change in spread. The adjusted R-square for the "after" full model's increases to 0.811. These results taken as a whole suggest that after the implementation of SFAS 140 and its related disclosures, investors while still attributing more weight (153 basis points) to the WAL disclosure also use the projloss disclosure (2 basis points) in their determination of the yield spreads they demand of automobile loan ABS. This occurs even while the percentage of externally credit enhanced issues decreases.

We posited earlier that for automobile loan ABS the projloss variable did not appear to play as prominent a role in the determination of yield spreads as prepayments stress test, WAL, because of the presence of external credit enhancement mechanisms that were assumed to ensure the timely payment of principal and interest to investors. Before exploring the relationship further, we will provide some background information on credit enhancement.

Variables	Pre SFAS 140 (N=148)			Post SFAS 140 (N= 286)		
Intercept	0.02963	0.01801	0.41418	-1.19805***	-1.21977	-0.58678*
	(0.26)	(0.16)	(1.32)	(-6.40)	(-6.56)	(-1.74)
ProjLoss	-0.04563**	-0.04321**	0.00622	0.0195	0.02514	0.02595**
	(-2.38)	(-2.23)	(0.42)	(0.97)	(1.24)	(2.51)
WAL	1.52230***	1.52857***	0.84026***	2.26056***	2.20596	1.53981***
	(7.57)	(7.60)	(6.09)	(6.44)	(6.32)	(8.97)
YldSlope			-0.12808***			-0.19262***
			(-2.88)			(-3.52)
Princpl			-0.000073			-0.00028**
			(-1.02)			(-2.54)
FxFloat			-0.08192			0.76322***
			(-0.78)			(13.11)
Maturity			0.06674***			0.18879***
			(6.56)			(15.41)
Rating			-0.15455***			-0.26726***
			(-7.08)			(-8.93)
Enhance			0.01781			-0.10830
			(0.12)			(-1.33)
Bspread			0.42514***			0.34583***
			(3.63)			(5.14)
Enhance*ProjLoss		0.44428			0.22620**	
		(0.89)			(2.4)	
Adj R-Sq	0.3100	0.3090	0.7229	0.1220	0.1364	0.8111

Table 5: Results of Pre and Post SFAS 140 Dependent variable-Spread

The dependent variable is Spread. ProjLoss is projected losses. WAL is weighted-average-life. YldSlope is yield slope. Princpl is principle amount of the issue. FxFlt is a dichotomous variable 1=fixed coupon, 0=floating coupon. Maturity is the maturity of the issue. Ratings is a categorical variable credit ratings 1=BBB, 2=A, 3=AA, 4=AAA, . Enhance is credit enhancement a dichotomous variable 1=internal, 0=external. Bspread is the spread to treasuries of nonsecuritization bonds. ***, **, * represent significance at the 1%, 5% and 10% levels respectively.

Internal credit enhancement performs the enhancement function using sources internal or within the underlying asset pool. Examples of internal credit enhancement mechanisms are senior-subordination, overcollateralization, and excess spread accounts. External credit enhancement is when the enhancement is provided or performed by sources that are external to the underlying asset pool. Examples of external credit enhancement include surety bonds, letters of credit and cash collateral accounts.

The choice of which credit enhancement mechanism is employed in a given ABS issue will be driven by the perceived strength of the underlying asset pool. For asset pools with strong underlying assets, internal credit enhancement mechanisms will suffice. However, if the underlying asset pool is viewed as not being as strong, ie. there is some question of the ability of the cash flows generated by the underlying assets to provide timely payment of principal and interest payments to ABS investors, investors may demand that external credit enhancement mechanisms be employed for that ABS issue. When partitioning the sample, automobile loans and further separating into before and after subsamples, the distribution of enhancement types is instructive. As observed earlier, the before subsample was comprised of 98 percent external

enhancement and 2 percent internal enhancement. The after subsample was made up of 88 percent external enhancement and 12 percent internal enhancement. To examine how and if enhancement affects spread, we add an dichotomous enhancement variable, enhance, to the OLS regression model (See Table 5), with a value of 1 indicating internal credit enhancement and a value of 0 indicating external credit enhancement. We also interacted the enhance variable with the projloss variable. In the before subsample, neither the enhance variable or its interaction with projloss is statistically significant (See Table 5). In the after subsample, the results were mixed with the interaction with projloss being statistically significant at the 5 percent level, but the enhance variable alone is not statistically significant (see Table 5). Taking into account that on average, spreads declined in the after subsample while the percentage of internally enhanced issues increased, this suggests that with the provision of SFAS 140 disclosures, investors had more information about the underlying asset pool and were more confident in their ability to assess the risk of issues. As a result, issuers were able to successfully bring a larger proportion of internally enhanced issues to market.

CONCLUSION

The purpose of a disclosure in a securities underwriting is to provide sufficient information for investors to evaluate the investment value of a given transaction. In paragraph 17 of SFAS 140, the Financial Accounting Standards Board (FASB) required that for all securitization transactions occurring after April 1, 2001, issuers of securitizations must provide disclosures that include information about the pool of assets that underlie securitization transactions. The findings of this research support the proposition that the required SFAS 140 disclosures have contributed to a statistically significant reduction in the mean launch spread of automobile loan ABS transactions. The univariate and multivariate results provide strong support for the hypotheses. H1 is supported with the observed yield spreads being smaller in automobile loan ABS by a statistically significant margin in the period after the implementation of SFAS 140. Support for H1 is further strengthen by the yield spreads of traditional AAA-rated bonds increasing by statistically significant margins during the sample period. There is mixed support for H2 for a positive association between projected losses disclosure and ABS yield spread. Disclosure of the weighted average life (WAL) is documented to be positively associated with yield spread in automobile loan ABS which supports H3. Taken together the strong support for H1 and H3, with mixed support for H2, suggests that the disclosures required by SFAS 140 are "value relevant" to investors making decisions about the yields they demand of issuers in automobile loan ABS transactions.

Of the two SFAS disclosures applicable to new automobile loan ABS issues, the results suggest that investors attribute more importance to the disclosure of the prepayments stress test or the weighted-average life (153 bps) compared to the projected losses disclosure (2 bps). While the results were mixed with regard to the relationship of the type credit enhancement's interaction with the projected losses disclosure and spread, the results do lend additional credence to the notion that suggests that by providing additional information about the underlying asset pool of automobile loan ABS with SFAS 140 disclosures, investors are better able to evaluate risk and accordingly demand lower yields in automobile loan ABS transactions.

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CURRENCY RETURNS AND LIQUIDITY PREMIUMS. EVIDENCE FROM HIGHER MOMENTS PORTFOLIO SORTING: VARIANCE, SKEWNESS, AND KURTOSIS

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ABSTRACT

The currency return has been investigated throughout the literature. However, we look at a different approach using realized variance and higher moments; skewness and kurtosis, to test for the size of return. Introducing these moments, we are able to detect the currency return and the size is pronounced. Then, we investigate further whether liquidity premium exists in currency market by sorting based on higher moments. We find, in fact, that liquidity premium is almost non-existing using skewness and kurtosis measure while using variance can detect the amount of liquidity premium, which is 5.51% per annum. Testing further for liquidity premium during the financial crisis period, we find the size is higher for variance portfolio sorting while skewness and kurtosis sorting does not show any improvement.
Keywords: Foreign Exchange; Liquidity; Portfolio Sorting; Financial Crisis; Higher Moments
JEL Classification: F31; G01; G11; G12; G15

INTRODUCTION

Currency market is one of the most traded markets in the world with the daily trading of $5.1 trillion (Bank of International Settlements, 2016)[i]. Although, many have attempted to explain the currency return in foreign exchange (FX) market[ii], there is a need to investigate deeper to see what could drive the change in currency return.

In this paper, we provide an empirical evidence to the currency portfolio construction using realized variance to proxy for the risk in the currency market. The realized variance is typically used in equity market[iii] as it measures the risk associated with the movement of the change in the stock returns. We also investigate further using higher moments such as skewness and kurtosis to see whether sorting portfolio based on these moments can yield the positive return[iv]. Typically, currencies show fat left-tail[v] as making it harder for investors to predict the movement in the currency market.

We sort portfolios based on size of realized variance. As expected, the most volatile portfolio depicts the loss while the least volatile portfolio incurs the positive return. The result can be explained by the characteristics of the currencies in portfolio sorting since developing currencies are more volatile and provide unstable return unlike in developed currencies. We find the size of this trading strategy can yield an approximate 65 basis point monthly or 7.84% annually. This result is interesting since most of the literatures in currency markets are focused on the carry trade portfolio approach[vi] and the strategy yields substantial positive return regardless the risk (volatility) involved. We present in this paper that using realized variance can actually provide substantial return for investors taking risk (volatility) of currencies into account.

Then, we test using higher moments such as skewness and kurtosis to see whether these higher moments sorting can depict a potential positive return. At first, we observe the

characteristics of the portfolios and find that currency portfolios provide negative skewness and high kurtosis. Consistent with literature, currencies with high interest rate differential provide a negative skewness and high positive kurtosis (Brunnermeier, Nagel, and Pedersen, 2008). With negative skewness and high kurtosis, currencies, in fact, show the long left-tail distribution as providing the potential currency crashes and positive return. Sorting portfolios based on skewness and kurtosis, we find that the higher moments sorting provides a positive return suggesting a potential currency gain in the higher moments.

Then, we test further to see which risk-factors can explain the change in return of portfolio sorting, namely variance, skewness, and kurtosis. We find that these factors are statistically significant with the change in currency return. The positive return also suggests the presence of currency return in the higher moments sorting portfolios. The plausible explanation of the result can be either shocks or information asymmetry in currency characteristics that cause the left-skewed distribution.

We also present the discussion on liquidity premium in this paper. We use the modification of liquidity measure from Evans and Lyon (2002) and Pástor and Stambaugh (2003) to test for the order flow and lagged order flow[vii] to the change in return. The lagged order flow is classified as the proxy for the return reversals (Banti, Phylaktis, and Sarno, 2012). Then, we expect the negative coefficient from the lagged order flow to indicate the reversals and the price impact. We find that the lagged order flow is negative supporting the presence of reversals as suggested by Pástor and Stambaugh (2003) that the price impact can influence the return of an asset.

Once the lagged order flow is determined, we estimate the liquidity premium based on the risk associated with the order flow. The risk measure is the realized variance of the currencies as we have determined in the first step. We find that the liquidity premium is pronounced as investors require to receive higher return to compensate their investment in risky currencies. After that, we sort portfolios based on sensitivity of liquidity to the market risk, classified as the realized variance of currencies. We find that more sensitive portfolios provide a greater need for liquidity than less sensitive portfolios. This result is consistent with Banti, Phylaktis, and Sarno (2012) indicating that the need for liquidity is higher for currencies with more sensitive to the risk associated to the market.

Then, we test for the liquidity premium during the great financial crisis (GFC)[viii]. We hypothesize that during the GCF period the size of liquidity premium should be more pronounced than during a stable state. As expected, we find that the size of liquidity premium is higher as investors require greater return from risky investment[ix]. Meanwhile, sorting based on skewness and kurtosis show no improvement in liquidity premium. Then, only realized variance can be used to capture the presence of premium, not skewness nor kurtosis.

The main contributions to this paper are (i) we provide an empirical evidence on currency return using higher moments sorting and find that there is a potential positive return on higher moments sorting portfolio, (ii) we present the liquidity premium using higher moments and the results show that the premium exists in variance sorting while using skewness and kurtosis sorting the size of premium is relatively small, and (iii) the presence of financial crisis, in fact, shows the higher premium using variance portfolio sorting; however, skewness and kurtosis sorting do not show any improvement in the size of premium.

LITERATURE REVIEW

Currency Risk and Return

There are numerous studies investigating the risk and return of the foreign exchange (FX) market. Adler and Dumas (1984) provide the measurement of risk associated in currencies. They argue that the change in economic variables impact the change in the exchange rates. His work has been providing an enormous impact on literatures to investigate the impact of economic variables to the change in risk and return of currencies. Also, there are literatures providing evidence based on other aspects of the variables that affect the change in currency risk and return such as the consumption growth (Jorion, 1995), the presence of institutional investors (Froot and Ramadorai, 2005), the price options (Lustig and Verdelhan, 2007), global risk (Brunnermeier and Nagel, 2008), and funding constraints (Banti and Phylaktis, 2015).

We are interested to look beyond the second moment (variance) of currency portfolio sorting since there is not much literatures exploring the higher moment sorting on currencies, unlike in equity markets[x]. There are substantial evidences of the positive returns from portfolio sorting[xi]. Typically, these literatures focus on the risk involved in a carry trade strategy; however, there is a lack of evidence supporting the role of higher moments, namely skewness and kurtosis sorting. The argument provided in this paper is that if currencies are seen as another type of asset, we should be able to observe the left-skewed distribution. Then, the investors should expect to receive positive returns from such investment strategy. However, there is an argument by Menkhoff et al. (2012) that crashes can potentially be used to explain the carry trade return that is high during the crisis period. Then, if their argument is true, we should be able to observe even higher return based on volatility, skewness, and kurtosis portfolio sorting during the crisis period. Moreover, Engle (2011) provides an empirical evidence of high negative skewness during the financial crisis using asymmetric volatility model.

Liquidity Premium in Currency Market

The presence of liquidity premium is important to determine the change in currency risk and return[xii]. Higher liquidity means higher risk associated with the return and investors prefer to receive higher return to compensate to such risk (Archarya and Pedersen, 2005; Pástor and Stambaugh, 2003). Banti, Phylaktis, and Sarno (2012) test for the presence of global liquidity risk in FX market. Using order flow to test for the return reversals, they conclude that the currencies are sensitive to the presence of the risk and funding constraint factors. Their work provides an interesting result since, instead of using carry trade approach, they sort the currencies based on the sensitivity with the finding of liquidity premium of 4.7% per annum. Their finding has motivated us to investigate further whether the size of liquidity premium can be explained by using variance, skewness, and kurtosis sorting.

The severely funding constraints and risks are causing higher liquidity premium in currency market. Mancini, Ranaldo, and Wrampelmeyer (2013) provide the solid work testing for the change in FX liquidity. They observe the major currencies using high frequency data to determine the liquidity risk and the size of liquidity premium. Using order flow as a determination of exchange rate liquidity, their result suggests that during the financial crisis the liquidity premium is higher, and the liquidity risk factor has a strong impact on the carry trade return during the same period. Their work indicates that VIX spread[xiii] has a significant impact on the change in FX liquidity as investors expect to receive a higher return during the liquidity dry-up period such as financial crisis or sudden market shocks. This finding is also supported by Karnaukh, Ranaldo, and Soderlind (2015) that the liquidity in FX market depends highly on

funding constraints and global risk. In this paper, we are testing for the presence of GFC to the change in FX liquidity and providing empirical framework on how to measure the liquidity premium size with and without financial constraints.

The paper is organized as follows: next section we provide data and methodology used in this paper. We describe the summary statistics as well as the measurement of variance, skewness, and kurtosis for portfolio sorting. Then, we present our empirical results. We also discuss on the liquidity premium topic under this section. Lastly, we show the conclusion and remarks.

DATA AND METHODLOGY

Data

The data are collected through Thompson and Reuters for the currency returns while Bloomberg Terminal is used to get bid, ask, and mid quotes, and supplemented for the sample. To be included in the sample, each currency must contain at least 5 years spanning period and be traded at 16 GMT[xiv]. Also, we exclude pegged currencies since these currencies have different microstructure than other currencies and they can cause the potential bias results. Furthermore, currencies must be traded based on the volume recorded by the Bank of International Settlement (BIS).

In the end, we have 43 currencies in our sample spanning from December 1984 to December 2015. The exchange rate is defined as foreign currency against USD as foreign currency is a numerator while USD is a denominator[xv]. To preserve the space, we provide the list of the currencies in the appendix section.

Excess Return Estimation

Once we collect the currency data, now we estimate the return of each currency using the difference in future spot rate and today's forward rate. The estimation assumes that the interest rate parity condition holds[xvi].

$$er_{i,t} = In\left(s_{i,t+1}\right) - In(f_{i,t}) \tag{1}$$

where $er_{i,t}$ is excess return of currency i from period t to t+1, S is spot rate of currency i at time t+1, and f is forward rate of currency i at time t. The estimation is proposed by Akram, Rime, and Sarno (2009)[xvii] that the effect of interest rate differential is minimal and covered interest rate parity does hold during the short horizon.

Table 1 shows the summary statistics of our sample. As expected, developed currencies provide lower mean returns and standard deviation while emerging currencies show higher standard deviation. The result is consistent with many literatures (Mancini, Ranaldo, Wrampelmeyer, 2013; Banti and Phylaktis, 2015; Menkhoff et al., 2012) that the emerging currencies are more volatile than developed ones providing opportunities for investors to take investment strategies on these currencies.

Table 1

The summary statistics of 43 currencies spanning period from December 1984 to December 2015. The excess return is estimated from equation (1): $er_{i,t} = In(s_{i,t+1}) - In(f_{i,t})$, where $er_{i,t}$ is excess return of currency i from period t to t+1, S is spot rate of currency i at time t+1, and f is forward rate of currency i at time t. Mean and Standard Deviation (Stdev) are also reported.

No.	Country	Excess Return	
		Mean	Stdev
1	Australia	0.0023	0.0344
2	Austria	-0.0011	0.0298
3	Belgium	-0.0011	0.0298
4	Brazil	0.0055	0.0445
5	Bulgaria	-0.0005	0.0305
6	Canada	0.0005	0.0212
7	Croatia	0.0004	0.0312
8	Cyprus	-0.0008	0.0304
9	Denmark	0.0006	0.031
10	Egypt	0.0095	0.0144
11	Euro	-0.0004	0.0298
12	Finland	-0.0012	0.0298
13	France	0.0045	0.0323
14	Germany	0.0032	0.0334
15	Greece	-0.0002	0.0302
16	Hongkong	-0.0002	0.0019
17	Hungary	0.0029	0.0408
18	Iceland	0.0009	0.0441
19	India	0.0011	0.0214
20	Indonesia	0.0138	0.089
21	Israel	0.0016	0.025
22	Italy	0.0043	0.0329
23	Japan	0.001	0.0325
24	Kuwait	0.0005	0.0069
25	Malaysia	0.0032	0.0608
26	Mexico	0.0026	0.0289
27	Netherlands	0.0034	0.0334
28	Norway	0.0018	0.0317
29	Poland	0.0027	0.0425
30	Portugal	-0.001	0.0297
31	Russia	-0.0015	0.0433
32	Saudi Arabia	0.0001	0.0011
33	Singapore	0.0002	0.0161
34	Slovakia	0.004	0.0332
35	Slovenia	-0.0009	0.0305
36	South Africa	0.0052	0.0485
37	South Korea	0.0017	0.0335
38	Spain	-0.001	0.0297
39	Sweden	0.0014	0.0326
40	Switzerland	0.0013	0.0338
41	Taiwan	-0.0015	0.0161
42	Thailand	0.0005	0.0326
43	UK	0.0001	0.0244

Realized Variance

The realized variance estimation is using an approximation of n trading days in each month. The conditional volatility is used to construct the next period portfolio (1-month period) as using the past realized variance to determine the next period portfolio variance to form the portfolio[xviii].

$$\sigma_t^2(f) = RV_t^2(f) = \Sigma_{d=1/n}^1 (f_{t+d} - \frac{\Sigma_{d=1/n}^1 f_{t+d}}{n})^2 \tag{2}$$

$$f_{t+1}^\sigma = \frac{c}{\sigma_t^2(f)} f_{t+1} \tag{3}$$

where f_{t+1} is the one period buy-and-hold portfolio excess return, f_{t+1}^σ is the one-period portfolio volatility, $\sigma_t^2(f)$ is the proxy for the conditional variance of the portfolio, and c is a constant arbitrary number to measure the scaling conditional volatility[xix].

We report the realized variance of all currencies in figure 1. As expected, the realized variance is high during the financial crisis period such as great financial crisis (GCF), and the collapse of Lehman Brothers. Then, realized variance is a good proxy to forming portfolio for the next period. We will provide evidence of realized variance to form portfolio under the empirical results section.

Figure 1

Realized Variance of 43 currencies spanning period from December 1984 to December 2015. The realized variance is estimated by equation (2): $\sigma_t^2(f) = RV_t^2(f) = \sum_{d=1/n}^{1}(f_{t+d} - \frac{\sum_{d=1/n}^{1}f_{t+d}}{n})^2$.
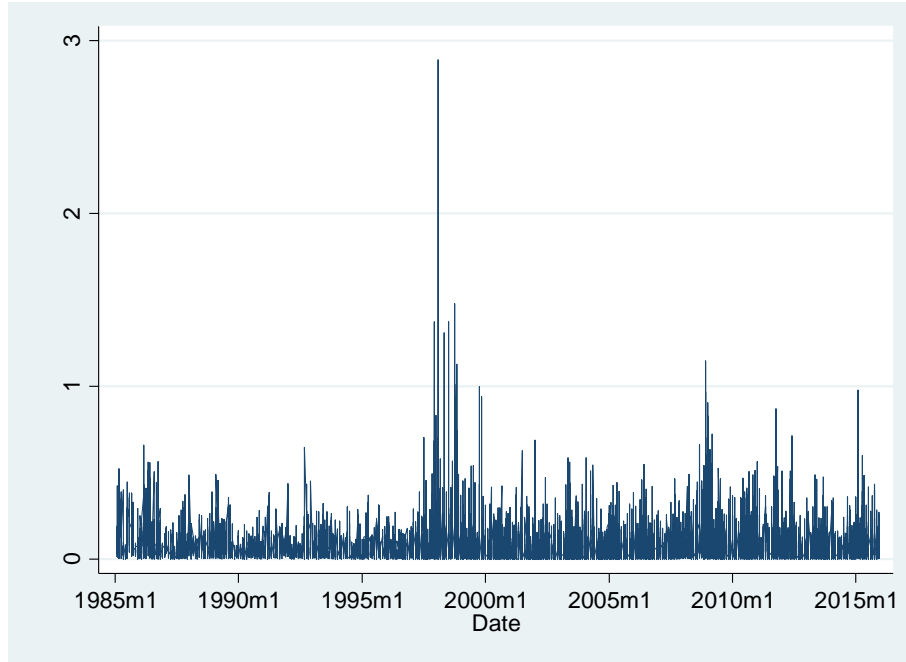
Higher Moments: Skewness and Kurtosis

Observing higher moments is very common in equity market. However, for the currency market, higher moments are not much investigated. The closest work to observe the higher moments in the currency market is done by Brunnermeier and Nagel (2008). They test for the carry trades and currency crashes with the probability of having left-skewed distribution. They find that carry trade has the left-tailed distribution with high negative skewness. Motivated by their finding, we are interested to test the portfolio sorting based on the higher moments. The estimation of skewness and kurtosis is shown below[xx]:

$$RSkew_t = \frac{\sqrt{n}\sum_1^n er_{i,t}^3}{\{RV_t^2(f)\}^{3/2}} \tag{4}$$

$$RKurt_t = \frac{n\sum_1^n er_{i,t}^4}{\{RV_t^2(f)\}^2} \tag{5}$$

where $er_{i,t}$ is the excess return estimation of currency i at time t.

The third and fourth moments are being scaled by the number of trading days in each month as denoted by n. The scaling of $RSkew_t$ and $RKurt_t$ by $\sqrt{n}$ and n is to ensure the estimation of skewness and kurtosis are corresponding to the daily frequency.

Explaining Currency Return Based on Moments

We measure the innovation based on the differences of market movement as suggested by Chang et al. (2013). The approximation of the innovation is done by ARMA (1,1)[xxi]. Also, the difference can help removing autocorrelation that may occur in the dataset. The innovation of these moments is defined as follows:

$$\Delta RV_t = RV_t - RV_{t-1} \tag{6}$$

$$\Delta Skew_t = 100 * (RSkew_t - 0.9916 * RSkew_{t-1} + 0.3361 * \Delta RSkew_{t-1}) \tag{7}$$

$$\Delta Kurt_t = 100 * (RKurt_t - 0.9954 * RKurt_{t-1} + 0.4413 * \Delta RKurt_{t-1}) \tag{8}$$

We can see that the AR(1) coefficients are close to -1 meaning that we can use MA(1) model on the first differences to obtain the innovations for both Skewness and Kurtosis. We reports ARMA(1,1) result in table 2.

Table 2

Risk Factors: Variance, Skewness and Kurtosis. The table reports the innovation from ARMA(1,1) for variance, skewness, and kurtosis. We also report the size of AR(1) and MA(1) to use for constructing portfolio.

Risk Factor	AR(1)	MA(1)	Correlation		
			ΔRV	ΔSkew	ΔKurt
ΔRV	-1	0	1	0.28	-0.16
ΔSkew	-0.9916	0.3361		1	-0.78
ΔKurt	-0.9954	0.4413			1

The correlation between these variables is also reported in table 2. ΔSkew and ΔKurt are highly negatively correlated indicating the fat-left tail distribution. Also, we can imply that currency has negative skewness on average.

Once we determine these moments, we sort portfolios based on these risk factors. In literature of asset pricing to determining the risk factors, the substantial empirical results indicate the presence of volatility in equity market[xxii]. However, the presence of skewness and kurtosis is left unexplored. We incorporate the use of higher moments to determine the portfolio sorting. The closet work to our paper is from Chang et al. (2013) investigating higher moments in the stock returns. We, however, focus on the use of higher moments to test for currency return and sort portfolio based on these factors. Although we are lacking empirical support of the presence of risk factors in currency market, we provide an empirical test to see whether currency return can be explained by these higher moment risk factors.

Once we determine risk factors, we test with regression model as follows:

$$er_{i,t} = a_i + b_1 \Delta RV_{i,t} + b_2 \Delta RSkew_{i,t} + b_3 \Delta RKurt_{i,t} + X_t BA_{i,t} + \varepsilon_{i,t} \tag{9}$$

where BA is the bid and ask spread of currency i at time t.

We argue that since currencies reply heavily on the presence of liquidity[xxiii] and the liquidity measure is measured by bid-ask spread, then we use it as the control variable in this regression model.

We then sort the currency return based into quintiles based on these coefficients, namely b1, b2, and b3. We present this regression result under the empirical result section.

Liquidity Measure and Liquidity Premium

Liquidity premium is an important factor for investors to take such positions in financial markets. When liquidity premium is high, investors demand a higher return to compensate for a higher illiquidity in the market. An additional compensation is required to compensate for a greater risk. Amihud and Mendelson (1986), Eleswarapu and Reinganum (1993), Pástor and Stambaugh (2003) explain the impact of liquidity premium to the change in the returns.

We estimate the potential return reversals. Pástor and Stambaugh (2003) provide empirical evidence of reversals to predict the liquidity. The change in order flow and lagged order flow are used as the indicators for return reversals. Then, we expect the lagged order flow to be negative while the order flow to be positive to show the reversals.

The order flow estimation is calculated as follows:

$$er_{i,t} = a_i + \beta_i \Delta X_{i,t} + \gamma_i \Delta X_{i,t-1} + \varepsilon_t \tag{10}$$

where $\Delta X_{i,t}$ is the change in order flow or information flow.

Evan and Lyons (2002), and Banti, Phylaktis, and Sarno (2012) estimate the change in the order flow to investigate the time-varying liquidity in FX market. Gamma (γ) or the lagged order flow coefficient can explain the change in behavior of risk-adverse market makers that they are trying to increase their returns in order to take such trading position in illiquid currencies.

Once we obtain the result showing the presence of the reversals, we now use it as the change in liquidity measure (γ) as the proxy for liquidity changed in currency. Then, we incorporate the use of liquidity measure with the realized variance to sort portfolios based on the sensitivity to the presence of realized variance. The result reports under the empirical result section.

EMPIRICAL RESULTS

Realized Variance Portfolio Sorting

We sort portfolio based on the sensitivity of conditional variance into quintiles ranking on the least volatile to the highest volatile portfolio. Table 3 reports our result. As expected, the least volatile portfolio (Portfolio 1) contains the positive mean return while the highest volatile portfolio (Portfolio 5) incurs losses. Grouping up portfolios based on volatility does separate the developed and emerging currencies since emerging currencies depict high volatility than developed ones.

Table 3

Quintile portfolio sorting based on realized variance. The realized variance is estimated in equation (2): $\sigma_t^2(f) = RV_t^2(f) = \sum_{d=1/n}^{1}(f_{t+d} - \frac{\sum_{d=1/n}^{1} f_{t+d}}{n})^2$ while equation (3): $f_{t+1}^{\sigma} = \frac{c}{\sigma_t^2(f)} f_{t+1}$ is used to form portfolios. f_{t+1} is the one period buy-and hold portfolio excess return, f_{t+1}^{σ} is the one-period portfolio volatility, $\sigma_t^2(f)$ is the proxy for the conditional variance of the portfolio, and c is a constant arbitrary number to measure the scaling conditional volatility. Portfolio 1 indicates the least volatility portfolio while portfolio 5 shows the highest. We also report mean, median, standard deviation (Stdev), Sharpe ratio (SR), Skewness, and Kurtosis. 1-5 is the difference between least volatility portfolio and highest volatility portfolio. Sharpe Ration is return per unit risk of each portfolio and it is calculated by dividing excess return (mean) with standard deviation (Stdev).

Portfolio	1	2	3	4	5	1-5
Mean	0.0037	0.0031	0.0023	0.0003	-0.0028	0.0065
Median	0.0033	0.0031	0.003	0.0012	-0.0034	0.0021
Stdev	0.023	0.0212	0.0234	0.0314	0.0571	0.0297
SR	0.1618	0.1445	0.0966	0.0112	-0.0492	0.2201
Skewness	-0.9118	-1.1044	-0.2897	-0.1573	-4.7282	-0.4857
Kurtosis	13.7634	11.5104	6.1008	4.5039	7.7558	9.1856

We also report Sharpe ratio[xxiv], skewness, and kurtosis of realized variance portfolio sorting. The least volatile portfolio shows the highest Sharpe ratio and Sharpe ratio is lowest at the most volatile portfolio. This finding is consistent with Menkhoff et al. (2012) that volatile currency portfolio should provide negative return and negative Sharpe ratio while least volatile portfolio mainly in developed currencies should indicate the positive return; hence, higher Sharpe ratio is pronounced.

The difference between portfolios or the return based on differences in realized variance is also reported in table 3 as 1-5. The size of the return is higher and Sharpe ratio increases.

Higher Moments Portfolio Sorting

Our argument in this paper is that using higher moment sorting the strategy should provide a significant positive return. Before we proceed into sorting based on skewness and kurtosis, we test for normality of our sample whether our data set depict the normality assumption. We follow the test of D'Agostino, Belanger, and D'Agostino (1990)[xxv] for normality test.

Table 4 reports the result. The null hypothesis is the normally distributed assumption. We find that all the portfolios show the rejection of normality distributed assumption as p-value for both skewness and kurtosis is shown 0 supporting the presence of non-normal distribution.

Table 4

Skewness and Kurtosis Testing. The table presents the test on skewness and kurtosis based on D'Agostino, Belanger, and D'Agostino (1990) normality testing. We test with realized variance sorting portfolio as presented in table 3. Portfolio 1 indicates the least volatile portfolio while portfolio 5 shows the highest. 1-5 is the difference between least volatility portfolio and highest volatility portfolio. The tests on probability of skewness and kurtosis are reported under Pr(Skewness) and Pr(Kurtosis) with null hypothesis of normally distribution.

Portfolio	Pr(Skewness)	Pr(Kurtosis)
1	0.0000	0.0000
2	0.0000	0.0000
3	0.0000	0.0000
4	0.0000	0.0000
5	0.0000	0.0000
1-5	0.0000	0.0000

We provide our sorting based on skewness and kurtosis in table 5. Panel A reports the skewness sorting while Panel B shows the kurtosis sorting. It is interesting that sorting based on skewness and kurtosis provide a very consistent result. Portfolio 1 shows the greatest return while portfolio 5 indicates the lowest return, as we find in sorting based on variance. The difference between portfolio 1 and 5 indicates the highest Sharpe ratio for both skewness and kurtosis sorting.

With the result, we can argue that the distribution of currency is left-skewed distribution. Investors seek to take position on such investment strategy to receive a positive return (Brunnermeier, Nagel, and Pedersen, 2008). The positive return also suggests the presence of currency return in the higher moment portfolio sorting.

Since there is no literature to support our methodology used in this paper, we would like to offer various explanations of this finding. Firstly, the presence of emerging currencies can drive the left-tail skewed distribution. Campa, Changb, and Reiderc (1998) and Bakshi, Carr, and Wu (2008) provide empirical evidences and discussions on the impact of currency trading. The shocks from emerging currencies, in fact, provide an opportunity for investors to hedge and take trading position in developing currencies. Then, the shocks or market crashes in currency market may depict the left skewed distribution. Another explanation is that the information asymmetry of traders in currency market in perceiving the risks. Menkhoff (1998) offers the test on information asymmetry issues in currency market and concludes that there is an issue related to information flow in currency market.

Table 5

Portfolio Sorting based on Skewness and Kurtosis. This table reports sorting based on skewness and kurtosis using equation (4): $RSkew_t = \frac{\sqrt{n}\sum_1^n er_{i,t}^3}{\{RV_t^2(f)\}^{3/2}}$ and equation (5): $RKurt_t = \frac{n\sum_1^n er_{i,t}^4}{\{RV_t^2(f)\}^2}$. We also report mean, median, standard deviation (Stdev), and Sharpe ratio (SR). 1-5 in panel A is the difference between the least skewness portfolio and the highest skewness portfolio. 1-5 in panel B reports the differences between the least kurtosis portfolio and the highest kurtosis portfolio. Sharpe Ration is return per unit risk of each portfolio and it is calculated by dividing excess return (mean) with standard deviation (Stdev).

Panel A: Skewness Sorting						
Portfolio	1	2	3	4	5	1-5
Mean	0.004312	0.00356	0.2718	0.0011	-0.0016	0.005912
Median	0.003710	0.003412	0.003111	0.00218	-0.00457	0.00095
Stdev	0.02284	0.02421	0.02688	0.03251	0.04721	0.030963
SR	0.188792	0.147047	10.11161	0.033836	-0.03389	0.190936
Panel B: Kurtosis Sorting						
Portfolio	1	2	3	4	5	1-5
Mean	0.00412	0.003571	0.002621	0.00101	-0.00185	0.00597
Median	0.003822	0.003687	0.002671	0.002019	-0.00378	0.001288
Stdev	0.02478	0.02567	0.024312	0.030113	0.04821	0.03259
SR	0.166263	0.139112	0.107807	0.03354	-0.03837	0.183185

Regression Results

Ang et al. (2006), Fu (2009), Carhart (1997), Lewellen and Nagel (2006) point to the presence of volatility in the change in stock return. We analyze using the regression model from equation (9) adding higher moments, namely skewness and kurtosis to add extra dimensions to see whether currency return can be explained by these moments.

The control variable we use in this paper is bid-ask spread as it is the measure of the change in liquidity of currency (Mancini, Ranaldo, and Wrampelmeyer ,2013; Banti, Phylaktis, and Sarno, 2012). Table 6 shows the result from the regression. All variables are statistically significant. The signs of these coefficients are supported by the presence of literature[xxvi.] The realized variance depicts the risk involved in currency returns as the return would decrease as the volatility increases.

Table 6

Regression Result. The table provides the regression result from equation (9):
$er_{i,t} = a_i + b_1 \Delta RV_{i,t} + b_2 \Delta RSkew_{i,t} + b_3 \Delta RKurt_{i,t} + X\ BA_{i,t} + \varepsilon_{i,t}$,   where
$\Delta RV_{i,t}$ is the realized variance estimated from equation (6): $\Delta RV_t = RV_t - RV_{t-1}$,
$\Delta Skew_t$ is the realized skewness estimated from equation (7):
$\Delta Skew_t = 100 * (RSkew_t - 0.9916 * RSkew_{t-1} + 0.3361 * \Delta RSkew_{t-1}$, $\Delta Kurt_t$
is the realized kurtosis calculated from equation (8):
$\Delta Kurt_t = 100 * (RKurt_t - 0.9954 * RKurt_{t-1} + 0.4413 * \Delta RKurt_{t-1})$, and BA_t is
the bid-ask spread as the control variable. The table reports using one factor a time
regression and model (4) shows all the risk factor loading regression. *, and **
indicate 5% and 10% significant level based on Newey and West (1987).

Model	1	2	3	4
Constant	0.001124	0.001357	0.001296	0.001381
	(2.34)*	(2.18)*	(2.27)*	(2.69)*
ΔRV	-0.00187			-0.00236
	(-2.64)*			(-2.87)*
ΔSkew		0.00471		0.00316
		(1.87)**		(1.96)*
ΔKurt			0.00382	0.00386
			(2.22)*	(2.21)*
ΔBA	0.0047	0.0053	0.0051	0.0064
	(3.16)*	(3.33)*	(3.30)*	(3.45)*

The positive coefficients of skewness and kurtosis support the idea that with the presence of the skewness and kurtosis, investors would expect to receive higher returns[xxvii]. Our evidence shows that the presence of these higher moments provides the change in currency returns. The skewness and kurtosis, in fact, positively related to the change in the returns. These risk factors are important in asset pricing to determine the change in asset return, especially in equity markets. Then, the issue with this testing is that the argument of currency is another type of asset. Although, many believe that currency should not be classified as an asset since the absence of fundamental values. There are substantially literatures testing currency return with the use of asset pricing model[xxviii]. Then, our fundamental assumption for this test is that currency is an asset and risk factors, namely variance, skewness, and kurtosis can be used to explain the currency return.

LIQUIDITY PREMIUM DISCUSSION

Liquidity Measure – Order Flow

We begin our analysis for order flow as described in equation (10). The test for order flow is proposed by Evans and Lyons (2002) indicating that the relation between currency movement and liquidity is observable and the information or order flow can be used to describe this relationship. Our result is reported in table 7. The order flow is, as expected, statistically significant for all the currencies in our sample while the lagged order flow depicts the negative sign indicating the reversals in currency returns. Pástor and Stambaugh (2003) explain that the

measure in liquidity can capture the return reversals due to risk averse investors in the market seeking greater liquidity to compensate with a greater return. Then, this finding supports the liquidity as an indicator for the currency return.

Table 7

Order Flow. This table reports the order flow estimated from equation (10): $er_{i,t} = a_i + \beta_i \Delta X_{i,t} + \gamma_i \Delta X_{i,t-1} + \varepsilon_t,$ where $\Delta x_{i,t}$ is the change in order flow or the estimated return. We expect the signs differences between β and Υ to support the presence of the reversals in our sample.

No.	Country	α	β	Υ
1	Australia	-0.00548	0.01232	-0.00044
2	Austria	-0.00137	0.00547	-0.00018
3	Belgium	-0.00028	0.00124	-0.00056
4	Brazil	-0.00722	0.02567	-0.00017
5	Bulgaria	-0.00581	0.00321	-0.00078
6	Canada	-0.00356	0.00663	-0.00027
7	Croatia	-0.0067	0.00871	-0.00054
8	Cyprus	-0.0013	0.002497	-0.00024
9	Denmark	-0.00334	0.00054	-0.00045
10	Egypt	-0.00783	0.00678	-0.00015
11	Euro	-0.00334	0.00295	-0.00048
12	Finland	-0.00128	0.00276	-0.00059
13	France	-0.00318	0.00361	-0.00079
14	Germany	-0.00221	0.00158	-0.00036
15	Greece	-0.00631	0.00783	-0.00103
16	Hong Kong	-0.00447	0.00028	-0.00089
17	Hungary	-0.00291	0.00476	-0.00047
18	Iceland	-0.00246	0.00101	-0.00042
19	India	-0.00538	0.00037	-0.00052
20	Indonesia	-0.00671	0.00087	-0.00057
21	Israel	-0.00589	0.00013	-0.00048
22	Italy	-0.00397	0.00213	-0.00012
23	Japan	-0.00322	0.01469	-0.00027
24	Kuwait	-0.00447	0.00541	-0.00027
25	Malaysia	-0.00491	0.00079	-0.00051
26	Mexico	-0.00203	0.02443	-0.00052
27	Netherlands	-0.00081	0.00054	-0.00038
28	Norway	-0.00349	0.00845	-0.0005
29	Poland	-0.00104	0.00114	-0.00082
30	Portugal	-0.00487	0.00543	-0.00078
31	Russia	-0.00876	0.003798	-0.00022
32	Saudi Arabia	-0.00312	0.003895	-0.00073
33	Singapore	-0.00216	0.00222	-0.00019

34	Slovakia	-0.00542	0.008725	-0.00033
35	Slovenia	-0.00557	0.00157	-0.00048
36	South Africa	-0.00115	0.15263	-0.00041
37	South Korea	-0.00138	0.0108	-0.00047
38	Spain	-0.00499	0.009815	-0.0001
39	Sweden	-0.00326	0.00268	-0.00048
40	Switzerland	-0.00466	0.00459	-0.00027
41	Taiwan	-0.00312	0.009051	-0.00021
42	Thailand	-0.00316	0.06991	-0.00034
43	UK	-0.00075	0.00355	-0.00047

Explaining Liquidity Premium

The sources of liquidity premium have been a main discussion in empirical studies. Prior empirical studies show that there are many factors that can explain the change in liquidity. To determine the change in liquidity, we cannot simply use the proxy of liquidity as the dependent variable since it is just a proxy of the liquidity that occurs when the change in excess returns happens. Thus, the proper way to measure the liquidity premium is to use excess return as the dependent variable (Mancini, Ranaldo, and Wrampelmeyer, 2013; Banti et al., 2012; Brunnermeier and Pedersen, 2009).

With funding constraints, investors would be worse off and the liquidity in financial markets will become illiquid. Brunnermeier, Nagel, and Pedersen (2008) test for several funding constraint factors and find that TED spread, the proxy for the level of credit risk and funding liquidity in financial markets, increases when the market becomes illiquid. Therefore, we take into consideration that TED spread may influence the liquidity premium.

VIX index, as defined by the Chicago Board Option Exchange (CBOE), is the measure of market expectation of near-term volatility conveyed by stock index option prices. Bekaert and Hoerova (2014) document that the change in VIX index can have an impact on the S&P 500 option prices. Also, Mancini, Ranaldo, and Wrampelmeyer (2013) define VIX as a proxy for investors' fear and uncertainty in financial markets. They test the change in VIX and conclude that the change in liquidity can be influenced by the volatility index.

The change in liquidity in the FX market can be seen as the order flow of the currencies trading in the market. This provides the need for investors to receive higher returns and expect to liquidate the currencies. Baker et al. (2012) test investor sentiments with several market indices. They find that investor sentiment can be used to predict returns. We, however, hypothesize that investor sentiments may not have any influence in changes in the currency premium since investor sentiment is mainly used in equity literature, which differs from currency literature.

We also observe the change in risk-free rates, as it is proposed by Fama-French (1996) that the change in risk-free rate can be used as a proxy for the change in asset pricing. In this paper, however, we do not go into any further analysis of book-to-market and size as parts of measuring the change in liquidity, since we are not focusing on determining return predictability. The change in risk-free rate, as we expect, must have some impact on the change in liquidity.

We perform the regression with these factors as follows:

$$er_{i,t} = a + b_1\gamma_{i,t} + b_2\Delta SEN_t + b_3\Delta TED_t + b_4\Delta VIX_t + b_5\Delta Rf_t + \varepsilon_{i,t} \quad (11)$$

where γ_i is our liquidity proxy obtained from equation (11), ΔVIX_t is the change in VIX spread, ΔTED_t is the change in TED spread, ΔSEN_t is the change in investor sentiment, and ΔRf_t is the change in risk-free rate.

      Table 8 reports the result. We add one factor at a time to test for the consistency of independent variables. We use Gamma (γ_i) as the control variable to test for the presence of liquidity. We find that the proxy for liquidity (Υ) is statistically negative capturing the presence of the change in excess return that occurs when there is a change in liquidity.

Table 8

Regression Result. The table reports the sources of liquidity of 34 currencies using equation (11):

$$er_{i,t} = \alpha_i + \beta_1\gamma_i + \beta_1\Delta bid\_ask_i + \beta_2\Delta VIX_t + \beta_3\Delta TED_t + \beta_4\Delta SEN_t + \beta_5\Delta Rf_t + \varepsilon_i.$$

$er_{i,t}$ is excess return used as the dependent variable. γ_i is the liquidity proxy. Δbid_ask_i is the change in bid-ask spread. ΔVIX_t is the change in VIX spread. ΔTED_t is the change in TED spread. ΔSEN_t is the change in investor's sentiment index. ΔRf_t is the change in risk-free rate. T-test is reported using Newey and West (1987) in parentheses. *, ** indicate 10% and 5% level of significance.

Model	1	2	3	4	5	6
Constant	-0.011305	-0.01208	-0.01121	-0.01046	-0.0113	-0.11332
	(-7.06)	(-7.83)	(-7.26)	(-6.55)	(-7.29)	(-7.11)
Υ	-0.13721	-0.15776	-0.15503	-0.13481	-0.15537	-0.13723
	(-3.85) **	(-4.57) **	(-4.46) **	(-3.75) **	(-4.47) **	(-3.85) **
ΔRisk-Free	-0.06420	-0.01116				
	(-1.22)	(-0.02)				
ΔVIX	0.00299		0.002885			0.003431
	(17.24) **		(17.03) **			(16.74) **
ΔTED	0.00082			0.000139		0.000118
	(3.85) **			(4.11) **		(4.51) **
ΔSEN	0.00760				0.0087864	
	(1.20)				(1.38)	

      Both VIX and TED are statistically significant indicating that investors are expected to receive higher returns when the market is more volatile. Since these variables are used to measure the funding constraints and risks involved in the market, our result supports that higher liquidity is compensated with higher returns.

      Risk-free and Investor Sentiment are not statistically significant. The finding is somehow different from the literatures (Fama and MacBeth 1973; Fama-French 1996; Glosten and Jagannathan, 1993; Bollerslev et. al. 2015) that risk-free and investor sentiment can influence the change in return. These papers test the variables with U.S. equity. Our paper, however, test with the currency return and this may explain the different in findings. Also, the characteristics of equity and currency markets are different from each other (Phylaktis and Chen, 2010, Pasquariello, 2014). Then, our result indicates the different characteristics between equity and currency market.

We also test for only significant variables in model (6). These variables provide the consistency result with other models. The model (6) confirms the earlier regression tests that Gamma, VIX, and TED can be used to explain the change in the currency return.

Size of Liquidity Premium

So far, we have been testing for the presence of liquidity to the change in currency return. We are interested in measuring the size of liquidity. Banti, Phylaktis, and Sarno (2012) describe the use of liquidity sensitivity to sort portfolio and then determine the size of the liquidity premium. In this paper, we look at a different approach. We test for the liquidity size using the variance, skewness, and kurtosis sorting. We test the liquidity premium by using the portfolio sorting of variance, skewness, and kurtosis[xxix] and run a regression based on the portfolios to test for the liquidity premium[xxx].

Table 9 reports the result. Panel A, B, and C show the liquidity premium based on variance, skewness, and kurtosis sorting respectively. As expected from variance sorting (Panel A), we find that the size of liquidity premium is approximately 5.51% per annum. The size of the liquidity premium is similar to Banti, Phylaktis, and Sarno (2012) that the size of premium is approximately 4.65% per annum. They measure the size of the liquidity premium using the sensitivity of currency portfolios. We test for similar methodology; however, we use the realized variance to present the size of the liquidity premium. Then, our finding shows that the liquidity premium exists in currency market using variance portfolio sorting.

Table 9

Liquidity Premium. The table reports the liquidity premium based on variance, skewness, and kurtosis portfolio sorting. Gamma is the liquidity proxy determined in equation (11): $er_{i,t} = \alpha_i + \beta_1\gamma_i + \beta_1\Delta bid\_ask_i + \beta_2\Delta VIX_t + \beta_3\Delta TED_t + \beta_4\Delta SEN_t + \beta_5\Delta Rf_t + \varepsilon_i$. $er_{i,t}$ is excess return used as the dependent variable. γ_i is the liquidity proxy. Δbid_ask_i is the change in bid-ask spread. ΔVIX_t is the change in VIX spread. ΔTED_t is the change in TED spread. ΔSEN_t is the change in investor's sentiment index. ΔRf_t is the change in risk-free rate. 1-5 is the difference between portfolio 1 and 5. The test statistic is reported under the p-value row.

Panel A: Variance						
Portfolio	1	2	3	4	5	1-5
Gamma	-0.05173	-0.08928	-0.08945	-0.09263	-0.10683	0.0551
p-value	0.0015	0.0019	0.0026	0.0027	0.0018	0.0013
Panel B: Skewness						
Portfolio	1	2	3	4	5	1-5
Gamma	-0.09163	-0.09264	-0.09971	-0.01036	-0.10463	0.013
p-value	0.0013	0.0026	0.0029	0.0018	0.0034	0.0027
Panel C: Kurtosis						
Portfolio	1	2	3	4	5	1-5
Gamma	-0.06298	-0.06518	-0.06761	-0.06883	-0.07098	0.008
p-value	0.0035	0.0013	0.0027	0.0038	0.0034	0.0043

Panel B, and C report the sorting based on skewness and kurtosis. Interestingly, we find that the size of premium is 1.3%, and 0.8% per annum using higher moments sorting. The p-value also shows that higher moments sorting is statistically significant. Then, we find an evidence that skewness and kurtosis sorting can be used to predict the amount of liquidity premium. However, the size is substantially small compared to what we find in variance sorting. Understanding that there is no literature support on currency portfolio sorting using skewness and kurtosis. The plausible explanation of the small liquidity premium size based on skewness and kurtosis sorting is the presence of highly skewed in currency markets. Menkhoff et al. (2012) explain the strong negatively skewed in currency markets. Crashes in currency markets can potentially provide substantial benefits for investors to receive such positive returns. Then, investors are expected to predict the change in volatility in currency markets while leaving the highly skewed behavior unexplained.

Financial Crisis

The financial crisis should make currency demanding for higher liquidity premium since investors trade for such a risky period. Investors would prefer to receive higher premium than that of during the normal state. To test for liquidity premium during the financial crisis period, we assign a dummy variable be equal to 1 during January 1996 to December 1999[xxxi], and zero otherwise.

We perform the regression with these factors as follows:

$$er_{i,t} = a + b_1\gamma_{i,t} * (Dummy_t) + b_2\Delta SEN_t * (Dummy_t) + b_3\Delta TED_t * (Dummy_t) + b_4\Delta VIX_t * (Dummy_t) + b_5\Delta Rf_t * (Dummy_t) + \varepsilon_{i,t}$$

$$(12)$$

where Dummy_t is equal to 1 if the period falls during January 1996 to December 1999, and zero otherwise.

Table 10 shows the result. Using variance sorting, we are able to see the higher liquidity premium, approximately 6.13% per annum. Then, the presence of GFC indicates the need for the premium for investors to trade illiquid currencies during the period. While using skewness and kurtosis portfolio sorting, we, however, do not see the change in liquidity premium, 1.38%, and 1.03% respectively. The presence of liquidity premium using higher moments, namely skewness and kurtosis, is not much higher than during the normal state. The possible explanation of the finding is that currencies are, in fact, having left-skewed regardless of the economy. Then, testing during the financial crisis does not show the improvement of premium size as we see from the variance sorting portfolio.

Table 10

Liquidity Premium during financial crisis. The table reports the liquidity premium based on variance, skewness, and kurtosis portfolio sorting during the Great Financial Crisis (GFC). Dummy variable equals to 1 during January 1996 to December 1999, and zero otherwise. Gamma is the liquidity proxy determined in equation (12):

$$er_{i,t} = a + b_1\gamma_{i,t} * (Dummy_t) + b_2\Delta SEN_t * (Dummy_t) + b_3\Delta TED_t * (Dummy_t) + b_4\Delta VIX_t * (Dummy_t) + b_5\Delta Rf_t * (Dummy_t) + \varepsilon_{i,t}$$

. $er_{i,t}$ is excess return used as the dependent variable. γ_i is the liquidity proxy. Δbid_ask_i is the change in bid-ask spread. ΔVIX_t is the change in VIX spread. ΔTED_t is the change in TED spread. ΔSEN_t is the change in investor's sentiment index. ΔRf_t is the change in risk-free rate. The test statistic is reported under the p-value.

	Variance	Skewness	Kurtosis
Gamma	6.13%	1.38%	1.03%
P-value	0.0018	0.0021	0.0038

CONCLUSION AND REMARKS

This paper presents the currency portfolio sorting using variance, skewness, and kurtosis of 43 currencies spanning from December 1984 to December 2015. We find that currency sorting portfolio depicts the left fat-tailed distribution. The return from the portfolio sorting is pronounced. The, investors can seek to invest using higher moments sorting portfolio. The finding supports the literature that currency distribution provides positive return, with negative skewness and high kurtosis.

Then, we test further to see the size of liquidity premium using these portfolio sorting. The realized variance sorting yields the greatest premium of 5.51% per annum while the size of premium using skewness and kurtosis is small. Testing during the financial crisis period also leads to the finding that skewness and kurtosis sorting do not provide a higher premium than during the normal state. However, sorting based on variance does provide higher premium during the financial crisis.

We offer the new approach of currency portfolio sorting based on higher moments, namely skewness and kurtosis. Since there is no support from the literature that using these sorting could potentially provide the positive investment, we find that there is a positive investment in such higher moments sorting.

We, however, are aware of potential issue on our sample. For example, the inclusion of currencies with high interest exposures such as Brazil's may adjust the premium size upward since such currencies are the most volatile in terms of target interest rates provided by the Central Banks. Furthermore, the differences in macro and microstructure between developed and emerging markets can also be used to explain the size of liquidity premium. Since these are not the main testing for this paper, we leave the rest for the further research to explore the possibility of explaining the positive investment from higher moments sorting as well as the size of liquidity premium.

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Appendix List of Currencies			
No.	Country	No.	Country
1	Australia	23	Japan
2	Austria	24	Kuwait
3	Belgium	25	Malaysia
4	Brazil	26	Mexico
5	Bulgaria	27	Netherlands
6	Canada	28	Norway
7	Croatia	29	Poland
8	Cyprus	30	Portugal
9	Denmark	31	Russia
10	Egypt	32	Saudi Arabia
11	Euro	33	Singapore
12	Finland	34	Slovakia
13	France	35	Slovenia
14	Germany	36	South Africa
15	Greece	37	South Korea
16	Hong Kong	38	Spain
17	Hungary	39	Sweden
18	Iceland	40	Switzerland
19	India	41	Taiwan
20	Indonesia	42	Thailand
21	Israel	43	UK
22	Italy		

ENDNOTES

[i] https://www.bis.org/publ/arpdf/ar2017e.pdf

[ii] See. De Santis and Gerard (1998), Balvers and Klein (2014).

[iii] See. Andersen et al. (2001), Liu, Patton, and Sheppard (2015).

[iv] Skewness and kurtosis are used to determine the shape of return distribution and to predict returns. See. Harvey and Siddique (1999), Chang, Christoffersen, Jacobs (2013).

[v] Menkhoff et al. (2012) have discussed the potential negative skewness and high kurtosis in currency momentum. Brunnermeier, Nagel, Pedersen (2008) also provided the empirical evidence of negative skewness in currencies using carry trade approach.

[vi] Carry trade portfolio refers to the strategy to sell low interest rate currencies and buy high interest rate currencies to receive the difference in return from such trading strategy. See. Menkhoff et al. (2012), Christiansen, Ranaldo, Soderlind (2011), Archarya and Steffen (2015).

[vii] Order flow and lagged order flow are indicators to determine return reversals in currency markets. The reversals capture the change in returns as the change in liquidity occurs.

[viii] Great financial crisis (GFC) refers to the financial crisis in 1997.

[ix] Karnaukh, Ranaldo, and Soderlind (2015) provide an empirical evidence of variables that affect the change in foreign exchange (FX) liquidity. They conclude that the presence of funding constraints and global risk reduces the liquidity in FX market.

[x] In equity markets, higher moments are observed to see the impact of asset price to the higher moments. See. Harvey and Siddique (2000), Fang and Lai (1997), Carr et al. (2002).

[xi] The portfolio sorting technique called "Carry Trade" strategy – Buying high interest rate portfolio and selling high interest rate portfolio. The strategy provides substantial positive return with high Sharpe ratio. See. Heath, Galati, McGuire (2007), Clarida and Pedersen (2009), Christiansen, Ranaldo, and Soderlind (2011), Archarya and Steffen (2015).

[xii] Stoll (1989) and Bessembinder (1994) explain the use of liquidity (bid-ask spread) to determine the risk and return in equity and foreign exchange market.

[xiii] VIX is a volatility index for S&P 500 options. It indicates the expectation of market participants in equity markets. For more information, see www.cboe.com.

[xiv] Mancini, Ranaldo, and Wrampelmeyer (2013) suggest using closing time at 16 GMT since it is the highest trading period of the day. Also, they suggest that 16 GMT shows the highest correlation between return and liquidity.

[xv] See. Lustig, Roussanov, and Vedelhan (2014), Daniel and Moskowitz (2016).

[xvi] See. Banti, Phylaktis, and Sarno (2012), Evan and Lyon (2002), Pastor and Stambaugh (2003) for the return estimation.

[xvii] Akram, Rime, and Sarno (2009) indicate the use of interest rate differential. Their empirical work shows that during the short-term horizon the covered interest rate parity does hold. The interest rate differential is equal to the forward discount.

[xviii] Moreira and Muir (2017) suggest using realized variance from the previous period (t-1) to form portfolio for the next period (t).

[xix] The arbitrary number, c, is used for approximation of the portfolio construction. In fact, c does not influence the change in portfolio construction. We use c equals to 1 in this paper.

[xx] See. Chang et al. (2013), Amaya et al. (2015).

[xxi] ARMA model is used to forecast future returns. Makridakis and Hibon (1997) explain the use of ARMA models to forecast for future equity returns.

[xxii] See. Ang et al. (2006), Fu (2009), Goyal and Santa-Clara (2003).

[xxiii] See. Mancini, Ranaldo, and Wrampelmeyer (2013), Banti, Phylaktis, and Sarno (2012), Banti and Phylaktis (2015) for the liquidity measure and affect to the change in currency returns.

[xxiv] Sharpe ratio is unit return per risk and is calculated by dividing portfolio's excess return (mean) with portfolio's standard deviation (Stdev).

[xxv] D'Agostino, Belanger, and D'Agostino (1990) test for normality based on the Jaque-Bera test statistics incorporating the skewness and kurtosis with the adjustment of sample size.

[xxvi] See. Ang et al. (2006), Fu (2009), Brunnermeier, Nagel, and Pedersen, 2008.

[xxvii] Aggarwal, Rao, Hiraki (1989), Corrado and Su (1996), Mills (1995), Brown, and Warner (1985) provide empirical evidence on skewness and kurtosis with the return on stock.

[xxviii] See. Stulz (1981), Svensson (1985), Duffie, Pan, Singleton (2000), Bakshi and Panayotov (2013), Harvey and Siddique (2000).

[xxix] The methodology is described by Chang et al. (2013), and Amaya et al. (2015) testing for the presence of variance, skewness, and kurtosis portfolio sorting combining with the test for asset pricing.

[xxx] The measure of the liquidity premium is our gamma, the proxy for liquidity. The difference between gammas from portfolio 1 and 5 is the size of the approximate liquidity premium from the portfolio sorting.

[xxxi] We use long spanning of financial crisis period to have enough number of observations in our testing. Furthermore, the use of these period is supported by literatures. See. Caramazza, Ricci, and Salgado (2004), Lemmon, and Lins (2003), Click and Plummer (2005), Carrieri, Chaieb, and Errunza (2013).

THE U.S. TAX CUTS AND JOBS ACT IN AN M&M CONTEXT: AN EXAMPLE

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ABSTRACT

The work of Franco Modigliani and Merton Miller revolutionized the way in which both academics and practitioners think about capital structure and firm value. In providing a framework for analysis of key corporate financial policies, these researchers laid the foundation for much of modern corporate finance theory in three seminal papers. Miller (1977), the final installment of the series, incorporates multiple tax rates and provides a platform from which to examine the impact on firm value of changes in the relationship between the various rates of taxation embedded in the U.S. tax code.

This paper examines, through a numerical exercise, the implications for firm value arising from the passage of the Tax Cuts and Jobs Act and changes in both corporate and personal income tax rates. First, the M&M framework for corporate valuation is revisited with a special focus on the later models which incorporate income tax rates. Next, the implications for firm value of the changes are discussed, and numerical examples of valuation impacts are provided. The paper concludes with a discussion of likely impacts over time in the real-world capital markets and outlines future research to examine the behavior of firms after the changes to the code have been in effect long enough to induce changes to corporate policy.

INTRODUCTION

Franco Modigliani and Merton Miller are credited with establishing the predominant framework for analyzing the impact of capital structure policy on the value of the firm. Their 1958 thesis (hereafter, M&M '58) is well known and concludes that the value of a firm is independent of its capital structure. The 1963 paper (hereafter, M&M '63) introduced corporate income taxes and the resultant gain from the use of leverage implied that the value of a firm is influenced by its choice of capital structure. In 1977, Miller included personal income taxes with the corporate income tax and concluded again that capital structure does matter to firm value.

Proposition I from Miller (1977) (hereafter, Miller '77) is the primary focus of this paper. Miller '77 tackles the tax rates on corporate income, personal income from equity sources, and personal income from debt sources, and determines that the gain in corporate value from the use of debt (G_L) in the funding mix is as follows:

$$G_L = \left[1 - \frac{(1 - T_C)(1 - T_{PS})}{(1 - T_{PB})}\right]B_L$$

Here T_C is the corporate tax rate on a firm's income, T_{PS} is the personal tax rate on income from an equity investment in the firm, and T_{PB} is the personal tax rate on income from an investment in the firm's debt. Finally, B_L is the market value of the firm's debt.

The gain from leverage relationship and its effect on firm value is typically presented assuming two otherwise identical firms where one is financially leveraged (V_L) and the other is not (V_U).

$$V_L = V_U + \left[1 - \frac{(1 - T_C)(1 - T_{PS})}{(1 - T_{PB})}\right] B_L$$

If T_{PS} and T_{PB} are set to zero, the result is equivalent to Proposition I with corporate taxes from M&M '63:

$$V_L = V_U + T_C B_L$$

And if all tax rates are set to zero, the solution is Proposition I from M&M '58.

$$V_L = V_U$$

THE 2017 CHANGES TO THE U.S. TAX CODE

On December 22, 2017 extensive changes were made to the U.S. tax code as part of the Tax Cuts and Jobs Act (hereafter, TCJA). The changes became effective with fiscal tax year 2018. From a corporate perspective, the most reported and relevant change to the U.S. tax code was the reduction of the maximum corporate income tax rate to 21 percent from 35 percent. All else equal, this change will reduce the incentive that interest expense provides and make debt a less attractive source of long-term capital funds as it becomes more costly on an after-tax basis. In other words, M&M's '63 gain from leverage became less valuable as a result of the TCJA.

There is a less-reported and less well-known provision that limits most large corporations' deduction of interest expense for tax purposes according to Elliot (2018). The Internal Revenue Service (2018) details the change to section 163(j) of the U.S. tax code that limits business interest expense to any business interest income plus 30 percent of earnings before interest, taxes, depreciation, and amortization (hereafter, EBITDA). Essentially, this would limit a firm's ability to take full advantage of any tax incentive that debt might provide in any particular year. Although a carryforward provision may provide some future benefit, a company that relies on large amounts of debt as a source of capital is likely to find their interest expense deduction capped indefinitely.

Additionally, during tax year 2022, the definition of earnings on which the 30% interest expense deduction cap is applied changes to *include* depreciation and amortization. This forthcoming change will decrease the earnings threshold used to determine the 30% cap and create an additional incentive to rely less on debt as a long-term source of funds.

There were also many changes to personal income tax rates, income thresholds, the elimination of exemptions, limits placed on deductible expenses and an expansion of the standard deduction, among other revisions as part of the TCJA.

For the purposes of this paper, the more extensive changes are left to a later date. It is the changes to personal income tax rates and, more importantly, the corporate income tax rate that are the center of the examples and discussion that follow.

NUMERICAL EXAMPLE

Modigliani and Miller set their theories of corporate financial structure in a world without any of the encumbrances and limitations that actually exist. A set of assumptions is made in order to reach, through an arbitrage proof, the initial 1958 conclusion that the use of leverage does not increase the value of the firm and thus capital structure does not matter. This is known as Proposition I.

Proposition II submits that the return shareholders demand will increase with the use of financial leverage. Initially, shareholders are compensated based on the risk of the firm's assets. Substituting debt for equity in the capital structure introduces financial risk, and shareholders will require a risk premium that is proportional to the level of debt.

Finally, Proposition III proposes that the value of the firm depends on the present value of its operating income with the weighted average cost of capital (hereafter, WACC) as the discount rate. They argue that the WACC is constant since shareholders will require higher returns to compensate for the increased risk associated with substitution of lower-cost debt for equity in the capital structure. Therefore, the value of the firm is unchanged when it is derived from operating income.

For consistent application of this example, a simple set of assumptions is made:

(1) the corporation has operating income (EBIT) of $25,000,000,
(2) the corporation is capitalized with equity and $50,000,000 book value debt,
(3) debt has a yield-to-maturity of 8.0 percent, and the market value is equal to the book value,
(4) equity investors require an unlevered 11.0 percent rate of return when no debt is used for capital funds.

Further assumptions will be employed or relaxed when appropriate as each of the three M&M papers are evaluated in order. The definitions of the variables used throughout this example are listed below and note that any superscript on a variable indicates a fiscal tax year.

V_U = Value of an unlevered firm
V_L = Value of a levered firm
r_{SU} = Required return on unlevered equity
r_{SL} = Required return on levered equity
B_L = Market value of debt
S_L = Market value of equity

r_B $=$ Return to debtholders

T_C $=$ Corporate income tax rate

T_{PS} $=$ Personal income tax rate on returns from equity

T_{PB} $=$ Personal income tax rate on returns from debt

$WACC_U$ $=$ Weighted average cost of capital of an unlevered firm

$WACC_L$ $=$ Weighted average cost of capital of a levered firm

Modigliani and Miller 1958

In addition to the numerical assumptions, the original 1958 M&M thesis assumed the following (in no particular order):

a. Perfect capital markets, and equality of information between corporations and individuals.
b. Investors are rational and risk neutral.
c. There are no transaction costs.
d. Securities are infinitely divisible.
e. No investor is large enough to influence the market price of securities.
f. There are no floatation costs when raising funds.
g. Equal borrowing costs for corporations and individuals.
h. There is no corporate income tax nor personal income taxes.
i. There are no costs associated with bankruptcy.

Exhibit I: The three propositions of M&M '58	
Proposition I	$V_L = V_U$
Proposition II	$r_{SL} = r_{SU} + (r_{SU} - r_B)\left(\dfrac{B_L}{S_L}\right)$
Proposition III	$WACC_U = WACC_L = r_{SU}$

Applying the simple numerical assumptions of the example provides the following results:

Proposition I: Value of the firm

$$V_U = \frac{EBIT}{r_{SU}} = \frac{\$25,000,000}{0.11} = \$227,272,727$$

Proposition II: Return on levered equity

$$r_{SL} = r_{SU} + (r_{SU} - r_B)\left(\frac{B_L}{S_L}\right) = 0.11 + (0.11 - 0.08)\left(\frac{\$50,000,000}{\$177,272,727}\right) = 0.11 + 0.03(0.282) = \mathbf{0.1185}$$

Proposition III: Weighted-average cost of capital

$$WACC_U = WACC_L = \left(\frac{B_L}{V_L}\right) \times r_{BL} + \left(\frac{S_L}{V_L}\right) \times r_{SL} = \left(\frac{\$50,000,000}{\$227,272,727}\right)0.08 + \left(\frac{\$177,272,727}{\$227,272,727}\right)0.1185$$

$$= (0.22)0.08 + (0.78)0.1185 = 0.0176 + 0.09243 = \mathbf{0.1100}$$

Proposition I determines that the total value of the unlevered firm is $227,272,727, consisting of $50,000,000 in debt and $177,272,727 in equity. Given that debt will increase the riskiness of the firm, the required return for the remaining, now levered, shareholders increases from 11.0 percent to 11.86 percent in accordance with Proposition II. Proposition III evaluates the substitution of low-cost debt for equity. The WACC remains unchanged and equal to the return on unlevered equity because the lower cost of debt is entirely offset by the increase in the return demanded by levered shareholders. Proposition I is confirmed as the discount rate (WACC) for operating earnings that determines firm value is unaffected by the level of leverage employed.

Modigliani and Miller 1963

To continue with the example, it is necessary to relax the assumptions of no corporate income tax and no bankruptcy costs. Other assumptions remain intact for this 1963 extension. Exhibit II summarizes the three propositions under the new set of assumptions.

<table>
<tr><td colspan="2" align="center">Exhibit II
The three propositions of M&M '63)</td></tr>
<tr><td>Proposition I</td><td>$V_L = V_U + T_C B_L$</td></tr>
<tr><td>Proposition II</td><td>$r_{SL} = r_{SU} + (r_{SU} - r_B)(1 - T_C)\left(\frac{B}{S_L}\right)$</td></tr>
<tr><td>Proposition III</td><td>(a) $\quad WACC_L = \left(\frac{B_L}{V_L}\right) \times r_B(1 - T_C) + \left(\frac{S_L}{V_L}\right) \times r_{SL}$
(b) $\quad WACC_L = r_{SU}\left[1 - T_C\left(\frac{B_L}{V_L}\right)\right]$</td></tr>
</table>

With the inclusion of corporate income tax, the changes to the U.S. tax code through the TCJA become relevant as the corporate income tax rate fell from 35 percent in 2017 to 21 percent in 2018. Assuming the market value of debt remains constant, the numerical assumptions provide the following results.

Preliminary: Value of the unlevered firm

For proper perspective in relation to M&M '58, the value of an unlevered firm is first found by discounting the after-tax operating earnings using the return required by unlevered shareholders for both years in question:

$$V_U^{2017} = \frac{EBIT(1 - T_C^{2017})}{r_{SU}} = \frac{\$25,000,000(1 - 0.35)}{0.11} = \left(\frac{\$16,250,000}{0.11}\right) = \$147,727,273$$

$$V_U^{2018} = \frac{EBIT(1 - T_C^{2018})}{r_{SU}} = \frac{\$25,000,000(1 - 0.21)}{0.11} = \left(\frac{\$19,750,000}{0.11}\right) = \$179,545,455$$

The value of the unlevered firm increases significantly after the enactment of the TCJA. The corporate income tax rate declined which allowed more operating earnings to pass through to shareholders.

Proposition I: Value of the firm

$$V_L^{20xx} = V_U^{20xx} + T_C B_L$$

$$V_L^{2017} = \$147,727,273 + (0.35 \times \$50,000,000) = \$147,727,273 + \$17,500,000 = \$165,227,273$$

$$V_L^{2018} = \$179,545,455 + (0.21 \times \$50,000,000) = \$179,545,455 + \$10,500,000 = \$190,045,455$$

Establishing the value of the unlevered firm in the preliminary step, turns the focus of Proposition I to the increase in firm value that is derived from the substitution of debt for equity in the capital structure.

The TCJA focal point of Proposition I is the decrease in the gain from leverage (2017: $17,500,000 to 2018: $10,500,000) resulting from a decrease of the corporate income tax rate from 35 percent to 21 percent. Note that the 14-point decline from 35 percent represents a 40 percent decrease in the corporate income tax rate.   The dollar gain from leverage ($T_C B_L$) decreases proportionately by 40 percent.

Proposition II: Return on levered equity

$$r_{SL}^{2017} = r_{SU} + (r_{SU} - r_B)(1 - T_C^{2017})\left(\frac{B}{S_L}\right) = 0.11 + (0.11 - 0.08)(1 - 0.35)\left(\frac{\$50,000,000}{\$115,227,273}\right) = 0.1185$$

$$r_{SL}^{2018} = r_{SU} + (r_{SU} - r_B)(1 - T_C^{2018})\left(\frac{B}{S_L}\right) = 0.11 + (0.11 - 0.08)(1 - 0.21)\left(\frac{\$50,000,000}{\$140,045,455}\right) = 0.1185$$

As with the M&M '58 result, the substitution of debt for equity increases the return required by levered equity holders. In this M&M '63 case, the decrease in the corporate tax rate

has no effect, as it is offset by the higher market value of equity after the substitution of debt in the capital structure. The numerical result is equivalent to that of M&M '58 Proposition II.

Proposition III: Weighted-average cost of capital

$$WACC_L^{20xx} = \left(\frac{B_L}{V_L}\right) \times r_{BL}(1 - T_C^{20xx}) + \left(\frac{S_L}{V_L}\right) \times r_{SL}$$

$$WACC_L^{2017} = \left(\frac{\$50,000,000}{\$165,227,273}\right) 0.08(1 - 0.35) + \left(\frac{\$115,227,273}{\$165,227,273}\right) 0.1185$$

$$= (0.3026) \times 0.052 + (0.6974) \times 0.1185 = 0.0984$$

$$WACC_L^{2018} = \left(\frac{\$50,000,000}{\$190,045,455}\right) 0.08(1 - 0.21) + \left(\frac{\$140,045,455}{\$190,045,455}\right) 0.1185$$

$$= (0.2631) \times 0.0632 + (0.7369) \times 0.1185 = 0.1040$$

As low-cost debt is substituted in the capital structure for equity, there is a noticeable decrease to 9.84 percent in the after-tax WACC from the 11.0 percent of an unlevered firm. As expected, after the TCJA changed the corporate income tax to 21 percent, the WACC increases from the 2017 level due to the higher after-tax cost of debt.

Miller 1977
The Miller '77 introduces personal income tax rates on returns from both debt and equity in addition to corporate income taxes. This necessitates assumptions regarding the different types of taxes that may be applied to personal income and investment returns.

Assumptions: Taxpayer
It is assumed that the taxpayer is single, had an adjusted gross income in 2017 of $134,767, chose one exemption and used the standard deduction. In 2017, the standard deduction of $6,350 and $4,050 for one exemption reduces the taxable income to $124,367, which falls into the 28% marginal income tax rate for that year.

For 2018 it is assumed that adjusted gross income increases by 2.83 percent to $138,583. The TCJA eliminated the deduction for exemptions, however the single taxpayer standard deduction increased to $12,000. Therefore, this taxpayer's $126,583 taxable income points to a marginal income tax rate of 24 percent.

Justification for arriving at these income levels are detailed in Appendix 1 at the end of the paper.

Assumptions: Taxes on Returns from Equity and from Debt
Shareholders of a corporation receive their returns through dividends and capital gains, both of which are subject to income taxes, but at different rates. The tax rate on capital gains

remained a constant 15 percent during the 2017 to 2018 period. It is traditionally assumed that shareholders will not be subject to this tax due to their ability to postpone it indefinitely by never selling the stock or selling stock with capital losses to offset those sold with capital gains. It is assumed in this example that a true capital gains tax lies somewhere between zero and 15 percent and 7.50 percent is chosen for expediency. It is noted that there have recently been historic levels of stock buybacks by corporations which would contribute toward capital gains of shareholders.

Cash dividends are considered current income and are taxed at the shareholder's marginal personal income tax rate. According to Ironman (2014), approximately 82 percent of companies included in the S&P 500 index paid dividends to their stockholders. The average dividend payout ratio from earnings was approximately 40 percent according to Birstingl (2016). Following these companies' preference, it is concluded for this example that the total return to shareholders will be composed of 40 percent dividend income and 60 percent capital gain income.

$$T_{PS}^{20xx} = (0.40 \times marginal\ tax\ rate^{20xx}) + (0.60 \times capital\ gains\ tax\ rate)$$

$$T_{PS}^{2017} = (0.40 \times 28\ percent) + (0.60 \times 7.5\ percent) = 15.7\ percent$$
$$T_{PS}^{2018} = (0.40 \times 24\ percent) + (0.60 \times 7.5\ percent) = 14.1\ percent$$

A weighted average tax rate of dividend income and capital gains is computed. This results in a blended personal income tax rate on equity (T_{PS}) of 15.7 percent in 2017 and 14.1 percent in 2018. The two tax rates on equity returns are similar but represent a modest 10 percent decrease due to the TCJA mandates.

The personal income tax rate on debt (T_{PB}) is assumed to be equal to the marginal tax rate of the example taxpayer, or 28 percent in 2017 and 24 percent in 2018. Interest income is taxed as current income and subject to the marginal income tax rate of the individual. It is further assumed the taxpayer is astute enough to amortize any discount or premium paid for the debt on an annual basis.

In order to focus attention on the change in corporate income tax rates resulting from the TCJA legislation, two scenarios are presented as personal income taxes are introduced. In the first scenario, it is assumed that the personal income tax rate on debt as well as the blended tax rate on equity returns remain at the 2017 level. The second scenario then allows personal income tax rates to adjust to the 2018 level following the TCJA and provides an opportunity to observe how personal taxes affect the firm while holding corporate income tax rates constant.

All prior assumptions continue to hold from M&M '58 and M&M '63 aside from relaxing those related to personal and corporate income taxes. Exhibit III summarizes the three propositions under the new set of assumptions of Miller '77.

<table>
<tr><td colspan="2" align="center">

Exhibit III
The three propositions of Miller '77

</td></tr>
<tr><td>

Proposition I

</td><td>

$V_L = V_U + \left\{ 1 - \left[\dfrac{(1-T_C)(1-T_{PS})}{(1-T_{PB})} \right] \right\} B_L$

</td></tr>
<tr><td>

Proposition II

</td><td>

$r_{SL} = r_{SU} + [r_{SU} - r_B \times (1 - T_{PB})] \times \left[\dfrac{(1-T_C)(1-T_{PS})}{(1-T_{PB})} \right] \left(\dfrac{B_L}{S_L} \right)$

</td></tr>
<tr><td>

Proposition III

</td><td>

(a) $WACC_L = \left(\dfrac{B_L}{V_L} \right) \times r_B (1 - T_C)(1 - T_{PS}) + \left(\dfrac{S_L}{V_L} \right) \times r_{SL}$

(b) $WACC_L = r_{SU} \left(1 - \left\{ 1 - \left[\dfrac{(1-T_C)(1-T_{PS})}{(1-T_{PB})} \right] \right\} \dfrac{B_L}{V_L} \right)$

</td></tr>
</table>

Preliminary: Value of the unlevered firm

To begin the Miller '77 exercise, the operating earnings of a firm funded with all equity passes through two income tax thresholds. Routinely identified as the double taxation of dividends, operating earnings are taxed first at the corporate level, and returns to the shareholders are then taxed as personal income. Therefore, the value of an unlevered firm will depend on the after-tax earnings distributed to shareholders discounted by the required rate of return of unlevered shareholders:

$$V_U^{20xx} = \frac{EBIT(1 - T_C)(1 - T_{PS})}{r_{SU}}$$

$$V_U^{2017} = \frac{\$25,000,000(1 - 0.35)(1 - 0.157)}{0.11} = \left(\frac{13,698,750}{0.11} \right) = \$124,534,091$$

Scenario 1: Personal rates constant at 2017 level, corporate rate falls to 21%:

$$V_U^{2018} = \frac{\$25,000,000(1 - 0.21)(1 - 0.157)}{0.11} = \left(\frac{16,649,250}{0.11} \right) = \$151,356,818$$

Scenario 2: All tax rates at 2018 level:

$$V_U^{2018} = \frac{\$25,000,000(1 - 0.21)(1 - 0.141)}{0.11} = \left(\frac{16,965,250}{0.11} \right) = \$154,229,545$$

The added burden of income tax on equity returns reduces the value of the unlevered firm to $124,534,091 from $147,727,273 obtained with M&M '63 which incorporated the first level of taxation on firm income.

In Scenario 1, the value of the unlevered firm does increase when the corporate income tax rate is decreased while holding personal income tax rates on equity constant at the 2017 level. More earnings are available to the shareholders when the corporate income tax burden is reduced.

With the addition of the decrease in personal income tax rates in 2018, scenario 2 details a slight increase in the value of the firm to $154,356,818 as shareholders retain a higher level of after-tax returns. Any decrease in either level of the double taxation of equity returns (capital gains or marginal income) is positive for the unlevered firm's value.

Proposition I: Value of the firm

$$V_L^{20xx} = V_U + \left\{ 1 - \left[\frac{(1 - T_C)(1 - T_{PS})}{(1 - T_{PB})} \right] \right\} B_L$$

$$V_L^{2017} = \$124,534,091 + \left\{ 1 - \left[\frac{(1 - 0.35)(1 - 0.157)}{(1 - 0.28)} \right] \right\} \times \$50,000,000$$

$$V_L^{2017} = \$124,534,091 + \$11,947,917 = \$136,482,008$$

Scenario 1: Personal rates constant at 2017 level, corporate rate falls to 21%:

$$V_L^{2018} = \$151,356,818 + \left\{ 1 - \left[\frac{(1 - 0.21)(1 - 0.157)}{(1 - 0.28)} \right] \right\} \times \$50,000,000$$

$$V_L^{2018} = \$151,356,818 + \$3,752,083 = \$155,108,901$$

Scenario 2: All tax rates at 2018 level:

$$V_L^{2018} = \$154,229,545 + \left\{ 1 - \left[\frac{(1 - 0.21)(1 - 0.141)}{(1 - 0.24)} \right] \right\} \times \$50,000,000$$

$$V_L^{2018} = \$154,229,545 + \$5,354,605 = \$159,584,150$$

As with M&M '63, the focus is the gain in firm value as debt is substituted for equity in the funding mix of the firm. Prior to the TCJA, the dollar gain from leverage in this example adds $11,947,917 to the value of an unlevered firm as a result of the combination of taxes.

Scenario 1 shows that holding personal income tax rates constant at the 2017 level and decreasing the corporate income tax rate to 21 percent from 35 percent results in a much smaller increase in firm value of $3,752,083. The $8,195,834 decline represents a 68.6 percent loss in the gain from leverage when the corporate tax rate is reduced. Recall that M&M '63 resulted in a smaller percentage decline (-40 percent) in the same measure.

When the personal income tax rates are adjusted to their 2018 levels, holders of equity and debt retain more of their returns from funding the firm and combine to recover some of the loss that the reduced corporate income tax rate imposed. With all income tax rates set to their

2018 level, the value of the gain from leverage decreases 55.2 percent over the value prior to the TCJA of 2017 ($5,354,605 from $11,947,917).

Proposition II: Return on levered equity

$$r_{SL} = r_{SU} + [r_{SU} - r_B \times (1 - T_{PB})] \times \left[\frac{(1 - T_C)(1 - T_{PS})}{(1 - T_{PB})} \right] \left(\frac{B_L}{S_L} \right)$$

$$r_{SL}^{2017} = 0.11 + [0.11 - 0.08(1 - 0.28)] \times \left[\frac{(1 - \mathbf{0.35})(1 - 0.157)}{(1 - 0.28)} \right] \left(\frac{\$50,000,000}{\$86,482,008} \right) = \mathbf{0.1331}$$

Scenario 1: Personal rates constant at 2017 level, corporate rate falls to 21%:

$$r_{SL}^{2018} = 0.11 + [0.11 - 0.08(1 - 0.28)] \times \left[\frac{(1 - \mathbf{0.21})(1 - 0.157)}{(1 - 0.28)} \right] \left(\frac{\$50,000,000}{\$105,108,902} \right) = \mathbf{0.1331}$$

Scenario 2: All tax rates at 2018 level:

$$r_{SL}^{2018} = 0.11 + [0.11 - 0.08(1 - 0.24)] \times \left[\frac{(1 - \mathbf{0.21})(1 - \mathbf{0.141})}{(1 - \mathbf{0.24})} \right] \left(\frac{\$50,000,000}{\$109,584,150} \right) = \mathbf{0.1300}$$

When personal tax rates enter the example, the return on levered equity increases significantly to 13.31 percent from 11.85 percent obtained with M&M '63. Since Miller '77 introduces double taxation of equity returns, the desire to obtain a particular after-tax return leads the shareholders to seek higher pre-tax returns.

Otherwise, the return to levered shareholders is not affected if their personal tax rates remain constant at the pre-TCJA level and only the corporate income tax rate is varied. As the corporate tax rate falls, the levered firm value increases through the gain from leverage and shareholders secure these gains. The proportion of debt in the capital structure (B_L/S_L) decreases as the value of the firm increases offsetting the effect that the corporate income tax may have on levered-equity returns.

After passage of the TCJA, levered shareholders' return decreases to 13.0 percent due to lower personal income tax levels. Ultimately, the change in personal income tax rates makes the shareholders' view their investment in the firm as less risky.

Proposition III: Weighted-average cost of capital

$$WACC_L = \left(\frac{B_L}{V_L} \right) \times r_{BL} (1 - T_C)(1 - T_{PS}) + \left(\frac{S_L}{V_L} \right) \times r_{SL}$$

$$WACC_L^{2017} = \left(\frac{\$50,000,000}{\$136,482,008} \right) \times 0.08(1 - \mathbf{0.35})(1 - 0.157) + \left(\frac{\$86,482,008}{\$136,482,008} \right) \times 0.133056$$

$$WACC_L^{2017} = (0.36635) \times 0.043836 + (0.63365) \times 0.133056 = \mathbf{0.1004}$$

Scenario 1: Personal rates constant at 2017 level, corporate rate falls to 21%:

$$WACC_L^{2018} = \left(\frac{50,000,000}{155,108,902}\right) \times 0.08(1 - \mathbf{0.21})(1 - 0.157) + \left(\frac{105,108,902}{155,108,902}\right) \times 0.133056$$

$$WACC_L^{2018} = (0.32235) \times 0.053278 + (0.67765) \times 0.133056 = \mathbf{0.1073}$$

Scenario 2: All tax rates at 2018 level:

$$WACC_L^{2018} = \left(\frac{50,000,000}{159,584,150}\right) \times 0.08(1 - \mathbf{0.21})(1 - \mathbf{0.141}) + \left(\frac{109,584,150}{159,584,150}\right) \times 0.130044$$

$$WACC_L^{2018} = (0.31331) \times 0.05429 + (0.68669) \times 0.130044 = \mathbf{0.1063}$$

With personal income tax rates included, the WACC numerical result (10.04 percent) is higher than the result under M&M '63 (9.84 percent). This reflects higher before-personal-tax returns desired by suppliers of equity to the firm (13.31 percent vs. 11.85 percent under M&M '63)

After passage of the TCJA and holding personal tax rates at the 2017 level, the lower corporate income tax increases the after-tax cost of debt to the firm from 4.38 percent to 5.33 percent, and thus increases the WACC.

The 2018 reduction in personal tax rates causes the after-tax cost of debt to increase further to 5.43 percent, however this is offset by a small decrease in the proportion of debt in the capital structure. It is the decrease in the cost of equity and the slightly higher reliance on equity that reduces the firm's WACC a small amount under this scenario.

SUMMARY OF RESULTS

This exercise is in chronological order of the Modigliani and Miller series of papers. The exhibits featured here depict the featured results in a more concise form. Exhibit IV summarizes the value of the firm from stockholders' perspective. The value is derived from the firm's operating earnings passed to the stockholders. As income taxes are incorporated, the value of the unlevered firm decreases as a portion of the earnings are diverted elsewhere.

Exhibit IV
Value of the Unlevered Firm
Operating Earnings passed through to Shareholders

	V_U^{2017}	V_U^{2018}	$ Change	% Change
M&M 1958	$ 227,272,727	$ 227,272,727	$ 0	
M&M 1963	$ 147,727,273	$ 179,545,455	$ 31,818,182	21.54 %
Miller 1977				
With 2017 Personal tax rates	$ 124,534,091	$ 151,356,818	$ 26,822,727	21.54 %
With 2018 Personal tax rates	$ 124,534,091	$ 154,229,545	$ 29,695,454	23.85 %

It is the purpose of Exhibit V to summarize the increase in firm value that results from the use of debt. M&M '63 incorporates the corporate income tax alone and Miller '77 extends by including personal income taxes on both debt and equity returns. Panel A serves as the base case of the exercise by determining the gain from leverage as it appeared prior to the TCJA. By incorporating personal income taxes, the gain in levered firm value decreases in percentage terms.

Exhibit V
Gain from Leverage
Substituting Low-Cost Debt for Equity in the Capital Structure

Panel A
Gain from Leverage 2017
Prior to the Tax Cuts and Jobs Act

	V_U^{2017}	V_L^{2017}	Gain from leverage $T_C^{2017} = 35\%$	% increase in firm value
M&M 1958	$ 227,272,727			
M&M 1963	$ 147,727,273	$ 165,227,273	$ 17,500,000	11.85
Miller 1977	$ 124,534,091	$ 136,482,008	$ 11,947,917	9.59

Panel B
Gain from Leverage 2018

	V_U^{2018}	V_L^{2018}	Gain from leverage $T_C^{2018} = 21\%$	% increase in firm value
M&M 1958	$ 227,272,727			
M&M 1963	$ 179,545,455	$ 190,045,455	$ 10,500,000	5.85 %
Miller 1977				
With 2017 Personal tax rates	$151,356,818	$ 155,108,902	$ 3,752,083	2.48 %
With 2018 Personal tax rates	$ 154,229,545	$159,584,151	$ 5,354,605	3.47 %

Panel B of Exhibit V displays the results of the exercise while transitioning to the post TCJA U.S. tax code. As expected, the lower corporate income tax reduces the gain from leverage substantially to 5.85 percent of levered firm value. Introducing personal income taxes at 2017 levels serves to decrease levered firm value further as the gain from leverage only adds 2.48 percent to firm value. The gain from leverage recovers somewhat (to 3.47 percent) when personal income taxes are lowered to post-TCJA levels.

Finally, the return on levered equity and the weighted average cost of capital results of the exercise are arranged in Exhibit VI. The substance of the results of Panel A is that the use of debt in the capital structure introduces a financial risk component and leads stockholders to require higher rates of return commensurate with that risk. The inclusion of personal income taxes further increases the risk of after-tax returns expected on equity.

The combination of returns on debt and equity, as well as their respective proportions within the firm comprise the weighted average cost of capital. Panel B of Exhibit VI summarizes the WACC findings of the exercise. Allowing debt to enter the capital structure secures a low, after-tax cost of funds for the firm while simultaneously decreasing the proportion of high-cost levered equity as a source of funds. In all cases involving debt, the WACC is reduced from that of an unlevered firm, attesting to the influence that debt and taxes play in the cost of funds. Miller's 1977 inclusion of personal income taxes increases the WACC slightly as both suppliers of capital seek increased returns to counterbalance the income taxes that are assessed.

Exhibit VI Propositions II and III Summary				
Panel A Proposition II Return on Levered Equity			Panel B Proposition III Weighted Average Cost of Capital	
	r_{SL}^{2017}	r_{SL}^{2018}	$WACC_L^{2017}$	$WACC_L^{2018}$
M&M 1958	11.85 %	11.85 %	11.00 %	11.00 %
M&M 1963	11.85 %	11.85 %	9.84 %	10.39 %
Miller 1977				
With 2017 Personal tax rates	13.31 %	13.31 %	10.04 %	10.73 %
With 2018 Personal tax rates		13.00 %		10.63 %

CONCLUSION

The ground-breaking capital structure theories of Modigliani and Miller have been the basis for multitudes of financial literature over the past 50 years. This exercise uses the foundation of Modigliani and Miller theories to present an interpretation of changes in a firm's

desire for debt or equity as a source of capital funds when corporate income tax rates change. Specifically, an example is pursued using the abrupt change in the corporate income tax rate instituted by the 2017 U.S. Tax Cuts and Jobs Act.

The examples and assessments provided in this paper demonstrate that changes in the corporate income tax may be directly related to a firm's use of debt as a funding source. If corporate income tax rates decline, the after-tax cost of debt increases, and firms will reduce the level of debt in favor of equity as a long-term source of funds. Investors in the firm subject to personal income taxes will make similar accommodations when the corporate income tax rate declines. The firm cannot offer debtholders high enough returns (when personal income taxes are considered) therefore, some investors will migrate away from debt toward the higher after-tax return that the firm's equity provides.

As a practical matter, the outcome of a reduction in the gain from leverage as corporate income tax rates decline was expected. However, it implies that empirical evidence may be available to determine if U.S. firms are currently undergoing capital structure change that includes less debt. Not only did the corporate income tax rate decline but, as mentioned previously, a cap on interest expense tax-deductions based on a firm's EBITDA was instituted. It is not often that changes in the U.S. tax code are so abrupt and substantial that it provides many unique opportunities for additional study. Further, investor behavior and preferences during this time of changing income tax rates may also provide insight on the availability and source of capital funds.

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APPENDIX 1
Derivation of the Adjusted Gross Income for Tax Application

Data is available from The Tax Foundation (2018) and its *Summary of the Latest Income Tax Data 2017 Update*. Available from:https://taxfoundation.org/summary-federal-income-tax-data-2017/

Table 3 of the Update contains aggregate Adjusted Gross Income ($ billions) for the years 1980 to 2015 for a variety of income groups. Table 2 of the 2017 Update contains the aggregate number of tax returns (thousands) filed in each of the income groups for the years 1980 to 2015.

The relevant number, Adjusted Gross Income (AGI), of an individual tax return is found by dividing the Table 3 value by the Table 2 value for the same year and income group. This is indicated in the Excel displays in Graphic 1 that follows the text of this appendix.

It is assumed that only the top 50 percent of taxpayers will have investments in either corporate equity or debt. Although arguments can be made to use the AGI for other income groups available (e.g. top 25% or top 10%) the income levels observed appeared unreasonably high for the purposes of this paper.

For 2015, the latest year available, average adjusted gross income is found to be $127,448 for the top 50 percent of taxpayers. This 2015 AGI must be adjusted to 2017 and 2018 levels so that appropriate personal income tax rates may be determined.

The annual growth rate of AGI for the top 50 percent of taxpayers was determined for each of the prior 14 years (2001 – 2015). The average of these growth rates is 2.8314 percent. This simple process is displayed in Graphic 2 that follows.

The average annual growth rate is applied to the 2015 AGI of $127,448 to arrive at the 2017 AGI value of $134,767 and 2018 of 138,583 used in the Miller 1977 section of the paper.

Graphic 1:
Determination of Adjusted Gross Income for an Example Taxpayer that is
Likely to Invest in Corporate Securities

Table 3. Adjusted Gross Income of Taxpayers in Various Income Brackets, 1980–2015 ($Billions)

Year	Top 1%	Top 5%	5% - 10%	Top 10%	10% - 25%	Top 25%	25% - 50%	Top 50%	Bottom 50%
2012	$1,977	$3,331	$997	$4,328	$1,934	$6,262	$1,776	$8,038	$1,004
2013	$1,720	$3,109	$1,034	$4,143	$2,008	$6,152	$1,844	$7,996	$1,038
2014	$1,998	$3,491	$1,093	$4,583	$2,107	$6,690	$1,924	$8,615	$1,094
2015	$2,095	$3,659	$1,145	$4,803	$2,194	$6,998	$2,000	$8,998	$1,145

Table 2. Number of Federal Individual Income Tax Returns Filed 1980–2015 (Thousands)

Year	Top 1%	Top 5%	5% - 10%	Top 10%	10% - 25%	Top 25%	25% - 50%	Top 50%	Bottom 50%
2012	1,361	6,804	6,804	13,608	20,412	34,020	34,020	68,040	68,040
2013	1,383	6,916	6,916	13,831	20,747	34,578	34,578	69,157	69,157
2014	1,396	6,978	6,978	13,956	20,934	34,891	34,891	69,781	69,781
2015	1,412	7,060	7,060	14,120	21,181	35,301	35,301	70,602	70,602

Adjusted Gross Income per Tax Return: Table 3 divided by Table 2 adjusted by $1,000,000

Year	Top 1%	Top 5%	5% - 10%	Top 10%	10% - 25%	Top 25%	25% - 50%	Top 50%	Bottom 50%
2012	$1,452,608	$489,565	$146,531	$318,048	$94,748	$184,068	$52,205	$118,136	$14,756
2013	$1,243,673	$449,537	$149,508	$299,545	$96,785	$177,917	$53,329	$115,621	$15,009
2014	$1,431,232	$500,287	$156,635	$328,389	$100,650	$191,740	$55,143	$123,458	$15,678
2015	$1,483,644	$518,209	$162,149	$340,179	$103,603	$198,231	$56,665	**$127,448**	$16,211

Graphic 2:
Determining the average annual growth rate in Adjusted Gross Income for the Example Taxpayer

Year	Top 50%	Annual growth rate
2001	$87,710	
2002	$85,357	-2.68%
2003	$87,564	2.59%
2004	$95,111	8.62%
2005	$102,876	8.16%
2006	$108,687	5.65%
2007	$114,147	5.02%
2008	$108,780	-4.70%
2009	$100,709	-7.42%
2010	$105,099	4.36%
2011	$107,727	2.50%
2012	$118,136	9.66%
2013	$115,621	-2.13%
2014	$123,458	6.78%
2015	**$127,448**	3.23%
Average Annual Growth		**2.8314%**

HOW DOMESTIC BUSINESSES DEDUCT BUSINESS INTEREST EXPENSES UNDER THE NEW SECTION 163(J)

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ABSTRACT

Although the Tax Cuts and Jobs Act (TCJA) 2017 contains many favorable business tax provisions such as a flat 21 percent tax rate for C corporations as well as the elimination of the corporate alternative minimum tax (AMT); it also creates new unfavorable limitations on business expense deductibility. For example, the TCJA (2017) amends the Internal Revenue Code (IRC) section 163(j) to reduce the deductibility for net business interest expense. Due the complexity of section 163(j), both the Treasury and the Internal Revenue Services (IRS) have issued numerous regulations detailing the application of section 163(j) as amended by the TCJA (2017). C corporations, S Corporations and partnerships implement the provisions of section 163(j) in different ways. This paper summarizes these varying implementations including the use of a real-life case. The application of section 179 (immediate expense), section 274 (food and beverage for employees) as well as section 163(j) (interest expense) are also examined. Finally, this paper updates readers with the newest guidance from the IRS on the Coronavirus Aid, Relief, and Economic Security Act (2020) in relation to section 163(j).

INTRODUCTION

The Tax Cuts and Jobs Act (TCJA), enacted by Congress and the president on December 22, 2017, makes significant changes in how individuals, businesses, multi-national enterprises, and others calculate their Federal tax liability. The report titled "Distribution Effects of Public Law 115-97" prepared by the staff of the Joint Committee on Taxation dated March 25, 2019 suggests that "The reduction in tax liability is more concentrated towards the upper end of the income distribution for the business side relative to the individual side (Joint Committee on Taxation, 2019a, p. 8)."

The most notable modifications to the tax law enacted by the TCJA (2017) is the cap of the corporation tax rate at 21 percent and the repeal of alternative minimum tax on business. Unlike many individual tax provisions under the TCJA (2017) which are scheduled to expire after 2025, most of the business tax provisions under the TCJA (2017) will remain until modified by Congress.

The TCJA (2017) also provides additional tax incentives to businesses. For example, TCJA (2017) allows a 100 percent additional first year depreciation deduction for qualified property acquired and placed in service after September 27, 2017, and before January 1, 2023 (IRS, 2018a). The 100 percent bonus depreciation now applies to both new and used assets (IRS, 2018b).

Based on the Data Book for 2018 published by the Internal Revenue Service (IRS) (IRS, 2019a), corporations only paid 7.60 percent of the total $3.5 trillion of federal taxes collected by the Department of the Treasury in 2018 (IRS, 2019a, Table 1, p. 3). Comparatively, individual income taxes accounted for 56.90 percent and employment taxes accounted for 32.70 percent of the total federal taxes collected in 2018 (IRS, 2019a, Table 1, p. 3).

In 2018, the Department of the Treasury ("Treasury") collected $3.5 trillion of gross federal taxes an increase of $400 million over 2014. According to the data of Collections and Refunds by Type of Tax published by the IRS (IRS, 2020a), the percentage of corporation income tax collected in terms of the total annual amount of gross federal taxes collected decreased from 11.50 percent in 2014 to 7.60 percent in 2018. At the same time, the percentage of income tax in terms of the total annual amount of gross federal taxed collected from individuals increased from 53.60 percent in 2014 to 56.90 percent in 2018.

The TCJA (2017) is not all good news for business owners. For example, the TCJA imposes new restrictions and reduces the deductibility of some formerly deductible business expenses. For example, TCJA (2017) amends section 163(j) to disallow a deduction for net business interest expense in a taxable year in excess of the sum of (a) the taxpayer's business interest income for the year; (b) 30 percent of the taxpayer's adjusted taxable income (ATI) for the year; and (c) the taxpayer's floor plan financing interest expense for the year (IRS, 2019b).

In general, the section 163(j) limitation applies to all taxpayers but with some exceptions for "certain small businesses." The limitation to business interest expenses (BIE) applies at the level of a C corporation or at the level of a consolidated group, but section 163(j) limitation applies at S corporation level and at the partnership level. Partnerships have special pass-through rules, which require allocations of the section 163(j) items, such as allowed and disallowed business interest expense of the partnership, consistent with the partners' distributive shares of items generating limitation (IRS, 2019b).

Since the TCJA (2017) is relatively new and highly complex, the Treasury Department and the Internal Revenue Service (IRS) have been continuously issuing guidelines to clarify details of the TCJA (2017). In fact, as early as April 2018, IRS Notice 2018-29 suggested that the Treasury Department and the IRS intend to issue regulations in an effort to clarify several areas relating to deducting business interest expense under section 163(j), as amended by the TCJA (2017) (IRS, 2018c, p. 494).

In the two years from December 22, 2017 to December 31, 2019 numerous official updates involving IRC section 163(j) have been issued. Unfortunately, only five numerical examples exist from official publications such as the Joint Committee on Taxation (JCT) which demonstrate the calculation of section 163(j) limitation on the deduction for business interest expenses. Further, there is a lack of research publications concerning the section 163(j) limitation on the deduction for business interest expenses. These two factors motivated the authors to write this paper to fill in the gaps in the research literature.

This paper focuses on section 163(j) and the limitation of business interest deductions. We do not discuss the effect of section 163(j) on multi-national businesses, which requires another separate research manuscript due to complexity of the multi-national scenario.

This paper contributes to the literature in several ways. First this paper gives readers a summary of the latest regulations of section 163(j) applicable to domestic U.S. businesses specifically C corporations, S Corporations and partnerships. Second, this paper provides numerical case examples based on real world examples demonstrating the calculation of the section 163(j) limitation on the deduction or business interest expenses for (1) C corporations, (2) S corporations, (3) partnerships, and (4) partners. Third, using a real case example, this paper demonstrates the application of section 179 (immediate expensing), section 274 (food and beverage for employees) along with section 163(j) (interest expense). Readers will benefit from this user-friendly paper to comply with section 163(j).

The authors present the remainder of this paper in the following order. The next section is a literature review. The third section provides the background of section 163(j). The fourth section is a summary of the latest regulations of section 163(j). The fifth section provides a real-life case to illustrate the calculation of the section 163(j) limitation for both a C corporation as well as a partnership. The sixth section discusses implications of tax law changes to business operations. The final section provides a summary and conclusion.

LITERATURE REVIEW

Most of the changes introduced by the TCJA (2017) went into effect on January 1, 2018 and did not affect 2017. Prior literature has ample publications in regards to business expenses deductibility under the old tax law before the enactment of TCJA 2017. For example, Hanson (2011), Hilber & Turner (2014), Binner & Day (2015), provide extensive studies regarding the deductibility of mortgage interest and its effects on the housing market. Pozen & Goodman (2012) and Bank (2014) discuss business interest deduction from a tax lawyer's viewpoint. Nevius (2016) explains the impact of section 179 and the bonus depreciation.

Shortly after the passage of the Tax Cuts and Jobs Act (TCJA) on December 22, 2017, each of the Big Four CPA firms published reports, summaries, and comments about TCJA (2017). On February 6, 2018, Klynveld Peat Marwick Goerdeler (KPMG) published its Tax Reform-KPMG Report on New Tax Law (KPMG, 2018a) to provide readers with a detailed analysis of how the tax law had changed. Likewise, PricewaterhouseCoppers (PWC, 2018) published advice to their clients on how to change their internal policies so that they conform with IRC section 274 as amended by TCJA (2017).

TCJA (2017) amends section 274 in regards to meal and entertainment expenditures effective for amounts paid or incurred after 2017. Under the TCJA (2017), no deduction is allowed with respect to entertainment, regardless of its connection to the taxpayer's trade or business (PWC, 2018, p. 1). TCJA (2017) also disallows any deduction for membership dues for any club organized for business, pleasures, recreation, or other social purposes (KPMG, 2018a, p. 54). TCJA (2017) also disallows deductions for a facility or a portion of a facility used in connection with entertainment, amusement, or recreation (KPMG, 2018a, p. 54).

Section 274 as amended by the TCJA (2017) still permits a 50 percent deduction for expenditures incurred in connection with client business meals provided that the taxpayer was present and such meals were not lavish or extravagant (PWC, 2018, p. 1; KPMG, 2018a, p. 54).

TCJA (2017) also reduces the deduction for employer-operated eating facilities to 50 percent, and repeals employee income exclusion for qualified moving expenses reimbursements (KPMG, 2018a, p. 54).

For property places in service in tax years beginning after 2017, TCJA (2017) increases the annual maximum amount that a taxpayer can immediately expense under section 179 from $500,000 to $1,000,000 and also increases the phase out amount of section 179 from $2,000,000 to $2,500,000 (KPMG, 2018a, p. 44). TCJA (2017), as clarified by IRS FS-2018-9, amends the definition of section 179 property (1) to include tangible personal property used in connection with furnishing lodging (for example, beds and furniture for use in hotels and apartment buildings) (KPMG, 2018a, p. 44). The second clarification is (2) to allow taxpayers to elect to include qualified improvements made to nonresidential property (and placed in service after the date the property was first placed in service). For example, taxpayers may elect to include roofs, heating, ventilation and air-conditioning property, fire protection and alarm systems, security systems to nonresidential property placed in service after the date the property was first placed in service (KPMG, 2018a, p. 44).

In another publication, titled Tax Reform Executive Edition: Highlights of the New Tax Law (KPMG, 2018b), KPMG explains that the definition of adjusted taxable income for business interest deduction under section 163(j) (as amended in 2017); will change from EBITDA to EBIT in the beginning of 2022 (KPMG, 2018b, p. 7). In its report (KPMG, 2018a), KPMG suggested that clarification is still needed in regards to the business interest deduction. For example, in addressing business interest income of a partnership or S corporation at the partner or shareholder level for the purpose of applying section 163(j) (KPMG, 2018a, p. 51).

Since the enactment of the TCJA (2017) on December 22, 2017, both the Treasury Department, the IRS and the JCT have been continually issuing guidelines regarding the application of the IRC as mended by TCJA (2017). Thus far, a dearth of research exists regarding IRC section 163(j) in light of the latest official publications. The next section of this paper provides a background regarding official publications from the Treasury Department, the IRS, and the JCT in regards to IRC section 163(j).

BACKGROUND OF SECTION 163(J)

This section of the paper briefly highlights the official updates of the IRC section 163(j) from the date of the TCJA (2017) on December 22, 2017 through December 31, 2019. The motivation of this paper is driven by the following three factors: (1) the complexity of section 163(j) created by the continuous official updates, (2) the dearth of numerical examples regarding the actual application of section 163(j), and (3) the lack of empirical research (with numerical examples) on section 163(j).

On December 22, 2017, Congress and the president enacted the Tax Cuts and Jobs Act (TCJA). The Joint Explanatory Statement of the Committee of Conference on the amendment of the Senate to the Tax Cuts and Jobs Act (2017) is a good source for understanding the TCJA (2017). The TCJA (2017) amends section 163(j) to limit the deduction of business interest expense for taxable years beginning after December 31, 2017.

As of December 31, 2019, detailed rules and procedures relating to the section 163(j) limitation on the deduction for business interest expense are being amended by subsequent proposed regulations by the Treasury Department and IRS publications. Unfortunately, only five numerical examples exist from official publications such as the Joint Explanatory Statement of the Committee of Conference or the Joint Committee on Taxation which demonstrate the calculation of the section 163(j) limitation on the deduction for business interest expenses.

Wein & Kaufman (2018, p. 1) criticize the "new section 163(j)" stating that it was rushed into law without a full and careful review. Wein & Kaufman (2018, p. 3) suggest that "the application of interest limitation at the partnership level has added significant complexity and ambiguity to the section 163(j) in terms of allocations of taxable income and loss of the partnership to the partners." As a result, Wein & Kaufman (2018, p. 6) report that the Internal Revenue Services needed to issue Notice 2018-28 to clarify section 163(j).

On April 16, 2018, the IRS issued Notice 2018-28 titled "Initial Guidance Under Section 163(j) as Applicable to Taxable Years Beginning After December 31, 2017" (IRS, 2018c) to help taxpayers understand and apply section 163(j). IRS Notice 2018-28 also specified that the Treasury Department and the IRS will issue new regulations in an effort to clarify the business interest expense under section 163(j) (IRS, 2018c, p. 494).

On November 26, 2018, the Internal Revenue Services issued, IR-2018-233, proposed regulations [REG–106089–18] regarding the limitation on the deduction for business interest expense for certain taxpayers (IRS, 2018d). The proposed regulations [REG–106089–18] clarify the definitions of terms such as "Business Interest Income" and "Floor Plan Financing Interest Expense." Table 1 provides definitions of the terms used in official publications of both the IRS and the JCT.

Table 1
DEFINITION OF TERMS FROM OFFICIAL PUBLICATIONS

Term	Definition
Business Interest Income	"Amount of interest includible in the gross income properly allocable to a trade or business. Business interest income does not include investment income (JCT, 2018, p. 173)."
Business Interest Expenses	"Any interest paid or accrued on indebtedness properly allocable to a trade or business, including guaranteed payments paid to a partner in a partnership, gain or loss in debt hedging, and certain amounts predominantly associated with the time value of money. Business interest does not include investment interest (JCT, 2018, p. 173; IRS, 2018a, p. 30)."
Floor Plan Financing	"Interest paid or accrued on floor plan financing indebtedness (JCT, 2018, p. 174)."
Floor Plan Indebtedness	"Floor plan financing indebtedness means indebtedness used to finance the acquisition of motor vehicles held for sale or lease to retail customers and secured by the inventory so acquired (JCT, 2018, p. 174)."
Disallowed (or excess) Business Interest Expense (Partnership)	"Any business interest that is not allowed as a deduction to the partnership for the taxable year (referred to as ''disallowed business interest'') is allocated to the partners (JCT, 2018, p. 177)."
Excess Business Interest Income (Partnership)	"Excess business interest income with respect to any partnership is the excess of the business interest income of the partnership over the business interest reduced by floor plan financing interest of the partnership (JCT, 2018, p. 176)."
Excess Taxable Income (Partnership)	"Adjusted taxable income of the partnership that was not used to generate a business interest deduction at the partnership level (JCT, 2018, p. 176)."

The proposed regulations, [REG–106089–18], were published in the Federal Register Volume 83, Number 248 on December 28, 2018 (Fed. Reg. 67490). These proposed regulations provide guidance regarding many of the provisions in section 163(j) as well as the application of section 163(j) to entities such as partnerships, controlled foreign corporations, and corporate members of a tax-consolidated group.

On November 26, 2018, the IRS issued the Revenue Procedure 2018-59 (IRS, 2018e) to provide "a safe harbor that allows taxpayers to treat certain infrastructure trades or businesses as real property trades or businesses solely for purposes of qualifying as an electing real property trade or business under section 163(j)(7)(B) of the IRC (IRS, 2018e)." In other words, any electing real property trade or business as defined in section 469(c)(7)(C) is not treated as a trade or business for purposes of section 163(j) and is therefore not subject to the business interest expense limitation.

Table 2 chronologically summarizes key points of the official publications of the Treasury, the IRS, and the JCT in regards to section 163(j).

Table 2
KEY POINTS OF GOVERNMENT PUBLICAITONS: IRC SECTION 163(J)

Date and Publications	Key Points of the Discussed Government Publications
December 22, 2017 U.S. House. The Tax Cuts and Jobs Act. 2017. Joint Explanatory Statement of the Committee of Conference (to Accompany H.R. 1).	1) Section 163(j), as amended by the TCJA 2017, enacted the "double counting rule" to prevent a partner (or shareholder of an S corporation) from double counting a partnership's (or S corporation's) adjusted taxable income when determining the partner's (or shareholder's) business interest limitation (p. 229). 2) When determining the partner's (or shareholder's) business interest limitation, a partner's (or shareholder's) adjusted taxable income is determined without regard to the partner's (or shareholder's) distributive share of the partnership's (or S corporation's) items of income, gain, deduction, or loss (p. 230).
April 16, 2018 Notice 2018-28, Initial Guidance Under Section 163(j) as Applicable to Taxable Years Beginning After December 31, 2017, published in the IRB 2018-16 (IRS, 2018c).	1) Section 163(j) limitation to business interest expense (BIE) applies to all taxpayers but small businesses are exempted. Section 163(j) disallows a deduction for net business interest expense in a taxable year in excess of the sum of (a) the taxpayer's business interest income for the year; (b) 30% of the taxpayer's adjusted taxable income (ATI) for the year; and (c) the taxpayer's floor plan financing interest expense for the year (IRS, 2018c, p. 493). 2) Section 163(j) limitation to business interest expenses applies at the level of a C corporation or at the level of a consolidated group but applies at the partnership level and S corporation level (IRS, 2018c, p. 493).
November 26, 2018 IR-2018-233 Proposed regulations [REG–106089–18] Limitation on Deduction for Business Interest Expense (IRS, 2018d), published in the Federal Register Volume 83, Number 248 (Fed. Reg. 67490).	1) Provides guidance on the application of section 163(j) to entities such as partnerships, controlled foreign corporations and corporate member of a tax-consolidated group. 2) Clarifies definitions of terms such as "Adjusted Taxable Income," "Interest," "Trades or Businesses," "Excepted Trades or Businesses," "Regulated Utility Trade or Businesses," "Floor Plan Financing Interest Expense." 3) Defines "Interest" to include (a) amounts of compensation for the use or forbearance of money, (b) interest associated with conventional debt instruments, (c) gain or loss from hedges of debt instruments, (d) substitute interest payments under a securities loans, (e) debt issuance costs (IRS, 2018d, p. 16-22), and f) any guaranteed payments by partnerships for the use of capital under section 707(c) (IRS, 2018d, p. 207). 4) Mandates Section 163(j) limitation to be applied at the entity-level but business interest expense carryforward to be allocated to partners (IRS, 2018d, p. 56).
November 26, 2018 Revenue Procedure 2018-59 (IRS, 2018e).	Section 163(j)(7)(B) treats certain infrastructure trades or businesses as real property trades or businesses solely for purposes of qualifying as an electing real property trade or business, as defined in section 469(c)(7)(C), which is not subject to the business interest expense limitation for the purpose of section 163(j).

December 20, 2018 The Joint Committee on Taxation. General Explanation of Public Law 115–97 (JCT, 2018).	1) Reprints the three previously published numerical examples of the section 163(j) limitation of "double counting rule" and "additional deduction limit," originally published in the Joint Explanatory Statement of the Committee of Conference. 2) Demonstrates the calculation of the excess taxable income with respect to any partnership and the additional business interest expense a partner can deduct at the partner level (JCT, 2018, p. 176).
March 28, 2019 The Joint Committee on Taxation. Overview of Limitation on Deduction of Business Interest: Section 163(j) (JCT, 2019).	It provides the latest guidelines on business interest expense deduction, and its appendix has two new numerical partnership carryforward examples demonstrating the allocation of (a) excess business interest income and (b) excess taxable income (ETI) under Anti-Double-Counting Rules (JCT, 2019, p. 38-46).
November 6, 2019 IRS' website (IRS, 2019b).	IRS' website "Basic questions and answers about the limitation on the deduction for business interest expense (IRS, 2019b)."

The Treasury Department and the IRS requested comments regarding the proposed regulations [REG–106089–18]. On February 21, 2019, The American Institute of CPAs (AICPA, 2019) submitted comments and recommendations to the Treasury Department and the IRS in response to the proposed regulations [REG–106089–18].

In response to the proposed regulations [REG–106089–18], Yu & Paulus (2019, p. 994) comment that "a highly controversial aspect of the proposed section 163(j) regulations is one of the four categories of the definition of interest (both expense and income) adopted for purposes of applying the business interest expense limitation." Yu & Paulus (2019, p. 995) believe that "the third category of the proposed definition of interest includes several 'other amounts treated as interest' (each an interest-like amount), each of which presumably falls outside the scope of the general principle-based rule."

On December 20, 2018, the JCT published a document titled "General Explanation of Public Law 115-97" (JCT, 2018), which explains in detail the three previously published numerical examples of the section 163(j) limitation of "double counting rule" and "additional deduction limit," originally published in the Joint Explanatory Statement of the Committee of Conference on the amendment of the Senate to the Tax Cuts and Jobs Act (2017).

On March 28, 2019, the JCT published a document titled "Overview of Limitation on Deduction of Business Interest: Section 163(j)" (JCT, 2019) providing the latest guidelines on business interest expense deduction. The appendix of the above-mentioned document includes two new numerical partnership carryforward examples demonstrating the allocation of (a) excess business interest income and (b) excess taxable income (ETI) under Anti-Double-Counting Rules (JCT, 2019, p. 38-46). On November 6, 2019, the IRS updated its webpage titled "Basic questions and answers about the limitation on the deduction for business interest expense" to reflect the latest clarification of section 163(j). Unfortunately, the IRS webpage does not provide the public with any numerical examples of how to apply section 163(j).

In summary, section 163(j) has been evolving since December 2017, and only five official numerical examples exist which demonstrate the calculation of the section 163(j)

limitation on the deduction for business interest expenses. The next section of this paper is a summary of the latest regulations of section 163(j) applicable to C Corporations, S Corporations, Partnerships and individual partners.

SUMMARY OF LATEST REGULATIONS OF SECTION 163(J)

In General

This paper does not discuss the application of section 163(j) in multi-national businesses, which the authors will discuss in a future manuscript. In general, for tax years beginning after 2017, the section 163(j) limitation applies to all taxpayers who have business interest expense other than some excepted trades or businesses. Excepted trades or businesses (IRS, 2019b; JCT, 2019, p. 23-26) include (1) any taxpayer other than a tax shelter for which the annual average gross receipts for the three-taxable-year period ending with the prior taxable year does not exceed $25 million, (2) the trade or business of performing services as an employee, and (3) certain regulated utilities. Excepted trades or businesses also include any electing (4) real property trade or business as defined in section 469(c)(7)(C) and (5) any electing farming business as defined in section 263A(e)(4).

Section 163(j) (IRS, 2019b; JCT, 2018, p. 173; JCT, 2019, p. 2) now disallows a taxpayer to deduct net business interest expense in a taxable year, for more than the sum of the taxpayer's business interest income for the year, 30 percent of the taxpayer's adjusted taxable income (ATI) for the year, and the taxpayer's floor plan financing interest expense for the year. This paper suggests a formula to represent the amount of section 163(j) business interest expenses deduction in a year:

$= < \Sigma$ [business interest income + 30% of ATI + floor plan financing interest expense].

ATI (JCT, 2018, p. 174; JCT, 2019, p. 12) means the taxable income of the taxpayer computed without regard to (1) any item of income, gain, deduction, or loss that is not properly allocable to a trade or business, (2) any business interest or business interest income, (3) the amount of any net operating loss deduction, and (4) the amount of any deduction allowed under section 199A. Table 3 provides an example of the ATI computation.

For taxable years beginning before January 1, 2022, taxpayers compute ATI without regard to any deduction allowable for depreciation, amortization, or depletion. For taxable years beginning on or after January 1, 2022, taxpayers compute ATI with regard to deductions for depreciation, amortization, and depletion. As a result, taxpayers will have a smaller amount of ATI for the 30 percent calculation of ATI as part of the formula of section 163(j) limitation on the deduction for business interest expense. In terms of accounting, it is Earnings Before Interest, Tax, Depreciation, Amortization (EBITDA). Similarly, without regard to deductions for depreciation, amortization, and depletion it is Earnings Before Interest and Tax (EBIT) (JCT, 2018, p. 174; JCT, 2019, p. 12).

Table 3 gives a numerical example to illustrate the difference in ATI with (without) regard to any deduction allowable for depreciation, amortization, or depletion respectively. Table

3 illustrates the differences between using EBITDA and EBIT to compute adjusted taxable income. Table 3 shows that a taxpayer will have $36 deduction of business interest expense when using EBITDA, but only $27 when using EBIT, to calculate the 30 percent restriction on business interest expense respectively.

In general, taxpayers will deduct a larger amount of net business interest expense by using EBITDA relative to using EBIT for the computation of adjusted taxable income to apply 30 percent restriction on business interest expense. This paper will further discuss the implication of changes in the IRC, such as section 163(j), to business operations in the seventh section.

Table 3 CALCULATION OF 30 PERCENT OF THE TAXPAYER'S ADJUSTED TAXABLE INCOME (ATI)			
C Corporation in a taxable year	Amount	EBITDA	EBIT
Business Income	$200		
Business interest income	$20		
Cost of goods sold	($80)		
Business interest expense	($50)		
Depreciation	($30)		
Taxable income before section 163(j) limitation	$60	$60	$60
Minus: interest income $20		($20)	($20)
Add back: net interest expense ($50)		$50	$50
Add back: depreciation ($30)		$30	-
Adjusted taxable income		$120	$90
30% of Adjusted taxable income (ATI)		$36	$27

C Corporations

The section 163(j) limitation on the deduction for business interest expense applies at the level of a C corporation or at the level of a consolidated group. A C corporation will carryforward indefinitely any amount of business interest not allowed as a deduction in a taxable year into the succeeding taxable years for future deduction (JCT, 2018, p. 175).

S Corporations

S corporations apply the section 163(j) limitation on the deduction for business interest at the S corporation level. An S corporation carries over any disallowed interest expense, upon application of the section 163(j) in a taxable year, at the S corporation level to its succeeding taxable years. Therefore, an S corporation does not allocate disallowed business interest expense to its shareholders. However, an S corporation allocates any excess taxable income and excess interest income to its shareholders on a pro-rata basis (IRS, 2019b). The double counting rule of section 163(j) applies to shareholders of S corporations. The business interest income and adjusted taxable income of an S corporation's shareholder is determined without regard to the shareholder's distributive share of any items of income, gain, deduction, or loss of the S corporation (JCT, 2018, p. 175).

Partnerships: Excess Business Interest Expense

Partnerships apply the section 163(j) limitation on the deduction for business interest at the partnership level. Table 4 summarizes key points of IRC section 163(j) in regards to the deduction of excess business interest at partner's level.

Table 4 IRC SECTION 163(J) DEDUCTION OF EXCESS BUSINESS INTEREST EXPENSE AT PARTNERS' LEVEL	
Key Points	Partner's Deduction of Excess Business Interest Expense
Same Partnership's Sources	"A partner carries forward its share of excess business interest expense. In a succeeding taxable year, a partner may treat its excess business interest expense as business interest expense paid or accrued by the partner to the extent the partner is allocated excess taxable income or excess business interest income from the same partnership (IRS, 2019b)."
Distributive Share of the Partnership's Excess Business Interest Income or Excess Taxable Income (ETI)	"Each partner may deduct its share of the partnership's disallowed business interest in any future year, but only to the extent of the partner's distributive share of excess business interest income and 30 percent of the partner's distributive share of excess taxable income of the partnership the activities of which gave rise to the disallowed business interest carryforward. Any amount that is not allowed as a deduction is carried forward (JCT, 2018, p. 177)."
Current Year Deduction of Prior Year Excess Business Interest	"A partner carried forward $100 of excess business interest from a prior year of Partnership X. In the current year, Partnership X allocates $100 of excess taxable income and $10 of excess business interest from X to the partner. The partner has $200 of adjusted taxable income from other sources in the current year. However, the partner can only deduct $40 = [$10 excess business interest income + (30% of the $100 excess taxable income)] of the carryforward excess business interest in the current year without regard to the partner's current year $200 of adjusted taxable income from other sources (JCT, 2018, p. 177)."

The amount of deductible business interest expense that a partnership can deduct in a taxable year cannot exceed the sum of the partnership's business interest income, 30 percent of the partnership's ATI, and the partnership's floor plan financing interest expense. The business interest expense that a partnership can deduct in a taxable year is taken into account in determining the non-separately stated taxable income or loss of the partnership (IRS, 2019b).

Unlike C corporations and S corporations, any business interest expense of the partnership that is disallowed (also known as disallowed or excess business interest expense) upon the application of the section 163(j) limitation is allocated to each partner in the same manner as the non-separately stated taxable income or loss of the partnership (IRS, 2019b). Readers should note that excess business interest expense is only applicable to the situation of a partner. Two special rules (double counting rule and the additional deduction limit rule) of section 163(j) limitation applies at the partner level.

Partnerships: Double Counting Rule

The business interest income as well as the adjusted taxable income of each partner is determined without regard to each partner's distributive share of income, gain, deduction or loss

of the partnership (JCT, 2018, p. 175). Table 5 describes the Double Counting Rule of section 163(j).

Table 5 IRC SECTION 163(J) APPLICATION OF DOUBLE COUNTING RULE AT PARTNERS' LEVEL	
Key Points	Illustration of Double Counting Rule at Partner's Level
Distributive Share of the Partnership's Ordinary Business Income	"XYZ Corporation owns 50 percent of Partnership ABC. In current year, the only expense Partnership ABC has is $60 business interest expense versus $200 noninterest income. Partnership ABC can deduct $60 = < Σ [business interest income $0 + 30% of ATI $200 + floor plan financing interest expense $0] of business interest expense. Partnership ABC reports ordinary business income of $140 = [$200 noninterest income - $60 business interest expense]. XYZ Corporation's distributive share of the ordinary business income of Partnership ABC is $70 = [50% of $140] (JCT, 2018, p. 175)."
Double Counting Rule at Partner's Level	"XYZ Corporation's distributive share of the ordinary business income of Partnership ABC is $70 = [50% of $140]. The double counting rule of section 163(j) stipulates that XYZ Corporation has adjusted taxable income computed without regard to the $70 distributive share of the ordinary business income from Partnership ABC. In current taxable year, XYZ Corporation has net taxable income of $0 from its other operations with $0 business interest income but $25 business interest. As a result, the business interest expense that XYZ Corporation can deduct is $0 = < Σ [business interest income $0 + 30% of ATI $0 + floor plan financing interest expense $0]. But, XYZ Corporation can carryforward the disallowed $25 business interest expense indefinitely (JCT, 2018, p. 176)."

Partnerships: Additional Deduction Limit

According to the additional deduction limit rule of section 163(j), the partner's business interest deduction limitation calculated under section 163(j) is increased to reflect the partner's distributive share of any excess business interest income or excess taxable income (ETI) of the partnership (JCT, 2018, p. 176). Table 6 describes the Additional Deduction Limit of section 163(j).

**Table 6**	

Table 6
IRC SECTION 163(J)
APPLICATION OF ADDITIONAL DEDUCTION LIMIT AT PARTNER'S LEVEL

Key Points	Illustration of Additional Deduction Limit at Partner's Level
Distributive Share of the Partnership's Excess Business Interest Income or Excess Taxable Income (ETI)	"XYZ Corporation owns 50 percent of Partnership ABC. In current year, the only expense Partnership ABC has is $40 business interest expense versus $200 noninterest income. Partnership adjusted taxable income (ATI) is therefore $200. Partnership ABC can deduct $60 of business interest expense = < Σ [business interest income $0 + 30% of ATI $200 + floor plan financing interest expense $0]. Partnership ABC's ETI is the amount which bears the same ratio to ABC's ATI $200 as (1) the excess of [(a) 30% of ABC's ATI over (b) the amount by which ABC's business interest exceeds its business interest income] bears to (2) 30% of ABC's ATI (JCT, 2018, p. 176). (1) = $20 = the excess of [(a) 30% of $200 = $60 over (b) ($40 - $0) = $40] bear to (2) 30% of $200 = $60 (1) bears to (2) = $20 / $60 Partnership ABC's ETI is $20/$60 x $200 = $66.67 XYZ Corporation's distributive share of the ETI from ABC is $33.33 = 50% * $66.67 (JCT, 2018, p. 176)."
Additional Deduction Limit at Partner's Level	"In current taxable year, XYZ Corporation has net taxable income of $0 from its other operations with $0 business interest income but $25 business interest. XYZ Corporation adjusted taxable income (ATI) is therefore $0. XYZ Corporation's distributive share of the ETI from ABC is $33.33 The additional deduction limit rule of section 163(j) stipulates that XYZ Corporation's deduction for business interest is limited to 30 percent of its adjusted taxable income plus its distributive share of the ETI from Partnership ABC (JCT, 2018, p. 177). XYZ Corporation's deduction for business interest is $10 = < Σ [business interest income $0 + 30% of (ATI $0 + distributive share of ETI from partnership ABC $33.33 + floor plan financing interest expense $0)] As a result of the excess taxable income, XYZ Corporation may deduct $10 of business interest and has a business interest deduction disallowance of $15 = ($25-$10) (JCT, 2018, p. 176)."

The next section presents a case analysis based on a real-world example of a hotel. The authors work in the College of Business and Economics situated in a metropolitan tourist city on the west coast of the United States. As a result, the authors are well acquainted with hotel operators. In any given taxable year, hotel operators typically incur business interest expense, renovation expenses, entertainment expenses and employees' meal expenses. Consequently, hotels provide a great case study for examining the effect of changes in IRC sections 163(j), 168(k), 179 and 274 on business operations.

CASE-EXAMPLE FOR ILLUSTRATION OF SECTION 163(J)

To demonstrate how a C corporation, S corporation or a partnership complies with the section 163(j) limitation, this paper creates a case-example based on actual business entities (albeit with fictitious numbers). The entities examined are not tax shelters nor excepted

businesses and have average annual gross receipts exceeding $25 million in the previous three years.

Case-example Description

Hotel A is a business entity [C Corporation or Partnership] with average annual gross receipts for the prior three tax years of more than $25 million but less than $50 million. Hotel A is therefore subject to the section 163(j) limitation of deduction of business interest expense. Hotel A opened in 2008 and has 1,000 rooms in a 38-story building which includes a swimming pool and a restaurant which is open 24 hours. The average room rate in 2018 was $100 per night per single room. Historically, Hotel A net profit has been around 10 percent of the gross revenue. In the past, instead of declaring a dividend, the board of directors of Hotel A decided to use most of its net profit and free cash flow to repay the hotel's mortgage loan.

Hotel A took out a mortgage in 2008 and is still repaying its mortgage loan. Currently, Hotel A is in need of renovation and qualified property improvements to its interior. Because Hotel A is a designated crew hotel for multiple airlines, (1) it is common for Hotel A to incur entertainment expenses in an effort to solicit airline business and (2) it operates a 24-hour restaurant to serve the needs of crews arriving and departing at different time during a day. Hotel A also operates a staff canteen. It is a customary practice of Hotel A to provide one free meal per day to each hotel's employee through the hotel's staff canteen. At the end of 2018, the controller of Hotel A calculated that the gross revenue for the year would be approximately $35 million (without interest income) and the cost of goods sold (before interest expense, depreciation, entertainment expense, and employees' meal expense) about $28 million.

During 2018, Hotel A has incurred the following expenses which met the definitions of various types of expenses under relevant sections of the IRC. Hotel A's expenses of 2018 included the following: (1) $4,000,000 business interest expense; (2) $8,000 business interest income from a money market checking account; (3) $250,000 annual MACRS depreciation; (4) $1,000,000 qualified property improvement to the interior common corridor areas of the hotel (new carpet, new wallpaper, new lights and fixtures, new swimming pool tiles) and renovation of the hotel (roof, heating and air conditioning systems, fire protection systems, and security systems); (5) $300,000 computer software to upgrade the hotel's computer reservation and security systems; (6) $200,000 cost of providing free meals to employees; (7) $6,000 golf club membership fees and entertainment activities; and (8) $70,000 cost of providing meals and beverage necessary in business of hotel's existing and potential customers.

During the year 2018, Hotel A did not have any of the following: (1) dividends received from taxable domestic corporations; (2) floor plan financing interest; (3) investment interest expense or income; (4) net operating losses; (5) like kind exchanges; (5) lobbying expenses; (6) domestic production deductions; (7) research and experiments deductions; (8) self-created property; or (9) deductions for qualified business income under section 199A. Further, during the year, Hotel A did not have any gain or loss on the sale of property; any depreciation recapture; any carryforward unused depreciation. Hotel A did not make any guaranteed payment to its partners in the partnership scenario.

Due to paper length restrictions, this paper cannot discuss nor illustrate all the major

changes to the IRC which affect businesses. This paper's illustrative case demonstrates to readers numerically how a business entity complies with section 163(j), 168(k), 179, and 274 simultaneously. The next few paragraphs briefly explain section 168(k), 179, and 274 as amended by TCJA (2017).

Section 168(k), 179, 274

IRC section 168(k), as amended by TCJA (2017), now allows a 100 percent additional first year depreciation deduction for qualified property acquired and placed in service after September 27, 2017, and before January 1, 2023 (IRS, 2018a). The 100 percent bonus depreciation now applies to both new and used assets, including depreciable personal assets used predominantly to furnish lodging such as beds, refrigerators, and stoves in hotels, apartments and dormitories (IRS, 2018b).

IRC section 179, as amended by TCJA (2017), now increases both the annual maximum deduction under section 179 from $500,000 to $1 million, and the phase-out threshold from $2 million to $2.5 million, for property placed in service in taxable year beginning after December 31, 2017 (IRS, 2018b). Section 179 now allows improvements made to commercial buildings to include roofs; heating, ventilation, and air conditioning equipment; fire protection and alarms; and security systems. However, improvements made to any elevator or escalator or the internal structural framework of the commercial building do not qualify for immediate expense under section 179 (IRS, 2018b).

IRC Section 274, as amended by TCJA (2017), repeals the deduction for entertainment activities and membership dues. Taxpayers can now only deduct 50 percent of their non-entertainment business meals and beverage expenses, assuming the meal expense is not lavish or extravagant and the taxpayer or an employee of the taxpayer is present at the furnishing of the food or beverages to a current or potential business customer (IRS, 2018d). Taxpayers now can only deduct 50 percent of the cost of employer-operated eating facilities.

C Corporation Scenario

Readers can calculate the section 163(j) limitation on the deduction for business interest expenses of a business entity by applying the formula suggested by this paper:

$$= < \Sigma \text{ [business interest income} + 30\% \text{ of ATI} + \text{floor plan financing interest expense].}$$

Table 7 shows the calculation of 30 percent of the adjustable taxable income (ATI) used in this paper's case example. ATI signifies the taxable income of the taxpayer computed without regard to any business interest or business interest income. For taxable years beginning before January 1, 2022, taxpayers compute ATI without regard to any deduction allowable for depreciation, amortization, or depletion (JCT, 2018, p. 174; JCT, 2019, p. 12).

Table 7 explains how Hotel A complies with section 274. Section 274 disallows a deduction for the $56,000 golf club membership fees and entertainment activities and allows Hotel A to only deduct 50 percent of the business meals beverage expenses which is $35,000. Further, section 274 only allows Hotel A to deduct 50 percent of the free meals to employees

which is $100,000. Hotel A elects to immediate expense $1,000,000 of qualified property improvement under section 179 and deducts $300,000 depreciation of computer software under section 168(k) bonus depreciation.

Table 7 calculates the adjusted taxable income (ATI) of this paper's case-example as $6,865,000. Hotel A can only deduct $2,067,500 of its business interest expense:

$= < \Sigma$ [business interest income $8,000 + 30% of ATI $6,865,000 + floor plan financing interest expense $0].

Assuming Hotel A is a C corporation, then it can carryforward the amount of any business interest not allowed as a deduction for any taxable year as business interest paid or accrued in the succeeding taxable year (JCT, 2018, p. 175). Therefore, Hotel A as a C corporation can carry forward the $1,932,500 ($4,000,000 - $2,067,500) of business interest which was not allowed as a deduction in current tax year and treat the carryforward amount as business interest paid in the succeeding taxable year or indefinitely.

Table 7 THIRTY PERCENT OF THE ADJUSTED TAXABLE INCOME OF THIS PAPER'S CASE		
Section 163(j) Calculation	Business Entity	EBITDA
Business income	$35,000,000	
Business interest income	$8,000	
Cost of goods sold	($28,000,000)	
Business interest expense	($4,000,000)	
Depreciation MACROS	($250,000)	
Section 179 immediate expense of qualified property improvement	($1,000,000)	
Section 168(k) bonus depreciation for computer software	($300,000)	
50% of the free meals to employees of $200,000	($100,000)	
50% of the business meals beverage of $70,000	($35,000)	
Taxable income before section 163(j) limitation	$1,323,000	$1,323,000
Deduct: Interest Income		($8,000)
Add Back: Interest expense		$4,000,000
Add Back: MARCROS depreciation		$250,000
Add Back: Section 179 qualified property improvement		$1,000,000
Add Back: Section 168(k) bonus depreciation for computer software		$300,000
Adjusted taxable income		$6,865,000
30% of Adjusted taxable income		$2,059,500
Note 1: EBITDA means earnings before interest, tax, depreciation and amortization.		
Note 2: IRC Section 274 allows 50 percent deduction of business meals expense.		
Note 3: IRC Section 274 allows 50 percent deduction of the cost of employer-operated eating facilities.		
Note 4: IRC Section 274 disallows $56,000 golf club membership fees and entertainment activities.		

S Corporation Scenario

S corporations apply the section 163(j) limitation on the deduction for business interest at the S corporation level. An S corporation carries over any disallowed interest expense, upon application of the section 163(j) in a taxable year, at the S corporation level to its succeeding taxable years. Therefore, an S corporation does not allocate disallowed business interest expense to its shareholders.

Assuming Hotel A is an S Corporation, then it can only deduct $2,067,500 of business

interest expense and carries forward the $1,932,500 business interest not allowed as a deduction in current tax year to its succeeding taxable years.

Partnership Scenario: Year One

Partnerships apply the section 163(j) limitation on the deduction for business interest at the partnership level. The amount of deductible business interest expense that a partnership can deduct in a taxable year cannot exceed the sum of the partnership's business interest income, 30 percent of the partnership's ATI, and the partnership's floor plan financing interest expense. Assuming Hotel A is a partnership, it is only allowed a $2,067,500 deduction for business interest expense at the partnership level. As a partnership, Hotel A's allowable business interest expense $2,067,500 that can deducted in the current tax year is taken into account in determining the non-separately stated taxable income or loss of the partnership (IRS, 2019b).

Unlike C corporations and S corporations, any business interest expense of the partnership that is disallowed (which is called disallowed or excess business interest expense) upon the application of the section 163(j) limitation is allocated to each partner in the same manner as the non-separately stated taxable income or loss of the partnership (IRS, 2019b).

Let's assume that (1) Hotel A is a partnership with two equal partners each owning 50 percent share of the partnership and (2) that each partner does not have any income from any other source. In this case, each partner of Hotel A will carryforward $966,250 [($4,000,000 - $2,067,500) / 2] of business interest not allowed as a deduction in current tax year to succeeding tax years. In the immediate succeeding tax year, if Hotel A allocates any excess taxable income or excess business interest to a partner; then the partner can deduct carried forwarded excess business interest of Hotel A against newly allocated excess taxable income or excess business interest.

Partnership Scenario: Year Two

Assume that in year two, Partnership Hotel A has $400,000 of business interest expense. Table 8 calculates Partnership Hotel A year two ATI.

Table 8		
YEAR TWO PARTNERSHIP: THIRTY PERCENT OF THE ADJUSTED TAXABLE INCOME		
Section 163(j) Calculation	Business Entity	EBITDA
Business income	$35,000,000	
Business interest income	$8,000	
Cost of goods sold	($28,000,000)	
Business interest expense	($400,000)	
Depreciation MACROS	($250,000)	
Section 179 immediate expense of qualified property improvement	($1,000,000)	
Section 168(k) bonus depreciation for computer software	($300,000)	
50% of the free meals to employees of $200,000	($100,000)	
50% of the business meals beverage of $70,000	($35,000)	
Taxable income before section 163(j) limitation	$4,923,000	$4,923,000
Deduct: Interest Income		($8,000)
Add Back: Interest expense		$400,000
Add Back: MARCROS depreciation		$250,000
Add Back: Section 179 qualified property improvement		$1,000,000
Add Back: Section 168(k) bonus depreciation for computer software		$300,000
Adjusted taxable income		$6,865,000
30% of Adjusted taxable income		$2,059,500
Note 1: EBITDA means earnings before interest, tax, depreciation and amortization.		
Note 2: IRC Section 274 allows 50 percent deduction of business meals expense.		
Note 3: IRC Section 274 allows 50 percent deduction of the cost of employer-operated eating facilities.		
Note 4: IRC Section 274 disallows $56,000 golf club membership fees and entertainment activities.		

Table 4 shows that in year two, Partnership Hotel A has a taxable income before section 163(j) limitation of $4,923,000; but still has an adjusted taxable income (ATI) of $6,865,000 and 30 percent of ATI is also $2,059,500. In year two, Partnership Hotel A can deduct up to $2,067,500 in business interest expense:

$= < \Sigma$ [business interest income $8,000 + 30% of ATI $6,865,000 + floor plan financing interest expense $0].

Even though Partnership Hotel A can deduct up to $2,067,500 business interest expense, it only has $400,000 business interest in year two. Therefore, in year two Partnership Hotel A has excess taxable income (ETI). In year two, Partnership Hotel A does not have excess business interest income because the business interest expense of Hotel A exceeds its business interest income by $392,000 ($400,000 - $8,000).

Following the guidelines of official publications (JCT, 2018, p. 176), Hotel A's ETI is the amount which bears the same ratio to the Hotel A's ATI as (1) the excess of (a) 30 percent of the Hotel A's ATI over (b) the amount by which the Hotel A's business interest, reduced by floor plan financing interest, exceeds its business interest income, bears to (2) 30 percent of the Hotel A's ATI. Calculation of Hotel A's ETI is as follows.

(a) 30% of $6,865,000 = $2,059,500
(b) ($400,000 - $0 - $8,000) = $392,000
The excess of (a) over (b) = $2,059,500 - $392,000 = $1,667,500   (1)

30% of $6,865,000 = $2,059,500   (2)

(1) bears to (2) = $1,667,500 / $2,059,500 = 80.97%

Hotel A's ETI = $6,865,000 * 80.97% = $5,558,333

Each partner's distributive share of the ETI from Hotel A in year two is $2,779,166, and therefore they can deduct a portion of the $966,250 carried forward excess business interest from prior year. In year two, each partner can only deduct $833,750 of the carryforward excess business interest in the current year:

= [excess business interest income $0 + 30% of distributive share of ETI from Partnership Hotel A $2,779,166].

Because of the excess taxable income, in year two each partner may deduct $833,750 of the carryforward excess business interest and continue to carryforward the remaining excess business interest $132,500 ($966,250 - $833,750).

IMPLICATION

In general, changes in the IRC have major implications for business tax liabilities. The next few paragraphs discuss how business managers could modify their operations in responses to the changes in the IRC such as section 163(j), section 168(k), section 179, and section 274.

Implication of Section 163(j) Changes

Table 3 demonstrates that once the definition of adjusted taxable income for business interest deduction changes from EBITDA to EBIT in the beginning of 2022, taxpayers in general will deduct a smaller amount of net business interest expense under the 30 percent limitation of section 163(j) as amended by TCJA (2017). For example, in Table 3, given the same amount of taxable income before section 163(j) limitation, a business operation can deduct $36 of business interest expense before January 1, 2022 but only $27 after January 1, 2022.

Considering only the effect of section 163(j) which allows business operators to deduct a smaller amount of business interest expense after January 1, 2022, business operators will have a higher tax liability. Thus, ceteris paribus, business operators could plan to use less debt financing after 2022. From the present to January 2022, business operators can either pay off some outstanding loans or refinance the loans by taking advantage of the existing low interest rate environment.

Implication of Section 168(k) Changes

The most important change to section 168(k) is the expansion of the 100 percent bonus depreciation for qualified property to include both new and used assets (acquired and placed in service after September 27, 2017 but before January 1, 2023). These assets include depreciable

personal assets used to furnish lodging such as beds, refrigerators, and stoves in hotels, apartments and dormitories (IRS, 2018b). Hotel operators should consider buying used depreciable personal assets but deducting 100 percent bonus depreciation of the purchase cost at the same time.

Implication of Section 179 Changes

IRC section 179, as amended by TCJA (2017), now increases the annual maximum deduction under section 179 from $500,000 to $1 million for property placed in service in taxable year beginning after December 31, 2017 (IRS, 2018b). However, a business operator cannot use the section 179 deductions in a tax year to create or increase tax losses. Thus, business operators need to consider future business earning potential, in light of the macroeconomic environment in coming years. Economies continually go through expansion and contraction cycles which affect both interest rates and profits. During recessions, taxable profit might not be large enough for a business to elect section 179 and immediately expense newly acquired property. Taking in to account the time value of money, ceteris paribus firms are better off electing section 179 to generate immediate expenses, and hence pay less taxes now and thus generating more cash in the present period. This cash can then be used to reduce debt, which is another factor for business operators subject to section 163(j) to consider.

Implication of Section 274 Changes

Under the new section 274 as amended by TCJA (2017), no deduction is allowed with respect to entertainment even if it is related to a taxpayer's business. Thus, for tax years after 2017, hotel operators can no longer deduct any expense for entertaining airlines' administrators for referring airlines' crews to stay in designated hotels. But, the new section 274 still permits a fifty percent deduction for non-extravagant business meals with business clients. Hotel operators should consider significantly curtailing entertainment expenditures such as golfing outings and instead shift entertainment dollars to business meals with referring airlines' administrators and onsite catered events at hotel's facilities.

The new section 274 now allows taxpayers to deduct only 50 percent of the cost of employer-operated eating facilities. In tight labor markets, a hotel operator should consider increasing the hourly rate paid to employees while charging these employees 50 percent of the cost of a meal in an employer-operated eating facility.

CONCLUSION

The Tax Cuts and Jobs Act (TCJA) 2017 significantly amended the IRC of 1986. From the time TCJA (2017) became law on December 22, 2017, the Treasury Department and the IRS have been proposing new regulations regarding its application. This paper focuses on the new limitations regarding the of the deduction for business interest expense under IRC section 163(j). To date, official tax authorities have only published five limited examples demonstrating the calculation of the section 163(j) limitation on the deduction for business interest expenses. Due

to fluidity of the rules and procedures regarding section 163(j), a lack of research papers on section 163(j) exists. This paper attempts to fill in the void in the research literature.

This paper contributes to the literature in several ways. First, it provides readers with a summary of the latest regulations regarding section 163(j) in tabular format. Second, this paper provides robust numerical case examples illustrating how section 163(j) applies at the entity level (a C corporation, a S corporation, and a partnership) as well as the partner-level. Third, using this paper's case, the authors highlight the application of section 168(k), section 179, section 274 together with section 163(j) in this paper's case examples. Furthermore, this paper discusses how businesses could change business operations to account for the changes in the tax code such as section 163(j), section 168(k), section 179, and section 274.

Tax law is constantly changing in response to changes in the political and economic environment. For example, on March 27, 2020, the President signed the Coronavirus Aid, Relief, and Economic Security (CARES) Act into law. On April 10, 2020, the IRS issued Rev. Proc. 2020-22 (IRS, 2020b) providing guidance on changes made by the CARES Act to the section 163(j) business interest deduction limitation. The CARES Act (2020) changes the limitations on deductibility by allowing taxpayers to apply a 50 percent ATI limitation in the 2019 and 2020 tax years only and allowing companies to compute the 2020 limitation based on 2019 ATI. The authors will discuss about CARES Act (2020) in future research papers.

The authors acknowledge several limitations of this paper. For example, this paper's case-example is a best effort attempt to demonstrate to readers how section 163(j) limitation applies under specific circumstances. Many opportunities exist for research in TCJA (2017), the authors will publish more manuscripts in the future about the effects of TCJA (2017) and the CARES Act (2020) on businesses.

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THE CURRENT STATE OF ETHICS EDUCATION IN ACCOUNTING PROGRAMS

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ABSTRACT

Ethics plays a critical role in the accounting profession. Accountants are expected to uphold high standards of competence and integrity to protect and garner public trust. Past accounting scandals illustrate the gap between ideal ethical standards and those in practice in the profession, and the need for an ethics course in the accounting curriculum. Historically, ethics has been integrated as part of existing courses, but research suggests that a stand-alone ethics course can help to develop ethical reasoning skills; and, therefore, provide more value to students. Previously, universities cited lack of room in the curriculum as a barrier to including a separate ethics course. This problem has been alleviated with the current CPA education requirement of 150 hours in most states. This study extends the accounting ethics literature by providing an update on the level of ethics coverage in graduate accounting programs in U.S. AACSB accredited schools. We research whether ethics is considered an important learning outcome in programs, and if stand-alone ethics courses, required or elective, have been implemented at the graduate level for CPA candidates. We find that over 50% of the colleges in the study have a stand-alone ethics course. While this represents an increase in the level of ethics coverage in graduate level programs, there is still an ongoing need to increase ethics education in accounting programs in order to protect the future credibility of the accounting profession.

INTRODUCTION

Accounting scandals have drawn increased attention to the overwhelming need to improve ethics in the accounting profession. Due to the nature of the work performed by accountants and auditors, it is crucial that they operate with a high level of ethics and integrity. In an attempt to restore public trust and prevent fraudulent activities that occurred with companies such as Enron, WorldCom, HealthSouth, and Tyco International, the government and accounting organizations have developed regulations to mitigate fraud, protect investors from fraudulent financial reporting, and improve integrity in the accounting profession. The Sarbanes-Oxley Act of 2002 created new standards to improve corporate accountability, mandated strict reforms on existing regulations, and imposed stiff penalties for noncompliance, including imprisonment up to twenty years. The U.S. Security and Exchange Commission's recent $50

million fine against KPMG for illegal use of regulatory data and cheating on internal exams mandated by a prior SEC order, reveals a pressing need to focus more on ethics.

Implementation of ethics coverage can help develop moral professionals and benefit the accounting profession. Research suggests that ethical education in the accounting curriculum improves ethical and moral reasoning (Clikeman & Henning, 2000; Earley & Kelly, 2004; Dellaportas, 2006; O'Leary, 2009). These decision-making skills will equip future accountants to address ethical dilemmas they may experience in the workforce. Professions rely on academia to prepare the next generation for the workforce. Accounting programs should ensure students have the rudimentary tools needed to perform in the accounting profession (Williams & Elson, 2010). However, accounting curricula are being criticized for not focusing enough on ethics, values, and integrity (Albrecht & Sack, 2000). To prepare future accountants for the profession, it is imperative to have a course that focuses on ethical and moral reasoning and decision-making.

Currently, most programs include ethics as modules or lessons in other courses, such as audit or business law. While it is important to integrate ethics into other courses throughout the curriculum, a stand-alone course provides an in-depth study for students to develop ethical reasoning, focus on ethical dilemmas, and learn how to address them. A combination of a specified ethics course and the integration of similar teachings in other courses taken by students can help ensure a well-structured exposure to ethics and an improvement for overall decision-making skills. The need for a stand-alone course is apparent and has been recognized through previous research in order for students to "think through various situations dealing with ethics and learn how to hone their ethical reasoning skills" (Chawla, Khan, Jackson, & Gray, 2015).

The purpose of this study is to determine the current state of ethics education in graduate accounting programs. We investigate whether schools have taken advantage of additional courses needed by CPA candidates to implement a stand-alone ethics course into the curriculum. We find that the number of stand-alone ethics courses in graduate programs have increased. However, only 53% of the colleges within the study have incorporated a stand-alone ethics course at the graduate level. While this represents progress, accounting programs are still universally slow in addressing the importance of ethics education in the accounting curriculum.

This paper is motivated by the reoccurring scandals in the accounting profession and the call for more ethics education in accounting programs. Historically, the lack of room in the accounting curriculum was noted as a barrier to a stand-alone ethics course in accounting programs. With the current 150-hour education requirement for CPA licensure in almost all states and jurisdictions, more CPA candidates are enrolled in 5-year programs or completing a graduate level degree, such as a Master of Accountancy, to meet the requirement. The graduate accounting program, therefore, serves an ideal placement for a stand-alone ethics course. This paper contributes to the accounting ethics literature by reporting the current state of ethics in accounting graduate programs. The findings in this paper help accounting organizations and policymakers that regulate and establish standards for the accounting profession.

The remainder of this paper precedes as follows. Next, we discuss the prior literature. Then we discuss our sample, research measures, and findings. Lastly, we present concluding remarks and offer opportunities for further research.

ETHICS EDUCATION

Previous Literature

There is consensus among professionals and academic researchers that more ethics education should be included in accounting programs. However, the debate continues regarding how to best incorporate ethics education into the accounting curriculum. Research reveals ongoing challenges and barriers, such as cost of implementation, who should teach ethics, lack of space in the curriculum, and whether ethics should be integrated into existing courses or taught as a stand-alone ethics course, that prevent successful implementation of ethics into the accounting curriculum (Langenderfer & Rockness, 1989; Loeb, 2006; Massey & Van Hise, 2009; Williams & Elson, 2010; Graham, 2012). Program administrators must carefully consider each of these challenges in pursuit of offering sufficient ethics teachings. The importance of ethics education to the individual programs offered can indicate whether the university is willing to meet the challenges and continue with a separate ethics course.

 Studies have surveyed accounting department chairs to determine administrators' perceptions of ethics and the current status of ethics in accounting programs. An earlier study by Cohen and Pant (1989), reveals that only 18% of the 145 responding schools required accounting majors to take a stand-alone ethics course at the undergraduate level. A later study by Madison & Schmidt (2006) examined ethics coverage of the 122 largest North America accountancy programs. This study reports that 8.1% of AACSB-accredited and 16.67% non-accredited institutions required a stand-alone ethics course for accounting majors at the undergraduate level.

A number of researchers explored ethics by looking at the personal values of accountants using the Rokeach Value Survey. Baker (1976) administered it to students at the major university in California and found that accounting majors prefer the value of "a comfortable life" more than non-accounting majors. Abdolmohammadi & Baker (2006) used the survey to explore the values of accounting majors. The authors surveyed 164 graduating accounting students enrolled in capstone course at two universities in the Northeastern United States to explore the relationship between their values and moral reasoning.   They found a highly significant inverse relationship between ''[c]onformity'' values and principled moral reasoning (i.e., those who prefer conformity values have lower levels of moral reasoning).

The Rokeach Values Survey has also been used to explore the personal values of professionals in public accounting in the United States. Wilson, Ward & Ward (1998) used it to investigate the personal behavior, ethical attitudes, and professional perceptions of practicing Certified Public Accountants. Their findings suggest that the high ranking of 'honesty' and 'responsibility' by CPAs reveals their propensity to behave according to these values. Ariail, Smith & Smith (2020) used the survey to further explore the personal values of senior level accountants in public practice and in industry. Their goal was to understand the extent to which values of the profession match to the personal values that accountants bring with them to the workplace. The authors found that the subjects ranked honest, responsible, capable, courageous, loving, and independent as the highest personal values, and that they do align with the professional values.

Sharpe, Grossman, Smith & Smith. (2015) explored the work-life balance views of prospective accountants and other business professionals by examining factors that are associated with individual interest in achieving work-life balance. The authors found that future accountants and business professionals place high value on work-life balance. In terms of spirituality, more religious persons expressed greater concern about work-life balance than less religious persons. Smith, Smith & Brower (2016) compared the perspectives of accounting practitioners with those of future accountants. They found that current and future accountants believe that a healthy work-life balance has a positive impact on their job satisfaction, job performance, and ethical decision-making.

The coverage of ethics is typically achieved through integration. Massey & Van Hise (2009a) cite evidence from Woo (2003) that 90% of AACSB business schools integrate ethics into other courses. The main concern with integration in a course not dedicated solely to ethics is the superficial treatment of the subject, which can result in it being overlooked or insufficiently covered. In a standard accounting course, such as audit, in which ethics is often incorporated as a single unit, students may only be exposed to a few hours of ethics material during the semester (Madison, 2001; Blanthorne et al., 2007). Even courses that continuously make connections to ethics material throughout the semester do not solely focus on ethics, and thus limit the time spent on the subject. Mastracchio, Jimenez-Angueira & Toth (2015) note that "without a separate ethics course, the integration of ethics in other courses to the extent that it is equivalent to a three–credit hour separate course seems doubtful" (p. 51). To ensure maximum ethics coverage, accounting curricula should include both a stand-alone course and integration of ethics in accounting courses.

The challenges of teaching ethics have been well documented in the accounting literature. One major concern is who should teach a stand-alone course. The prospect of teaching ethics may seem daunting to an accounting professor. Ethics is a complex subject that includes moral reasoning and moral development, which is very distinct from the technical subject of accounting. Research suggests that that the lack of ethics integrated in accounting courses may be due to the inadequacy of accounting faculty to teach ethics (Owens, 1983; Massey & Van Hise, 2009a). An accounting professor may be comfortable focusing on the professional standards and ethical challenges accounting students may face in their careers but may be challenged to impart the appropriate reasoning tools needed to successfully navigate an ethical dilemma. On the other hand, a non-accounting professor, such as a philosopher, may be able to teach the reasoning skills needed for moral decision-making, but may struggle to discuss the professional judgment accountants face in the profession. A viable technique to alleviate this challenge is the team-teaching approach (Loeb & Ostas, 2000; Williams & Elson, 2010). This approach would ensure students are exposed to not only ethical situations accountants face in the profession but also develop the reasoning skills needed to address them. Team teaching, however, may be costly for schools to implement.

In the past, the most significant challenges facing faculty who include ethics in their courses were the lack of time and adequate ethics materials (McNair and Milam, 1993). Resources for accounting professors who want to teach ethical reasoning in a stand-alone ethics course were previously limited (Gaa and Thorne, 2004). However, calls by accounting

organizations for more ethics in accounting, post scandals of the early 2000s, led to an increase in published research on this topic. A plethora of research evolved that provided resources, such as frameworks, teaching approaches, cases, and syllabi to develop proposed ethics courses based on the accounting literature (Dellaportas, 2006; Bean & Bernardi, 2007; Massey & Van Hise, 2009a; Williams & Elson, 2010a; Graham, 2012; Kidwell et al, 2012; Apostolou et al., 2013; Graham et al. 2014; Blanthorne, 2017). Studies have also summarized decades of accounting ethics research and provided a depository for ethics materials (Bernardi & Bean, 2006; Apostolou et al., 2013; Uysal, 2010).

In a more recent paper, Chawla, Khan, Jackson & Gray (2015) outline a conceptual "Ethics in Accounting" course, which would fulfill the need for a stand-alone ethics course for graduate students. The authors argue that developing ethical reasoning skills require a different pedagogical approach than what is used in traditional accounting courses. To elevate the burden on faculty members to develop a new stand-alone ethics course, they propose an outline of an accounting-specific ethics course, including course objectives, goals of class discussions, case analytics, and ethical theory research. Smith, Smith & Mulig (2005) used a multimedia presentation to introduce ethics to accounting and business classes. They found that students agreed that the multimedia presentation contributed to their learning experience on the subject matter. In addition, student perceptions following the presentation showed a higher regard for the importance of ethics. These resources are valuable in developing a foundation for ethical decision making.

Studies have also considered the best platforms and audiences for teaching a stand-alone ethics course in accounting curricula. Todd et al. (2017) weighed the effectiveness of traditional face-to-face courses compared to online courses, and proposed ethics is best taught through a hybrid method. Armstrong (1993) advocated for the 'sandwich approach' to teaching ethics. Students would take an introduction to ethics class early in the curriculum, followed by an integration of ethics in accounting courses, and end with a comprehensive capstone ethics course. While this would be ideal for maximum coverage of ethics, it is not practical in an already heavily populated accounting curriculum. A graduate course, however, would be ideal since CPA candidates are required to complete 150 hours and it would not require replacement of a course in the undergraduate curriculum. Loeb (1998) suggests that an ethics course near the end of students' program would integrate knowledge from previous accounting courses and work experience, and account for a more meaningful experience. The increase in accounting ethics research has helped to mitigate the long-debated questions surrounding who should teach accounting and should it be a stand-alone course. Resources are available for accounting professors to teach a stand-alone ethics course, and to integrate ethics in other accounting courses. The adoption of a stand-alone ethics graduate course eliminates the challenge of not having adequate space for a stand-alone course in the undergraduate accounting curriculum.

Importance of Ethics Education

Ethics plays a critical role in accounting and accounting plays an important role in society. The importance of ethics has become more apparent in light of reoccurring accounting

scandals. WorldCom, Tyco, and HealthSouth are only a few of the debacles that have shaken the public's confidence in the accounting profession (Lail et al., 2017). Since the advent of accounting in business governance, the purpose of accounting has remained constant – "to provide a test of stewardship or accountability for those trusted with financial resources" (Axtell, Smith & Tervo, 2017). The accounting profession requires public trust and the maintenance of high standards, including ethical leadership. Smith (2003) highlights the importance of ethics by pointing to integrity and professional skepticism as a mainstay of the accounting profession. The author further notes that the future of the accounting profession depends on the ethical leadership of both accounting professionals and accounting educators. Therefore, it is crucial that accountants learn to make ethical decisions in order to obtain the public's trust.

Accounting ethics can be learned in the workplace and the classroom. While the right tone in a workplace can positively influence employees, it is ideal if individuals have an established ethical foundation when they begin their careers. Once individuals start their careers, they will be exposed to ethical implications with 'real' outcomes. With the inclusion of ethics education in academia, students can address ethical dilemmas and related outcomes before having to encounter the realities of negative consequences. Warth (2000) claims accounting firms do not teach ethics in the organization, but instead "rely primarily on colleges to cover the ethics and ethical behavior expected of the profession" (p. 69).

Research has examined the impact of accounting ethics on students' moral and ethical decision-making (Armstrong, 1993; Ponemon, 1993; Dellaportas, 2006; Sorenson et al, 2017). Generally, studies show positive or modestly positive results on the role that ethics plays in improving ethical decision-making. Thomas (2012) reports that after being exposed to ethics in the accounting curriculum, accounting seniors exhibited higher deliberative reasoning and made better ethical decisions than first-year accounting students. In 2007, NASBA approved an exposure draft that required the inclusion of the equivalent of three-semester hours of ethics in the curriculum to sit for the CPA exam. Currently, Texas and Maryland require a stand-alone 3-credit ethics course to sit for the CPA Exam. A study of the accounting ethics education in Texas shows that the effect of the 3-credit hour required ethics course has led to positive results for students (Hurtt & Thomas, 2008). This study provide evidence that ethics education can help develop ethical skills and prepare students for the accounting profession.

Accounting professionals and faculty agree that future accountants need to be better equipped to deal with accounting dilemmas. The process of incorporating ethics education into the accounting curriculum, however, has been challenging. Students must be made aware of institutional structures, individual choices, and how the two are linked. Accountants have the discretion and responsibility of making their own choices but will be influenced by organizational structure and peer pressure (Gaa & Thorne, 2004). Preparation for such ethical dilemmas is crucial for students to obtain before entering the workplace.

RESEARCH & RESULTS

Sample

The AACSB established rigorous standards for qualifying colleges to place an emphasis on ethics in education. Accordingly, the colleges and universities included in the study are those for which the Business and Accounting accreditation has been conferred upon by the AACSB. There are 179 U.S. academic institutions included in the pool that met the qualifying AACSB criteria when the research commenced in fall 2018.   Approximately one-third of these schools were randomly selected for in-depth research. Each of the selected colleges were reviewed for (1) the type of program offered, (2) the learning outcomes and goals for the program, (3) whether the program has a stand-alone ethics course, and if so, (4) whether the course is an elective or required. The data for this study can be found in the appendix (See Appendix A).

The programs included in the sample are five-year or graduate level programs that meet the education requirements for the CPA licensure. Per the AICPA, the education requirement can be met with 150 total semester hours for most states, with 30 of these hours in accounting courses above the introductory level. As such, Master of Business Administration (MBA) programs are only considered eligible for the CPA licensure if they have an accounting concentration (AICPA, 2018). There are five colleges within the selection that do not offer an MBA with an accounting concentration or an accounting focused master's degree (e.g. Master of Accountancy). These exceptions would not assist a CPA candidate and are excluded from consideration for each of the reviewed areas (denoted with * in the appendix). If multiple programs are available at the university that meet these criteria, each program is listed and considered separately. There are 71 programs within the sample schools that meet the above criteria. Table 1 includes the type of programs included in the sample. The largest percentage of programs consists of Master of Accountancy programs (43.7%). The Master of Science in Accounting/Accountancy consists of 28.2%, the Master of Business Administration with an accounting concentration consists of 12.7%, and the Master of Taxation program consists of 7.0% of the total programs. Each of the remaining programs consists of less than 3% of the sample.

Table 1: Descriptive Statistics

Panel A: Type of Graduate Program	n	%
Master of Accountancy	31	43.7
Master of Science in Accounting/Accountancy	20	28.2
MBA (with Accounting Concentration) #	9	12.7
Master of Taxation	5	7.00
Master of Professional Accountancy	2	2.8
Master of Accounting and Information Systems	1	1.4
Integrated Bachelor of Science/Master of Professional Accountancy	1	1.4
Certificate of Advanced Proficiency	1	1.4
Master of Accountancy/Juris Doctor – Dual Degree	1	1.4
Total	**71**	**100%**

#MBA programs without a concentration in accounting are excluded from the sample.

Panel B: Program Specifics	Yes	
	n	%
Ethics Learning Outcomes	32	42.1
Separate Ethics Course	40	52.6
Required Ethics Course	25	32.9

This research is designed to determine if academic institutions emphasize the importance of ethics education in the overall graduate level curriculum and if stand-alone ethics courses have been established at the graduate level. The findings of this study are reported below.

Learning Outcomes

The learning outcomes and goals for each program are reviewed on the graduate level. Ethical learning outcomes and stand-alone ethics courses in undergraduate programs at the selected schools are excluded from this study. For the scope of this paper, only graduate level outcomes are reviewed. These outcomes provide the foundation and direction of the curriculum and indicate the desired goals of the graduate programs. Approximately 42% of the programs include an ethics component as a learning outcome for the program, in varying manners such as ethical behavior or awareness. This illustrates a significant focus of these programs to include ethical behavior and decision-making as a desired learning outcome. Examples of such learning outcomes include an emphasis on "ethical understanding and reasoning abilities," expanding "students' understanding of professional and ethical issues faced by accountants," and recognizing "the importance of professional ethics and integrity to the accounting profession" (Eastern Illinois University, Louisiana Tech University, & Stetson University, 2018).

Other common learning outcomes listed within the programs include, advantageous internship and career placement, opportunities for networking, academic accreditations, assistance with CPA exam preparation, high caliber research prospects, and further professional and communication development. While these outcomes are important and likely to assist students in other aspects of future careers, there is opportunity to include ethics in more programs. One of the first steps in ensuring proper ethics education in accounting programs is for academic institutions to recognize the importance of ethics and place such a goal at the same level of importance as the others listed.

Ethics Course

Next, we review whether the programs in the sample include an ethics course. For purposes of this study, a stand-alone ethics course is one that focuses solely on ethics (e.g. Business Ethics, Accounting Ethics) and not an accounting course that integrates ethics in the curriculum (e.g. Auditing & Attestation). Again, a course of this description may be found at the undergraduate level, but the focus of the study is on graduate level courses designed to assist

CPA candidates with the education requirements. Over one-half, or 53%, of the programs in the study consists of a stand-alone ethics course in the accounting curriculum.

The result that over one-half of the programs in the study includes an ethics course illustrates the growing recognition of ethics education for future accountants. A survey by Armstrong & Mintz (1989) of 137 AACSB-accredited schools, report that only 7.3% schools had a stand-alone ethics course at the graduate level. While there are fewer studies aimed specifically at the graduate level of accounting education, this shows an increase of ethics courses in the graduate level compared to the undergraduate level as well. Another 1989 survey of 145 schools, 70 of which were identified as AACSB accredited, revealed that only 40% of undergraduate programs offered a stand-alone ethics course to accounting majors (Cohen & Pant, 1989). A more recent study of the business schools with the highest rankings, per the Eduniversal ratings, found that only 27% of the studied universities offered a stand-alone business ethics course in their accounting curriculum (Larran Jorge et al., 2015).

Elective vs. Required

Lastly, we investigate whether the stand-alone ethics course is an elective or required course in the graduate program. A stand-alone ethics course in a graduate accounting program reflects a school's recognition of the importance of ethics. It also reveals a high level of commitment by the program to ensure students are exposed to this essential skill and better equipped to address ethical dilemmas in the profession. Of the programs that contain a stand-alone course, approximately 63% offer it as required course. Overall, 33% of the total programs in the study have a required stand-alone ethics course, ensuring that the future accountants are exposed to a class dedicated solely to ethical behavior and awareness. This further represents an increase in ethics courses in graduate level programs.

CONCLUSION AND OPPORTUNITIES FOR FUTURE RESEARCH

Accounting plays an important role in society and ethics plays an important role in accounting. As gatekeepers of the financial markets, accounting professionals are held to a high level of integrity and ethics. The public must be able to rely on the work and financial reporting of accounting professionals. When unethical behavior occurs in the accounting profession, the public's trust of the profession is severely threatened. As such, accounting scandals over the decades have raised public awareness and concern about the ethical climate of the accounting profession.

To improve ethics in the accounting profession, academia must restore and strengthen ethics courses in business school programs (Alder, 2002). It is the responsibility of accounting programs to ensure students are prepared for the profession. This includes students not only being aware of ethical dilemmas but also having the ethical reasoning skills to address them. A separate stand-alone course which focuses solely on ethics will ensure ethics is a priority and this mandate is achieved.

While there is consensus that ethics should be an integral part of the accounting curriculum, inclusion of a separate ethics course has been slow. Calls by organizations, such as the American Institute of Certified Public Accountants (AICPA), the American Accounting Association (AAA), the Accounting Education Change Commission (AECC), and the National Commission on Fraudulent Financial Reporting (NCFFR) over the decades have led to an increased coverage of ethics in the accounting literature. This body of research, which includes research findings, teaching approaches, course materials, proposed courses and other resources, has helped to mitigate some of the challenges of implementing a separate ethics course, such as who will teach the course and how should the course be taught. Another barrier, the lack of room in an overly filled undergraduate accounting curriculum, is eradicated by the 150-hour rule for CPA licensure. With more CPA candidates enrolling in 5-year or graduate accounting programs to meet the educational requirements, a graduate program is ideal for a stand-alone ethics course.

The purpose of this study is to investigate whether ethical coverage has increased in graduate accounting programs. Our findings reveal that approximately 53% of the accounting programs in our sample have a stand-alone ethics course, and of those programs, the stand-alone course is required in 63% of them. These findings represent an increase in ethics in accounting graduate programs. However, there is still a strong need for more stand-alone ethics courses in accounting programs. Accountants face challenging circumstances and decisions that require the use of moral and ethical standards. When these standards are not met, the outcomes can have far reaching effects (Kelly, 2017). Thus, it is pertinent that "ethics should have a more prominent role in accounting curricula and professional education" (Mastracchio et al, 2015, p. 49) to ensure a strong profession.

There has been a dramatic increase in ethics research over the decades but many opportunities for further research still exists. The current research outlined in this paper was limited to the determination of the existence of stand-alone ethics courses in AACSB accredited universities. The study does not include an analysis of the content or the syllabus for each of these courses to determine the specific topics covered. Further research could include an in-depth review of the course contents of the previously mentioned ethics courses to determine how they are being implemented, and possibly the quality of the courses offered. Other accreditation bodies, aside from AACSB, may require the inclusion of ethics in the curriculum, which provides opportunity to compare the implementation of stand-alone ethics courses across differing accreditation standards.

While performing this research, a possible connection arose between ethics education and religious influence. The religiously affiliated institutions that were included in the study listed ethics-related learning outcomes for the respective accounting programs. There were only four included in the randomly selected list of schools to research, but all four appear to recognize the importance of ethics in education (Baylor University, Creighton University, Marquette University, and Saint Louis University). These institutions also all offered stand-alone ethics courses, which are required for all accounting graduate degrees except the MBA program at Saint Louis. Further study could be performed to determine the existence of a link between the

religious affiliation of the institution and the encouragement of ethics education within the programs.

Appendix A: List of Schools included in the sample

#	School Name	State	Program Type[1]	Ethic Learning Outcome[2]	Ethic Learning Outcome-Details[3]	Separate Accounting Ethics Course	Course Required vs. Elective
1.	Auburn University at Montgomery	AL	M.Acc.	No	-	No	-
2.	Baylor University [4]	TX	M.Acc. M. Tax.	Yes Yes	Yes Yes	Yes Yes	Required Required
3.	Binghamton University, State University of New York	NY	MS Accounting	No	-	Yes	Required
4.	Bradley University	IL	MS Accounting	No	-	No	-
5.	Case Western Reserve University	OH	M.Acc.	No	-	No	-
6.	Cleveland State University	OH	M.Acc.	No	-	No	-

[1] *Key for Program Abbreviations*

[2] *Per the AICPA Website, an MBA must have an accounting concentration to count for the education requirement. MBA** are not included in the ethics course consideration, and ethics courses for these programs are denoted as Yes**

[3] *Ethical component (e.g., behavior, awareness) included as part of program goal per website*

	University	State	Degree				
7.	**Creighton University** [4]	NE	M.Acc.	Yes	Yes	Yes	Required
8.	**Eastern Illinois University**	IL	MBA*	Yes	Yes	No	-
9.	**George Mason University**	VA	MS Accounting	Yes	Yes	Yes	Elective
10.	**Georgia State University**	GA	MBA* MPA	No No	-	No No	- -
11.	**Hofstra University**	NY	MBA* MS Accounting	Yes	Yes	Yes	Required
12.	**Illinois State University**	IL	Integrated B.S./MPA MS Accounting	No No	-	Yes No	Required -
13.	**James Madison University**	VA	MS Accounting	No	-	No	-
14.	**Kennesaw State University**	GA	M.Acc.	No	-	No	-
15.	**Louisiana Tech University**	LA	M.Acc.	Yes	Yes	No	-
16.	**Marquette University** [4]	WI	MS Accounting	Yes	Yes	Yes	Required
17.	**Michigan State University**	MI	MS Accounting	No	-	No	-
18.	**Missouri State University**	MO	M.Acc.	Yes	Yes	No	-
19.	**Nicholls State University**	LA	MBA**	Yes*	Yes	Yes*	Required
20.	**Northern Illinois University**	IL	M.Tax. M.Acc.	Yes	Yes	No	- -

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[4] *Religiously-affiliated universities*

No.	University	State	Program				
			MS Accounting	Yes		No	-
21.	Ohio University	OH	MBA* M.Acc.	No No	-	No Yes	- Required
22.	Oregon State University	OR	MBA**	Yes*	Yes	Yes*	Required*
23.	Quinnipiac University	CT	MS Accounting	No	-	Yes	Required
24.	Saint Louis University [4]	MO	MBA* M.Acc	Yes Yes	Yes	Yes Yes	Elective Required
25.	Santa Clara University	CA	CAAP*	No	-	No	-
26.	Southern Illinois University Carbondale	IL	M.Acc.	No	-	Yes	Required
27.	Stetson University	FL	M.Acc.	Yes	Yes	No	-
28.	Texas A & M University	TX	MS Accounting	No	-	Yes	Required
29.	Texas State University	TX	M.Acc. MS Accounting	Yes	Yes	Yes	Required Elective
30.	Truman State University	MO	M.Acc.	Yes	Yes	No	-
31.	The University of Akron	OH	MS Accounting M.Tax.	Yes Yes	Yes	No Yes	- Required
32.	University of Alaska Fairbanks	AK	MBA**	Yes*	Yes	Yes*	Required
33.	University of Central Florida	FL	MS Accounting	No	-	Yes	Required
34.	University of Connecticut	CT	MS Accounting	No	-	Yes	Elective
35.	University of Denver	CO	MBA* M.Acc.	Yes Yes	Yes	Yes	Required Elective

#	University	State	Program				
				s		Yes	
36.	University of Houston	TX	MS Accounting	Yes	Yes	Yes	Required
37.	University of Illinois at Chicago	IL	MBA* / MS Accounting	No / No	-	Yes / Yes	Elective
38.	University of Kansas	KS	M.Acc.	No	-	No	-
39.	University of Louisiana at Monroe	LA	MBA**	No	-	No	-
40.	The University of Memphis	TN	MS Accounting	No	-	Yes	Elective
41.	University of Missouri	MO	M.Acc.	No	-	Yes	Elective
42.	University of Nebraska at Omaha	NE	M.Acc.	No	-	No	-
43.	University of Nevada, Reno	NV	MBA* / M.Acc.	Yes / Yes	Yes	Yes / Yes	Elective / Required
44.	University of North Carolina at Charlotte	NC	M.Acc.	No	-	No	-
45.	University of North Texas	TX	MS Accounting	No	-	Yes	Required
46.	University of Oklahoma	OK	M.Acc.	No	-	Yes	Required
47.	University of Richmond	VA	MBA**	No	-	Yes*	Required*
48.	University of South Carolina	SC	M.Acc. / M.Acc/JD-Dual	Yes / Yes	Yes	No / No	- / -
49.	University of Southern California	CA	M.Acc. / M.Tax.	Yes / Yes	Yes	Yes / Ye	Required / Required

						s	
50.	University of Tennessee at Chattanooga	TN	M.Acc.	No	-	Yes	Elective
51.	The University of Texas at Austin	TX	MBA* MPA	No No	- -	No No	- -
52.	The University of Texas at San Antonio	TX	M.Acc.	No	-	Yes	Required
53.	University of Virginia-McIntire	VA	MS Accounting	No	-	Yes	Elective
54.	University of Wisconsin-Madison	WI	M.Acc.	Yes	Yes	No	-
55.	Valdosta State University	GA	M.Acc.	No	-	No	-
56.	Virginia Polytechnic Institute and State University	VA	MACIS	No	-	Yes	Elective
57.	Weber State University	UT	M.Acc. M.Tax.	No No	-	Yes Yes	Elective Elective
58.	Western Kentucky University	KY	M.Acc.	No	-	No	-
59.	Wright State University	OH	M.Acc.	Yes	Yes	Yes	Required

Program:	Program Name:	Number of Programs:
M.Acc.	Master of Accountancy	31
MS Accounting	Master of Science in Accounting/Accountancy	20
MBA*	Master of Business Administration (with Accounting Concentration)	9
M.Tax.	Master of Taxation	5
MPA	Master of Professional Accountancy	2

MACIS	Master of Accounting and Information Systems	1
Integrated B.S./MPA	Integrated Bachelor of Science/Master of Professional Accountancy	1
CAAP*	Certificate of Advanced Accounting Proficiency	1
M.Acc/JD – Dual	Masters of Accountancy/Juris Doctor – Dual Degree	1
MBA**	Master of Business Administration (Without Accounting Concentration)	5
Total Programs		76

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INVESTIGATION OF THE RELATIONSHIPS BETWEEN A PUBLIC COMPANY'S FINANCIAL FACTORS AND ITS STOCK PRICE: AN EMPIRICAL STUDY

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ABSTRACT

This study investigates the relationships between financial factors of a company and its stock price. The financial factors for the study were long-term debt divided by total assets (LTD/TA), total debt divided by total assets (leverage), cash and short-term investments divided by total assets (CI/TA), cash and short-term investments divided by current assets (CI/CA), return on assets (ROA), return on equity per share (ROE-S), and return on equity (ROE).

Results indicated that not many financial factors were related to stock price. The financial factors that related significantly to price, as a percent of the 49 companies analyzed, were the following: LTD/TA (10.2%), ROE (8.2%), ROA (2%), lag of CI/CA (4.1%), leverage (4.1%), CI/CA (6.1%), CI/TA (6.1%), ROE-S (6.1%), lag of LTD/TA (2%), lag of leverage (4.1%), and lag CI/TA (2%). Based on these results, it does not appear that a company's financial factors are influential since they do not relate substantially to the stock price. Investors did not appear to depend substantially on a company's financial data when investing in the company.

INTRODUCTION

Of importance for market investment is to determine which financial data of a company can be used as predictors of the company's stock returns. Public companies are required by the US Securities and Exchange Commission (SEC) to file annually the 10-K report, which documents companies' audited financial data. This information is supposed to be for the benefit of investors so they can make wise decisions about their investments. The 10-K report is complex, and it is not clear how much investors depend on it for their investments. There is evidence showing that individual investors rely more on publicly available signals than on financial data in making their investments (Barber & Odean, 2008; Earl, 1972). Studies in the literature, examining the impact of financial factors on stock returns, have used the so-called panel regression. Data are collected for different companies over time. The regression model includes independent variables (financial factors) observed over companies and time. As such, one does not have information about the significance of an independent variable for any particular company, but only overall companies. Also, the multiple regression analysis does not correct for multi-collinearity or autocorrelation of errors, which is common for time series data. Multi-collinearity is known to give inaccurate estimates of the regression coefficients, and estimates can have the wrong sign. Autocorrelation is known to give spurious regression results where estimates appear significant when, in reality, they are not (Montgomery et al., 2001; Granger & Newbold, 1974).

For investment purposes, an investor would like to know about the financial factors that have an effect on stock returns for a specific company. Therefore, it is more informative to determine the relationship between financial factors and stock returns for each company separately using regression techniques corrected for multi-collinearity and autocorrelation. As such, the final regression model chosen per company will be one where the independent variables are not linearly dependent, and the errors are independent and not correlated. In this analysis, we utilize the above statistical approach to determine which company's financial factors may be related to the stock price of the company. This information can be used to predict the stock price movement of a company based on its financial data.

LITERATURE REVIEW

Ur Rehman and Gul (2017), using panel regression, investigated the effect of certain financial factors on stock returns in the Pakistani equity market. The quarterly data were from June 1999 to December 2007 and from June 2009 to December 2015. An analysis was done on the pre-financial and post-financial crisis periods. The factors investigated were firm size, earnings growth rate, institutional earnings ratio, trading volume, book-to-market ratio, and momentum. The size of a firm was measured as the natural log of market price per share multiplied by the number of common shares outstanding at the end of each quarter. Trading volume was measured as the natural log of the number of common shares traded. Institutional ownership ratio was measured as the number of shares held by investors divided by the total number of common shares outstanding. The earnings growth rate was measured as the ratio of the current quarter's net income to the previous quarter's net income. Momentum was measured as winners' minus losers' firm stock returns. Book value per share was measured as the total assets minus total liabilities and preferred equity divided by the total number of common shares outstanding. Results indicated that momentum and earnings growth affected stock returns in the pre-financial crisis of 2008.

In the post-financial period, the variables that affected stock price were momentum, earnings growth rate, institutional ownership, and trading volume. For the whole sampling period, momentum, earnings growth rate, and size were significantly related to stock returns. The R^2 value was about 0.67 when including all the variables (significant and not significant in the model). The result implied that R^2 was less for the significant variables that were predictors of the stock price. As a result, it was likely that the significant variables were not good predictors of stock returns. The findings indicated there were other variables of importance not included in the data set.

Aras and Yilmaz (2008), using multiple regression analysis, investigated the relationships between stock returns in 12 emerging markets and a price-earnings ratio, dividend yield, and market-to-book ratio for the period 1997-2003. The most important predictors were the market-to-book ratio and the dividend yield. The price to earnings ratio was least significant in its relationship with stock returns and played a minor role in predicting stock returns.

Cordis (2014), using multiple linear regression, reported on the effect of accounting ratios on the monthly stock returns of US firms. Empirical results revealed that the log accounting ratios were predictors of the conditional mean and conditional variance of the log stock returns. The accounting ratios used were book-to-market ratio, dividend-price ratio, and return on equity.

Lai and Kwai-yee (2016) investigated the relationships between stock returns and price-to-sales ratio, market-to-book ratio, earning per share, dividend yield, and firm size. The

independent variables were the five factors, using factor analysis, extracted from 20 financial ratios for 17 firms on the Hong Kong Stock Market. Results from the multiple regression analysis over time showed that the market-to-book ratio, dividend yield, and firm size had significant positive relationships with stock returns. Price-to-sales ratio and earnings per share were not significantly related to stock returns. The authors concluded that their research proved to be inconclusive in the sense that it was not possible to say for certain which ratio was best for predicting stock returns and which was the most useful for investors.

Vedd and Yassinski (2015) empirically studied the effect of financial ratios on stock prices in stock markets in Latin America. The financial data were over the period 2004 to 2013 and included 345 from Brazil, 191 from Chile, 129 from Mexico, and 49 from Colombia. The companies belonged to 10 industry sectors. Using panel multiple regression analysis, the authors found that assets, turnover ratio, and firm size had significant effects on stock prices in companies from Brazil, Chile, and Mexico. In addition, the debt ratio had a significant effect on stock prices in companies from Colombia.

Song (2018) reported on how investor attention to a company's accounting information influenced the pricing of its stock. The focus was on individual retail investors rather than institutional investors. The author used Google Trends Daily Search Volume Index (SVI), over the period 2004 - 2016, to determine investor attention to the firm's accounting information (such as financial reports and earnings) and non- accounting information (such as price trends). Results showed that the three-day stock returns around quarterly earnings announcements were stronger with greater investor attention to accounting information. It was estimated that a one standard deviation increase in investor attention to accounting information was associated with a 31.2% stronger return.

Kheradya et al. (2011) investigated the effects of dividend yield, earnings yield, and book-to-market ratio on stock returns in the Malaysian stock exchange for the period of January 2000- December 2009. Using multiple regression analysis, the authors showed that all three variables were significantly positively related to stock return. The most significant predictor of stock returns was the book-to-market ratio. However, the adjusted R^2 for the model was too low (<.03), indicating that the independent variables did not explain much of the variability in the dependent variable, and other variables of importance were not included in the model.

Hamza and Jaradat (2018) investigated the effect of changes in cash flow statements on stock returns in 13 commercial banks listed on the Amman stock exchange for the period 2009-2015. The dependent variable in the multiple regression analysis was stock returns, and the independent variables were changed in combined activities of cash flows, change in operating cash flow, change in investing cash flow, and change in financing cash flow. The control variables used were bank size, bank performance, and bank financial leverage. Regression analysis results showed that change in operating cash flow and change in cash flows from investing activities had a positive and significant effect on stock returns. Also, the control variables had a significant impact on stock returns.

Enow and Brijlal (2016) examined factors that affected stock returns utilizing 14 companies listed on the Johannesburg stock exchange for the period 2009- 2013. Results of the least-squares multiple regression analysis revealed that dividends per share, earnings per share, and price-earnings ratio explained 57.8% of the variation in stock prices, which meant other important financial factors were not included in the data set. Earnings per share and price-earnings ratio were significantly positively related to stock returns, while dividend per share was not.

In an article by Earl (1972), the author discussed some reasons why stock prices move up or down. He stated that if investors buy more than sell a certain stock, then the stock price would rise. In addition, if they sell more than they buy, then the stock price would fall. To discern the reason for price movement, one has to examine human motivation, not company financial results, nor economic or political situations, which may or may not affect stock returns. Of influence on stock prices are tips that circulate among investors regarding whether a share is going to rise or fall. As a result, price rise or fall tends to be self -reinforcing. The author further asserted that a disparity between share performance and the company's financial results could be explained as being caused by portfolio saturation, given the need to maintain portfolio diversification and balance. The author summarized his argument with the statement: "the facts which determine stock market prices are not just those of the commercial and industrial world but also those of the stock market microcosm, in which elements as disparate as the gambling urge and ideal portfolio distribution combine."

Chughtai et al. (2014) investigated the relationship between financial factors and stock returns, utilizing 99 companies listed on the Karachi **Stock** Exchange for the period 2006-2011. Results of the panel regression analysis showed that stock price was significantly positively related to dividend per share and earning per share.

Using panel regression on 95 companies listed on NSE 100 for the period 2007-2012, Malhotra and Tandon (2013) showed that the firm's book value, earning per share, and price-earnings ratio had a significant positive relationship with firm's stock price. On the other hand, the dividend yield was negatively associated with the stock price. These four independent variables explained 51.6% of the variability in stock price.

Shafana et al. (2013) examined the effect of firm size and book-to-market ratio on stock price in 12 companies (financial and non-financial) listed on the Colombo Stock Exchange in Sri Lanka. The period of the study was from 2005 to 2010. Results of the panel multiple regression analysis showed that firm size had no significant effect on the stock price. In contrast, book-to market-ratio had a significant negative effect on the stock price. These regression results were true for all firms as well as for the financial and non-financial firms. The coefficient of determination (R^2) was less than 36%, which indicated that the model did not have an adequate predictive ability. The low R^2 was an indication that there were other important predictor financial variables that were not included in the model.

Ping-fu and Kwai-yee (2016) investigated the effect of financial ratios on stock returns using 17 firms on the Hong Kong Stock Exchange for the period 2008-2012. Financial ratios used as independent variables in the multiple regression analysis were price-to-sales ratio, market-to-book ratio, earning per share, dividend yield, and firm size. Results of the multiple regression analysis with stock returns as the dependent variable showed that market-to-book ratio, dividend yield, and firm size had significant positive relationships with stock returns.

Ligocká (2019) investigated the effect of selected financial ratios on the stock prices of energy, food, chemical, and metallurgical companies on the Polish Stock Exchange over the period 2006-2015. Results of a panel regression analysis showed that for the energy companies, return on equity, financial leverage, and equity ratio were significantly negatively related to the stock price. The debt ratio was significantly positively related to price. For the food companies, the panel regression revealed that return on assets and financial leverage were significantly negatively related to stock price. Return on equity and L2 (defined as current assets - inventory divided by short- term liabilities) were significantly positively related to price. Results for the metallurgical companies indicated that return on assets and L2 were negatively related to stock

price. Return on equities, financial leverage, and the equity ratio were positively related to price. In the case of the chemical companies, none of the financial ratios was significantly related to stock price.

In a similar study about the Vienna Stock Exchange, Ligocká (2018a) reported results showed no significant relationship between selected financial ratios and stock prices. The data used in the analysis represented five financial institutions over the period 2005-2015. The financial ratios were current assets divided by current liabilities; net income divided by total assets; net income divided by equity capital, and total assets in billion EUR. Possible reasons for the lack of a significant impact of the financial ratios on stock price were given as being due perhaps to investors using other ratios or were basing their decisions on macroeconomic factors. Also, perhaps investors' psychology was playing a more important role in investment decisions than financial information.

Berglund and Bergman (2013) investigated the relationship between selected financial ratios and quarterly stock returns of Swedish listed firms over the period 1998-2012. The ratios studied were price-earnings, dividend yield, earnings per share, debt to equity, and market to book. Results of the regression analysis on each firm showed that most firms did not show a significant impact on the financial ratios on stock returns. The most frequent significant ratio was market-to-book with a frequency of 38% of being significant on Large Cap Stocks and 35% on Small Cap stocks.

Pražák (2020) investigated the impact of microeconomic factors on stock prices of 29 selected Swiss companies listed on the Six Swiss Exchange. The dataset was composed of annual data over the period 2006 to 2015. The study utilized a panel regression analysis. The independent variables chosen were debt to equity ratio (DE), the ratio between cash and short-term liabilities, the ratio between the swift current assets and short-term liabilities, and return on assets (ROA). Results showed that all independent variables were significantly related to price. The ratio between cash and short-term liabilities and ROA was positively related to price. On the other hand, DE and the ratio between the swift current assets and short-term liabilities were negatively related to price.

Ligocká (2018b) investigated the relationship between financial ratios and the stock price of selected companies listed on the Polish Stock Exchange and the Prague Stock Exchange. The data set was semi-annual over the period 2006-2017. The financial ratios considered are the return on assets, return on equity, earnings after tax divided by total assets, current assets divided by short-term liabilities, liabilities divided by total assets, own capital divided by total assets, total assets divided by shareholders' equity, and liabilities divided by total assets.

The long-term relationships between stock price and the financial ratios were analyzed using the Johansen co-integration test. The existence of a short-term relationship was determined using the Vector Error Correction Model (VECM). Results indicated that there were only sporadic relationships between stock price and financial ratios at the company level. The conclusion was that investors were not relying on companies' financial information in making their investment decisions.

Stejskalová (2019) reported on the effect of investor attention on stock returns. The author reported a strong link between online searches and stock returns and the Dow Jones Industrial Average. There was also evidence that investors' attention became significant during the financial crisis. Of interest was the finding that not only online searches for companies' names, but also searches for companies' financial indicators were positively associated with changes in stock returns.

Sharma et al. (2012) studied the effect of financial variables on stock returns for 71 companies listed on the CNX 100 stock index in India. The data set was annual for the period 2000 – 2008. The authors used the regression analysis of overall companies. The dependent variable was the ratio of market share price to its book value. The independent variables were returned on the net-worth and cash flow from operations, cash flow from investment, and profit after tax. Results showed that only return on net-worth was significantly related to the dependent variable. The authors concluded that Indian investors do not rely on the fundamental financial information of companies for investment decisions. In a similar study, Shreyes and Gowda (2018) investigated the effects of dividend, book value, and earnings on the share price in 125 companies from BSE 500 on the Indian market for the period 2000-2012. The study utilized regression of overall companies. Results indicated that dividend, book value, and earnings affected share price.

METHODS
DATA

Fifty US companies over the years 1998 to 2017 were selected, based on having complete quarterly financial data, from a Compustat file utilizing the Wharton Research Data Services (WRDS) database. Also, from WRDS, we obtained for each company its quarterly stock price over the same years. From the 50 companies, one company did not have complete data on its stock price.

Statistical analysis

Regression techniques, correcting for autocorrelation and multi-collinearity, were used in the analysis. For each company, we regressed its stock price on financial factors and their first lags as well as the first lag of stock price using multiple regression:

$$P_t = a + b_1 P_{t-1} + b_2 X_{1t} + b_3 X_{1t-1} + \ldots\ldots + b_{2k} X_{kt} + b_{2k+1} X_{kt-1} + \eta_t \qquad (1)$$

Where P_t is the stock price at time t and P_{t-1} its lag at time t-1, The X's are the independent financial factors and their lags, and η_t denotes the residuals. It is advisable to include lags in regression on time series data where the errors usually exhibit the first-order autocorrelation. The financial factors used as independent variables are listed in Table 1. The interest was in determining which factors affected the stock price.

In running a regression analysis, one needs to examine multi-collinearity and serial correlation of error. It is known that multi-collinearity among the independent variables in regression gives inaccurate estimates of the partial regression coefficients and can give estimates with the wrong sign. Also, a serial correlation on time series data can give spurious regression results, where parameter estimates are declared significant when, in reality, they are not (Montgomery et al., 2001; Granger & Newbold, 1974).

Regression with auto-correlated errors

The residuals in regression on non-stationary time series are often positively autocorrelated and can render the F test for model significance invalid, which can give rise to spurious regression (Granger and Newbold (1974)). A Durbin-Watson Statistic of less than 2 indicates positive autocorrelation. The authors' recommendations to address the situation are: to include a lagged dependent variable, to take the first-differences of the variables in the regression, or to model the error term by a first-order autoregressive process.

In this study, price, using the Dickey-Fuller and the Phillips-Perron unit root tests, was non-stationary for 41 companies and stationary for eight companies. The non-stationary price was mainly a random walk. Based on the above recommendations, we included in this analysis a lagged dependent variable and used the auto-regression procedure, which assumes, based on the Durbin-Watson statistic, a first-order stationary autoregressive form for the residuals, AR(1).

Hence, η_t in Equation (1) may be expressed as

$\eta_t = \emptyset\eta_{t-1} + e$

or

$\eta_t = e \,/\, (1- \emptyset B).$

Here, B is the backshift operator, and e represents independent random errors

Replacing η_t in Equation (1) with its value above gives a regression equation with lags, where the errors are independent.

In this analysis, when autocorrelation was present, it was positive (Durbin-Watson statistic less than 2). However, the autocorrelation was not substantial since the Durbin-Watson statistic was close to 2, the value for no autocorrelation, and could be attributed to the inclusion of lags in the regression.

Multi-collinearity

Multi-collinearity exists when there are linear dependencies among the independent variables. Multi-collinearity for each independent variable is measured by the variance inflation factor (VIF).
The variance inflation factor for variable X_i is expressed as

$VIF_i = 1/(1-R^2_i).$ (2)

Here R^2_i = the coefficient of determination when X_i is regressed, as a dependent variable, on the other independent variables.

Independent variables that had VIF's equal or larger than five were eliminated from the set of variables. For the remaining subset of independent variables, if the errors showed autocorrelation (using the Durbin-Watson test), we used the autocorrelation procedure in SAS, which estimates the regression coefficients using maximum likelihood when an autoregressive (AR(1)) process models the error term, as indicated above. The backward elimination procedure was used so that only significant independent variables remained in the final regression model. On the other hand, if the errors were not autocorrelated, we used the least-squares estimation with the recommended stepwise procedure. Stepwise is a variable selection procedure where independent variables are entered into the regression model one at a time. An independent variable is entered into the model if it is significant at a certain lever (0.25 was chosen for this analysis). When a new variable enters the model, the variable that was entered a step before

remains in the model only if it is significant at the 5% level. The final model has only significant variables (Montgomery et al. 2001). Table 2 presents the regression models resulting from the regression analyses for each company.

Table 1
List of Independent Variables Used in the Regression Analyses Where a Company's Stock Price is the Dependent Variable

ROE	Return on equity
ROA	Return on assets
ROE-S	Return on equity per share
Lprice	First lag (lag 1) of stock price
LTD/TA	Long term debt divided by total assets
Leverage	Total debt divided by total assets
CI/TA	Cash and short term investment divided by total assets
CI/CA	Cash and short term investment divided by current assets
LROA	First lag (lag 1) of return on assets
LROE-S	First lag (lag1) of return on equity per share
LROE	First lag (Lag 1) of return on equity
Lag- LTD/TA	First lag (Lag 1) of LTD/TA
Lag-Leverage	First lag (Lag 1) of Leverage
Lag-CI/TA	First lag (Lag 1) of CI/TA
Lag-CI/CA	First lag (Lag 1) of CI/CA

Table 2
Regressions of Stock Price on Financial Factors, as Independent Variables, for Different Companies on the US Stock Market

Company	Intercept	Lprice	LTD/TA	Leverage	CI/TA	CI/CA	LTD/ TA lag
1-800-FLOWERS.COM, INC.	0.975	0.879					
Abbott	8.44	0.829					
ABM	1.93	0.868	-14.77				
1st source	1.99	0.929					
Bank of America	1.73	.686					
Bristol-Myers	3.24	.912					
Caterpillar	57.98	.834		-87.04			
Chase	-.621	.944			45.4		
Community health	2.89	.838					
Diamond drilling	5.86	.786					
DTE Energy	-.111	1.02					
Edwards life sciences	8.04	.641			90.0		
Eli Lilli	3.85	.943					
First Energy	15.78	.879					
Fiserv Inc.	6.38	.894					
G&K Services	-.092	1.03					
GAP Inc	3.65	.582					
Hain Celestial	2.44	.928					
Halliburton	8.80	.769					
Harris Corp	1.57	.993					

Hershey	2.76	.926				19.20	
I.D.Systems	3.15	.732					
ICU Medical	-2.19	1.09					
J.B.Hunt	1.69	.982					
J.C. Penny	.199	.818				17.05	
Jewett-Cameron	2.50	.312					
Kellog	2.70	.951					
Kewaunee Scientific	3.22		-92.87				
L.B. Foster	2.12	.908					
Laboratory Corp	9.71	.895					
M.D.C. Holding	21.41	.825		-38.38			
Manpower Group	18.01	.809	-60.36				
Nanometrics	-.002	.316	-55.24		38.1		
Nanophase	1.09	.807					
Ocean Biochemical	.403	.540				7.65	
Oceaneering International	24.01	.647	-55.51				
Panhandle Oil and Gas	9.26	.608					
Par Technology	1.01	.890					
Quacker Chemicals	-1.17	1.07					
Quanta Service	6.21	.635					
Radisys Corp	.946	.866					
Rambus Inc	6.38	.690					-11.86
Salem Media Group Inc.	.448	.933					
Take-Two Interactive Software	2.95	.992					
Tampa Electric	-3.59	.778					
UGI Corp	4.00	.891					
W.R.Grace & CO	-3.44	.955					
Walt Disney	.685	1.01					
WW Grainger Inc.	4.16	.990					

Table 2 (continued)							
Company	Leverage-lag	CI/TA lag	ROE	ROE-S	ROA	CI/CA lag	R²
1-800-FLOWERS.COM, INC.							.755
Abbott							.617
ABM		250.7					.915
1st source							.843
Bank of America			.903				.914
Bristol-Myers							.847
Caterpillar							.828
Chase							.959
Community health					.433		.800
Diamond drilling			.353				.875
DTE Energy							.969
Edwards life sciences							.866
Eli Lilli							.809

First Energy	-26.47					.852
Fiserv Inc.						.796
G&K Services						.889
GAP Inc				.249		.762
Hain Celestial						.855
Halliburton						.589
Harris Corp						.920
Hershey						.904
I.D.Systems			.062			.709
ICU Medical						.981
J.B.Hunt						.944
J.C. Penny				.096		.913
Jewett-Cameron						.091
Kellog						.917
Kewaunee Scientific	-59.33				133.6	.478
L.B. Foster						.835
Laboratory Corp						.820
MDC. Holding						.862
Manpower Group						.776
Nanometrics						.713
Nanophase						.59
Ocean Biochemical						.621
Oceaneering International						.778
Panhandle Oil and Gas						.407
Par Technology						.718
Quacker Chemicals						.968
Quanta Service				.516		.713
Radisys Corp						.867
Rambus Inc						.680
Salem Media Group Inc.						.900
Take-Two Interactive Software						.917
Tampa Electric			.760			.740
UGI Corp						.762
W.R.Grace & CO					19.58	.963
Walt Disney						.972
WW Grainger Inc.						.956

RESULTS AND DISCUSSION

For investing purposes, it is important to develop a regression equation for each company, and not overall companies, relating stock price to the independent or predictor variables that are significant. Table 2 presents the regression equation for each of the 49 companies that were investigated. The numbers in each column represent the constants and the partial regression coefficients associated with the independent variables. For instance, the regression equation for the ABM company can be written as:

$$P_t = 1.93 + 0.868\ P_{t-1} - 14.77\ (LTD/TA)_t + 250.7\ (CI/TA)_{t-1} + e \qquad\qquad (3)$$

The R^2 value is 0.915, which means that this regression model explains 91.5% of the total variability in stock price.

It is of interest to note that the first lag of price is present in every regression for all companies. The presence indicates that price at time t-1 significantly positively impacts a company's stock price at time t. What is interesting is that the price lag as an independent variable is the most important predictor of stock price when one considers all the companies. Of the 49 companies, 27 (55%) have the price lag as the only predictor variable in the regression equation.

Of interest is the fact that not many of the financial factors studied had a significant impact on the stock price. It is important to note that where there was a significant impact, it was of the right sign. Long-term debt divided by total assets (LTD/TA) had a significant negative impact on stock price in only 10.2% of the companies. Total debt divided by total assets (leverage) had a significant negative impact on stock price in only 4.1% of the companies. Cash and short time investment divided by total assets (CI/TA) had a positive impact on stock price in only 6.1% of the companies. Also, cash and short term investment divided by the current assets (CI/CA) was significantly positively related to the stock price in 6.1% of the firms. The LTD/TA lag had a negative effect on stock price in only 2% of the companies. Two (4.1%) of the companies showed a significant negative relation between leverage lag and stock price.

The CI/TA lag had a positive impact on stock price in only one company (2%) and the CI/CA lag in only two (4.1%) companies. Returns on equity (ROE), return on equity per share (ROE-S) and return on assets (ROA) had a significant positive impact on stock price in 8.2%, 6.1%, and 2% of the companies, respectively

These results, showing that the company's financial data have little to no substantial impact on its stock price, are in agreement with results reported by Berglund and Bergman (2013) and by Ligocká (2018a, b) for the European stock markets. This lack of significant association between financial data and stock price may mean that investors are not using these financial data in making decisions about investment in stocks. They may be relying instead on macro-financial data in investment decision making or decisions are made, as Earl (1972) points out, based on human motivation and not company financial results nor economic situations. Of influence on stock prices are tips that circulate among investors regarding whether a share is going to rise or fall. As a result, investment in stocks can be psychological and not based on the rational financial determination. It would be of interest to examine the effects of macro-financial variables at the national level to determine if they have more impact on stock prices than the micro-financial data examined in this study.

CONCLUSION

In this study, we investigate the relationship between the stock price of a company and its financial factors. The selected financial factors were long-term debt divided by total assets (LTD/TA), total debt divided by total assets (leverage), cash and short-term investments divided by total assets (CI/TA), cash and short-term investments divided by current assets (CI/CA), return on assets (ROA), return on equity per share (ROE-S), and return on equity (ROE).

Regression techniques, correcting for error autocorrelation and multi-collinearity, were used where the dependent variable was the stock price, and the independent variables were the above financial factors and their first lags as well as the stock price lag.

Results indicated that few financial factors were related to stock price. Out of 49 companies studied, long-term debt divided by total assets (LTD/TA) had a significant negative impact on stock price in 10.2% of the companies. Total debt divided by total assets (leverage) had a significant negative impact on stock price in only 4.1% of the firms. Cash and short time investment divided by total assets (CI/TA) had a positive impact on stock price in only 6.1% of the companies. Also, cash and short term investment divided by the current assets (CI/CA) was significantly positively related to the stock price in only 6.1% of the firms. The LTD/TA lag had a negative effect on stock price in only 2% of the companies. Two (4.1%) of the companies showed a significant negative relationship between the leverage lag and stock price.

The lag of CI/TA had a positive impact on stock price in only 2% of the firms, and the lag of CI/CA had a positive impact on stock price in only 4% of the firms. Returns on equity (ROE), return on equity per share (ROE-S), and return on assets (ROA) had significant positive impacts on stock price in 8.2%, 6.1%, and 2% of the firms, respectively.

The fact that 10% or less of the companies showed any effect of a financial factor on the stock price indicated that investors did not depend substantially on the financial information of a company when investing in the company's stock. These results are in agreement with some studies in the literature; Earl (1972), Berglund and Bergman (2013), and Ligocká (2018a,b). They point out that when making their investments, investors did not rely on the company's financial data. Perhaps they could be relying more on macro-financial factors at the national level. Another reason, as argued by Earl (1972) and Barber and Odean (2008), could be human motivation or public signals. Of influence on stock prices are tips that circulate among investors regarding whether a share is going to rise or fall. The author argued that a disparity between share performance and the company's financial results could be explained as being caused by portfolio saturation, given the need to maintain portfolio diversification and balance.

In summary, the present study shows clearly that a company's financial data do not relate in a significant way to the stock price of the company. This finding is in agreement with similar studies in the literature, conducted on a company basis. The fact that a company's financial information has no substantial effect on its stock price would indicate that financial information, such as that presented in the 10-K annual report, is not being used by investors. Instead, investors seem to rely on other information to make their investment decisions.

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STRATEGIC COST MANAGEMENT PRACTICES AND ORGANIZATIONAL PERFORMANCE: A STUDY OF MANUFACTURING FIRMS IN NIGERIA

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ABSTRACT

There has been a lot of transformation in the manufacturing industry. The manufacturing processes are highly automated, multiple product mix strategies are employed, and the nature of production cost drivers are complex, production costs have increased and market competition has risen due to market globalization. Therefore, the use of the traditional cost management system, such as standard costing and predetermined overhead allocation system in the Nigerian manufacturing industry has proven to be ineffective in product costing, cost management, and decision making. As a result of these developments, it has become necessary to employ more refined product costing techniques of Strategic Cost Management. Some of the Strategic Cost Management methods are Activity-Based Costing, Target Costing, Life Cycle Costing, Balance Scorecard, and Total Quality Management. The implementation of the Strategic Cost Management system has led to improved product costing analysis and decision-making, production efficiency, and improved firm performance and market competitiveness. This study examines the effect of Strategic Cost Management practices on organizational performance of Nigerian manufacturing industry. A survey research design is employed to collect primary data, which are analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) method. The study reveals that Strategic Cost Management practices positively impact organizations' performance. Therefore, it is recommended that manufacturing firms still using the traditional costing methods should consider employing the Strategic Cost Management methods to enhance their performance and competitiveness.

  Key words: *Activity-based costing, Life cycle costing, Target costing, Organizational Performance, Strategic Cost Management, Production Costing*

INTRODUCTION

The current manufacturing industry in Nigeria is facing some challenges that warrant crucial attention. The sale of goods in Nigerian has faced strong competition from most imported goods, which are cheaper than those manufactured in Nigeria. Correspondingly, the market orientation has changed from seller's market to buyer's market. In addition, the advancement in manufacturing technology has shifted from single product manufacturing model to multiple and product mix production approaches, and the life cycles of modern products have also become shortened (Abdel–Kader and Luther, 2008). Nigerian consumer market is flooded with foreign and domestic products where customers and consumers have options to purchase products at prices that they consider reasonable and affordable. In order to survive and maintain a competitive advantage in this market, manufacturing firms in Nigeria have to adopt cost

reduction and cost management practices that result in improved production, productivity, and profitability, while maintaining product quality (Cheng and Lin, 2018). In their study of responsibility accounting, Mahmud, Anitsal and Anitsal (2018) reveal the important relationship between responsibility centers and cost accounting strategies. The study references that the use of strategic cost management techniques for product costing has impact on the assessment and evaluation of the performance of responsibility centers.

The advancement in manufacturing and information technologies have led to automated manufacturing processes. Consequently, Nigerian manufacturing industry has to adapt to this reality in order to compete in today's market. The manufacturing costs in Nigeria have significantly increased by manufacturing and information technologies. The cost of automation contributes to the increase overhead manufacturing costs. Another challenge facing Nigerian manufacturing firms is the shortage of electric power supply in Nigeria. Because manufacturing firms have to generate their own power supply needed in this highly automated manufacturing environment, the cost of production increases considerably. Thus, due to the changes in the industry, the traditional cost management systems of budgetary control and standard costing are no longer effective because they do not necessarily focus much attention on the impact of customers, competitors and other external environmental factors and they are not amenable to strategically managed manufacturing costs to attain cost reduction (Shuah, Malik and Malik, 2011).

The complexity in overhead costs structure calls for the implementation of in-depth product costing systems for effective allocation of manufacturing overhead costs. The use of Strategic Cost Management methods allows manufacturing firms to manage their production costs strategically to attain cost reduction, profitability, and competitive position in the market. Gilaubicas and Kanapickiene (2015) conclude that manufacturing companies are utilizing more SCM techniques to combat intensified competition. Other studies assert that market competition is one of the external forces responsible for companies' move toward the use of strategic cost management techniques (Kariuki and Kamau, 2016; Ismail, Isa and Mia, 2018). The Strategic Cost Management methods provide information "which is externally orientated, market-driven, and customer-focused" leading to sound decision-making. (Emiaso and Amaechi, 2018). The information required to make decisions in respect to gaining competitive advantage and performance enhancement must be holistic, and must contain both financial and non-financial information (Abdullah and Said, 2016). Hence, Nigerian manufacturing firms need to adopt strategic cost management methods to effectively manage manufacturing costs, be profitable and remain competitive.

Empirical studies on various techniques of Strategic Cost Management (SCM) in Nigeria are scarce. The existing literature mostly focuses on Activity-Based Costing method and firm performance. Hence, there is need for an in-depth study of product costing methods to explore the impact of some of the SCM methods on manufacturing organization's performance (henceforth referred to as Organizational Performance). The purpose of this study is to explore the impact of three of the SCM methods namely Activity-Based Costing (ABC), Target Costing (TC), and Life Cycle Costing (LCC) on Organizational Performance (OP) in Nigerian manufacturing firms.

The remainder of this paper consists of the following sections: literature review, research propositions, methodology, analysis and discussion of results, and conclusion and recommendations.

LITERATURE REVIEW

The traditional absorption and variable costing methods were used in the manufacturing environment where few products were produced, and the direct materials and direct labor costs were the dominant parts of factory costs (Drury, 2012). However, these costing methods fail to produce accurate product cost information in today's automated manufacturing environment. The limitations of the traditional cost methods include 1) the use of a single cost driver, and volume-based cost drivers (e.g. direct labor hour rate or machine hour rate) for cost allocation process (Cooper and Kaplan, 1999), 2) assumption that products or service are the real consumer of resources rather than activities (Blocher, Chen and Lin, 2002), and 3) inability of the methods to appropriately fit the contemporary automated manufacturing setting, where firms produce multiple products or services.

The concept of Strategic Cost Management is defined as "managerial use of cost information explicitly directed at one or more of the four stages of the strategic management cycle: formulating strategies, communication of the strategies throughout the organization, developing and carrying out tactics to implement the strategies, and developing and implementing controls to monitor the success of the objectives" (Shank and Govindarajan, 1989, p. 50). Shank and Govindarajan (1989) further note that the strategic cost management concept is built on three themes, borrowed from strategic management, namely value chain analysis, strategic positioning analysis, and cost driver analysis. Cooper and Slagmulder (1998) opined that strategic cost management is the application of cost management techniques that simultaneously reduce product cost, enhance firm's performance, and improve firm's competitive position in the market place. Strategic Cost Management (SCM) encompasses numerous cost management techniques such as Activity-Based Costing, Target Costing, Life Cycle Costing, Balance Scorecard, Total Quality Management (TQM), Value Chain Analysis, Early Warning Analysis, and Product-Cycle Approach (Stevcevska, et. al, 2020; Emiaso and Amaechi, 2018;; Mateso-Ronco and Mezquida, 2016; Basu, et. al, 2016; Ezugwu and Agu, 2016; Ali, Malo-Alain and Haque, 2015; Adigbole and Oludoyi, 2015; Elhamma and Yifei, 2013; Rattanaphaphtham and Ussahawanitchakit, 2010; Zaman, 2009; Ebben and Johnson, 2005). Although Janjic, Karapaviovic and Damjanovic (2017) report that the impact of strategic cost management techniques are negligible, they acknowledge the potential benefits of the techniques on performance and competition. Cescon, Costantini and Grassetti (2018) conclude Strategic Management Accounting techniques such as strategic pricing, balances scorecard, risk analysis target costing and life-cycle costing have positive association with performance and competitive forces. This study focuses on examining the impact of three of the of the SCM techniques of ABC, TC and LCC on the organizational performance in the Nigerian manufacturing firms.

Activity-Based Costing

The works of Turney (1996) and Cooper and Kaplan (1999) contributed to the development of Activity-Based Costing (ABC) technique in an effort to address the failure of the traditional costing methods, and to generate accurate product cost information. Activity-Based Costing (ABC) is a cost management accounting process that ensures the allocation of manufacturing costs to products based on activities which drive the incurrence of such costs (Krumwiede and Roth, 1997). The key concept of ABC is that manufacturing activities involve the use of resources and that the allocation of the costs should be based on the relevant cost driver of the

activities (Wegmann, (2019). Hence, the elaborate cost allocation process of ABC allows the costs of products to be accurately measured. The main purpose of ABC, as noted by Turney (1996) and Cooper and Kaplan (1999) is to provide accurate production cost information, determine selling prices, identify market channels, and implement business strategies for attaining competitive advantage. Albalaki, Abdullah, and Kamardin (2019) demonstrate the role of ABC implementation on the relationship between external contingency factors and organizational performance.

Target Costing

Another SCM method of Target Costing (TC) is a process of allocating product costs based on consumer demand, product planning and design and functional cost analysis (Emiaso and Amaechi, 2018). Ansari and Bell (1997), describe the basic principles of Target Costing as a market-orientated, customer-focused, and design-focused technique to achieve cross-functional and value-chain goals. TC embodies the concepts of desired product/service quality characteristics (Ellram, 2006), product functionality through market survey (Zengin and Ada, 2010), target selling price through pricing research, customer's view surveys, reviews of competitor pricing, and disaggregation of target cost components and functions (Gopalakrishnan, Samuels and Swenson, 2007), target profit through market research (Hamood, Omar and Suleiman, 2013), cost reduction, and continuous improvement (Shank and Fisher, 1999).

Life Cycle Costing

Life Cycle Costing (LCC) refers to the process of estimating and accumulating the total costs in monetary terms that producer or manufacturer will incur over a product's entire life with the aim of minimizing its combined costs (Testa, et al., 2011). Spickova and Myskova (2015) note that the main goal of life cycle costing approach is to optimize the life cycle cost of a product without sacrificing firm performance. This goal depends on the accurate determination of life cycle cost of the product. Horngren, Foster and Datar (2000) refer to LCC as "cradle-to-grave costing" as all the costs associated with a product during its life span are captured and analyzed. LCC ensures that the total cost determined and managed for each product life stages of introduction, growth, maturity, and decline need to be accurate in order to contribute to the enhancement of firm performance and competitive advantage. Bengu and Kara (2010) also assert that the costs determination process of a product during its life cycle can be classified into three phases of pre-manufacturing cost, manufacturing costs and post-manufacturing costs, and because LCC focuses on cost behavior during each unique phase of the product life cycle, managers and planners are able to manage costs effectively. Pavlatos (2018) reportes that SCM techniques have significant positive impact on performance and competitiveness, but that life cycle technique does not directly impact performance.

Organizational Performance

Organizational Performance (OP) is the accomplishment of an organization measured in financial (quantitative) or non-financial (qualitative) terms. Mostly, Organizational Performance can be measured in financial terms (profit, return on investment (ROI) return on assets (ROA, earnings per share (EPS)), product market performance (market share and sales level),

shareholder return (dividends ratio, economic value added (EVA), and stock price). These measures of organizational performance are effectiveness indicators, and firm success. Several studies have used these performance indicators to study organizational performance (Hassan, et al., 2013; Hagedoorn and Cloodt, 2003; Gunday, et al., 2011). In their study of the Balanced Scorecard (BSC) concept, Kaplan and Norton (1996) argue that an organization's vision and strategy are best achieved if viewed from customer, internal business operations, growth, and financial perspectives. The study of Tontiset and Usshawanitchakit (2009) which investigates the relationships among cost management effectiveness, cost information usefulness, corporate competitiveness and firm success, reveals that cost management effectiveness plays a role in driving superior corporate competitiveness and firm success.

RESEARCH HYPOTHESES

The conclusions of extant studies indicate that strategic cost management methods have an impact on firm's financial performance (Mijoc, Starcevic and Mijoc, 2014). Alsoboa, Al-Ghazzani and Joudeh (2015) asserts that Activity-Based Costing, Target Costing and Cost of Quality have positive effects on overall performance, while Life-Cycle Costing and Value Chain Costing do not have a significant effect on the performance of the firms they studied. Several others studies of strategic cost management also report evidence of strong relationship between strategic cost management techniques and organizational performance (Ali, Malo-Alain, and Haque, 2015; Noordin, Zainudin, et al., 2015; Adigbole and Oludoyi, 2015; Ebben and Johnson, 2005; Rattanaphaphtham and Ussahawanitchakit 2010; Zaman, 2009; Elhamma and Yifei; 2013). This study endeavors to study the SCM methods in the Nigerian manufacturing industry. Hence, we postulate the following null hypothesis:

Ho 1: Activity-Based Costing has no significant impact on organizational performance of manufacturing firms.

Current literature asserts that Target Costing can assist a firm in producing products with lower cost, better quality and enhanced performance (Huang, et al., 2012). Target Costing achieves lower product cost by minimizing production costs through the imposition of spending limits, and avoidance of waste. Prior studies assert that there is a positive correlation between Target Costing and Organizational Performance (Juhmani, 2010; Huang, Lai and Chun, 2012; Tontiset and Choojan, 2012; Chaikambang, Ussahawanitchakit and Boolua, 2012; Imeokparia and Adebisi, 2014). We hereby propose the following null hypothesis:

Ho 2: Target costing has no significant effect on organizational performance of manufacturing firms.

Life Cycle Costing is also relevant in performance enhancement and cost reduction. The organization that seeks cost reduction and performance improvement focuses its cost management activities on all the production stages of a product as noted by Berliner and Brimson (1988). However, prior studies have reported mixed results concerning the association between LCC and Organizational performance. Mijoc, Starcevic and Mijoc (2014) examines the relationship between strategic cost management methods and firms' financial performance; they conclude that financial performance is significantly positively associated with the cost

management methods. However, Alsoboa, Al-Ghazzani and Joudeh (2015) examine the impact of some of the strategic costing techniques on the performance of Jordanian listed companies. While the result indicates that some strategic cost management methods impact firm performance positively, the Life-Cycle Costing method does not have a significant effect on the performance of the firms studied. We hereby propose the following null hypothesis:

Ho 3: Life Cycle Costing has no significant influence on organizational performance of manufacturing firms.

METHODOLOGY

This study employs a cross-sectional survey research design, which allows for the examination of statistical associations at any particular point in time. The study examines the ABS, TC and LCC cost management practices of manufacturing firms located in Lagos and Ogun States of Nigeria, where majority of Nigerian manufacturing firms' headquarters and/or manufacturing facilities are located (Adigbole, 2018). A list of seventy-seven (77) quoted manufacturing firms with potential 385 respondents in the geographical areas were obtained from Nigerian Stock Exchange 2015/2016 Fact Book. Using Taro Yamane formula (Imeokparia, 2013), 65 of the quoted manufacturing companies were selected for the study.

The primary data were collected using a survey instrument. The survey items consists of relevant questions to assess the implementation of strategic cost management methods (ABC, TC and LCC), and demographic characteristics. The survey items for Firm Performance (dependent variable) were developed using a seven-point Likert scale ranging from 1 being **greatly decreased** to 7 being **greatly increased**, and those items for ABC, TC and LCC (independent variables) as (1) being **strongly disag**ree to (7) being **strongly agree** (adapted from Aksoylu (2013).

Five (5) copies of the survey instrument were administered in each of the sampled sixty-five (65) companies, a total of 325 survey instruments. The financial accountant, cost accountant, management accountant, chief accountant, and chief internal auditor of each manufacturing company were implored to complete the survey. These accounting professionals were considered knowledgeable in cost and management accounting to provide relevant responses to the questions on strategic cost management practices (Singh, 2013). Two hundred and forty–four (244) copies of the survey instruments were completed and returned, yielding 75% response rate. However, 11 returned survey instruments are unusable. Consequently, two hundred and thirty-three (233) survey responses from 57 manufacturing firms were used in this study, a 71.7% usable response rate.

Partial Least Squares-Structural Equation Modeling (PLS-SEM) method, which is appropriate for assessing complex cause-effect relationship models with latent variables, was used to analyze the survey data and to test the hypotheses. PLS-SEM was also used to determine several measures of reliability and validity tests (Baines and Langfield-Smith, 2003).

Structural Equation Model

In using PLS-SEM to examine the hypothesized effects of ABC, TC and LCC on Organizational Performance (OP), the structural equation of the relationships among the variables involved in the study is specified in pictorial form. In Figure 1, the independent

variables known as the exogenous variables are Activity Based Costing Application (ABCA), Target Costing Implementation (TCI) and Life Cycle Costing Orientation (LCCO) representing activity based costing, life cycle costing and target costing respectively, and the dependent variable as Organizational Performance (OP).

Figure 1: The Study's Structural Model
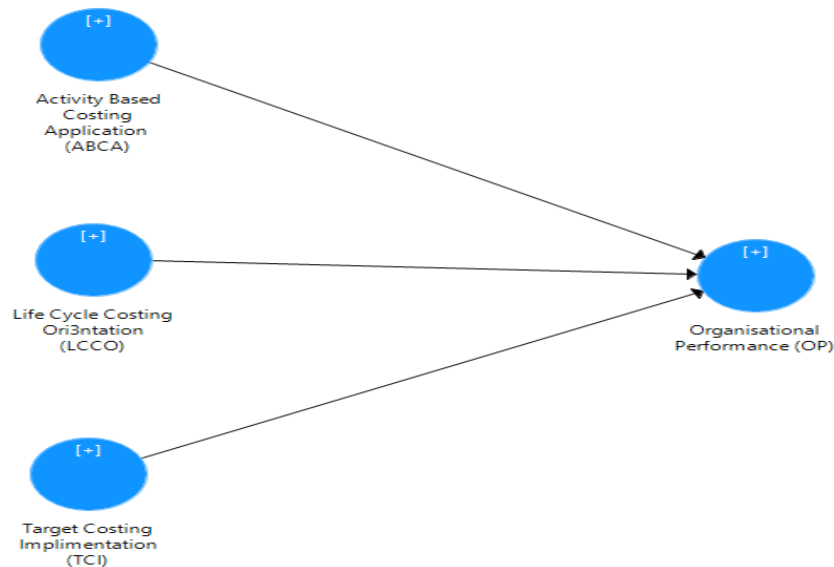
ANALYSIS AND DISCUSSION OF RESULTS

The PLS-SEM data analysis was carried out in two steps. The first step used the PLS algorithm in SmartPLS 3 to produce some preliminary test results which were used in evaluating the measurement model. The second step used the SmartPLS algorithm to obtain the β values, the R^2, and Smart PLS bootstrapping process to obtain the t-statistic and the p-values which indicate the significance value of the β. The values produced in the second step were used in evaluating the structural model that defines the relationships among the variables.

The measurement model defines the relationships between the latent (construct) variables and their manifest (indicators) variables. In the preliminary test for evaluating the measurement model, the PLS algorithm of SmartPLS 3 produced results for Indicators Reliability, Construct Reliability and Validity, Convergent Validity, and Discriminant Validity. The results are presented in Figure 2 below.

Figure 2: Measurement (Outer) Model Results
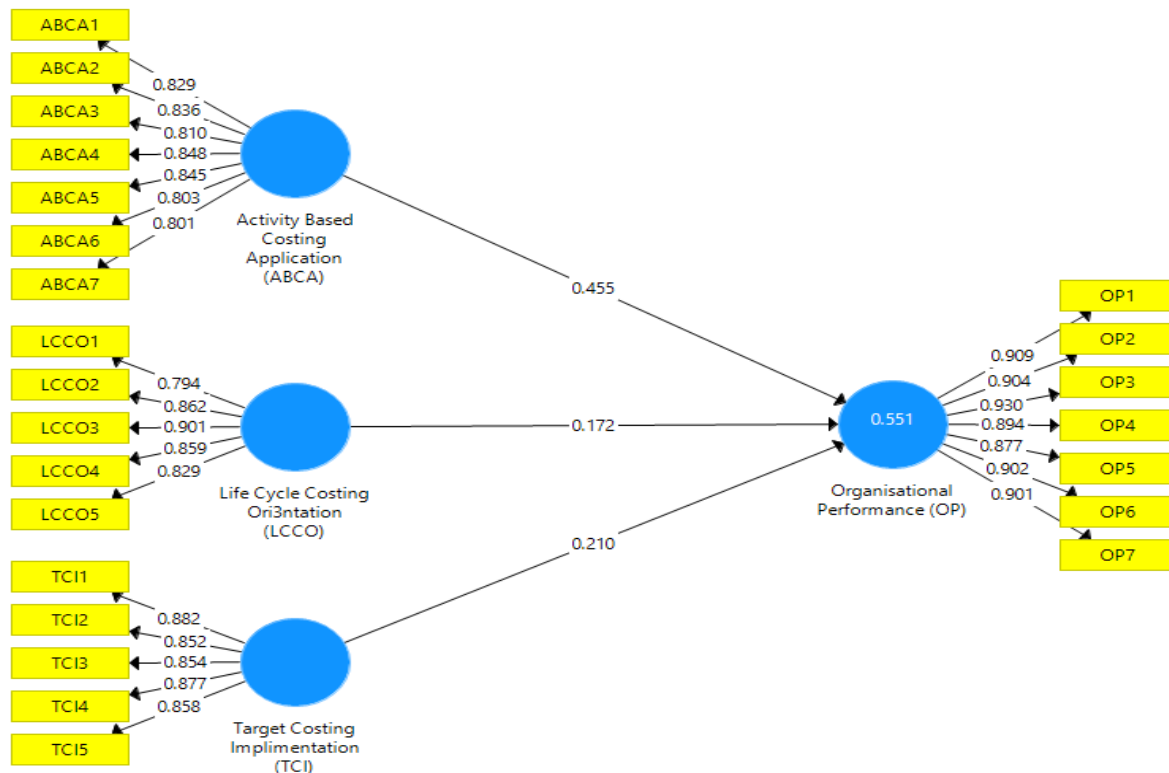
Indicators Reliability Test

Reliability is a requirement for the validity of SEM results. The indicator reliability test is measured by indicators loading and indicators reliability. In Table 1, all the indicators used in this model have loadings ranging from 0.794 to 0.930 which are above the required threshold of 0.70 (Ringle, 2006). Also, the indicators reliability range from 0.630 to 0.865, which are above the common threshold criterion of 0.50 (Hair et al., 2014). These results show that all the indicators are reliable and the measurement model is strong.

Construct Consistency Reliability and Validity

The Construct Consistency Reliability which indicates how well a set of manifest variables appraises a single latent construct was evaluated by two measures – Cronbach's Alpha and Composite Reliability (CR). From Table 2, the Cronbach Alpha and the Composite Reliability (CR) values of all the latent variables in the study were above the required value of 0.70. The results therefore show that internal consistency reliability is demonstrated.

Convergent Validity

The Convergent Validity shows the amount of variance captured by the latent variable from its relative manifest (indicator) variables due to measurement errors (Memon and Rahman, 2014). This was tested using Average Variance Extracted (AVE) test. From Table 2, the AVE values of all the constructs in this model, were greater than 0.5 stipulated by Hair *et al*. (2011). This result indicates that convergent validity is confirmed and the model is adequate.

Table 1: Indicator Reliability			
Latent Variable	**Indicators**	**Loadings**	**Indicator Reliability**
Activity Based Costing Application (ABCA)	**ABCA1**	**0.829**	**0.687**
	ABCA2	**0.836**	**0.699**
	ABCA3	**0.810**	**0.656**
	ABCA4	**0.848**	**0.719**
	ABCA5	**0.845**	**0.714**
	ABCA6	**0.803**	**0.645**
	ABCA7	**0.801**	**0.642**
Target Costing Implementation (TCI)	**TCI1**	**0.882**	**0.778**
	TCI2	**0.852**	**0.726**
	TCI3	**0.854**	**0.729**
	TCI4	**0.877**	**0.769**
	TCI5	**0.858**	**0.736**
Life Cycle Costing Orientation (LCCO)	**LCCO1**	**0.794**	**0.630**
	LCCO2	**0.862**	**0.743**
	LCCO3	**0.901**	**0.812**
	LCCO4	**0.859**	**0.738**
	LCCO5	**0.829**	**0.687**
Organizational Performance (OP)	**OP1**	**0.909**	**0.826**
	OP2	**0.904**	**0.817**
	OP3	**0.930**	**0.865**
	OP4	**0.894**	**0.799**
	OP5	**0.877**	**0.769**
	OP6	**0.902**	**0.814**
	OP7	**0.901**	**0.812**

Discriminant Validity

Discriminant Validity test is carried out to confirm that the manifest variable in any construct is relevant to the designated latent variable. Discriminant Validity test is measured using Fornell-Larker criterion (Fornell-Larker, 1981) and Heterotrait-Monotrait (HTMT) ratio (Henseler, Ringle and Sarstedt, 2015). Table 3 shows that the values of the square root of AVE, presented diagonally, are larger than other correlation values among the latent variables. The discriminant validity is achieved because the diagonal value is higher than the value in its row and column. Using the Heterotrait-Monotrait (HTMT) ratios to test for Discriminant Validity, the results in Table 4 show that for each pair of latent variables, the values are below the criterion of $HTMT_{0.90}$. This also indicate that the discriminant validity is attained in this study. The HTMT ratio is a notable method of measuring discriminant validity.

Table 2: Construct Reliability and Validity			
Latent Variable	**Cronbach's Alpha**	**Composite Reliability**	**Average Variance Extracted (AVE)**
Activity Based Costing Application (ABCA)	**0.922**	**0.937**	**0.680**
Target Costing Implementation (TCI)	**0.916**	**0.937**	**0.748**
Life Cycle Costing Ori3ntation (LCCO)	**0.904**	**0.928**	**0.722**
Organizational Performance (OP)	**0.962**	**0.968**	**0.815**

Table 3: Fornell-Larcker Criterion for Discriminant Validity Test				
Latent Variable	ABCA	LCCO	OP	TCI
Activity Based Costing Application (ABCA)	**0.825**			
Life Cycle Costing Orientation (LCCO)	0.538	**0.850**		
Organizational Performance (OP)	0.691	0.578	**0.903**	
Target Costing Implementation (TCI)	0.682	0.768	0.652	**0.865**

Table 4: Heterotrait-Monotrait (HTMT)				
Latent Variable	**ABCA**	**LCCO**	**OP**	**TCI**
Activity-Based-Costing Application (ABCA)				
Life Cycle Costing Orientation (LCCO)	**0.587**			
Organizational Performance (OP)	**0.727**	**0.615**		
Target Costing Implementation (TCI)	**0.738**	**0.847**	**0.691**	

The results of the various preliminary tests, above are satisfactory in implying that the measurement (manifest) variables are able to measure their constructs correctly and that the constructs are able to measure what they are intended to measure. With the outer model properly evaluated, we proceed to evaluate the structural or inner model of the study.

The structural (inner) model which specifies the relationship between the exogenous variables (Activity-Based Costing application, Target Costing implementation, and Life Cycle Costing orientation) and endogenous latent variable (Organizational Performance) is presented in Figure 3 which shows the coefficient of determination (R^2) and the path coefficients (β values) in the model. SmartPLS algorithm was used to obtain the β values and the R^2; while Smart PLS bootstrapping process was used to obtain the t-statistic and the p-values.

Since PLS-SEM does not have overall goodness of fit measures (Hulland, 1999), the R^2 and the path coefficients are used in deciding which paths to leave in the model and which to discard (Henseler and Sarstedt, 2013). The R^2 is the overall effect size measure for the structural model; a higher R^2 indicates a higher predictive ability. In SEM, the R^2 can be evaluated based on the threshold of 0.75, 0.50, and 0.25 as large, moderate, and weak, respectively (Hair et al., 2011).

In Figure 3 and Table 5, the endogenous constructs' predictive power shows that Organizational Performance (OP) has R^2 value of 0.551 which shows that the model predictive

capacity is moderate. Thus, Activity Based Costing Application (ABCA), Life Cycle Costing Orientation (LCCO) and Target Costing Implementation (TCI) combined, moderately predict an impact on Organizational Performance (OP).

Figure 3: Structural (Inner) Model
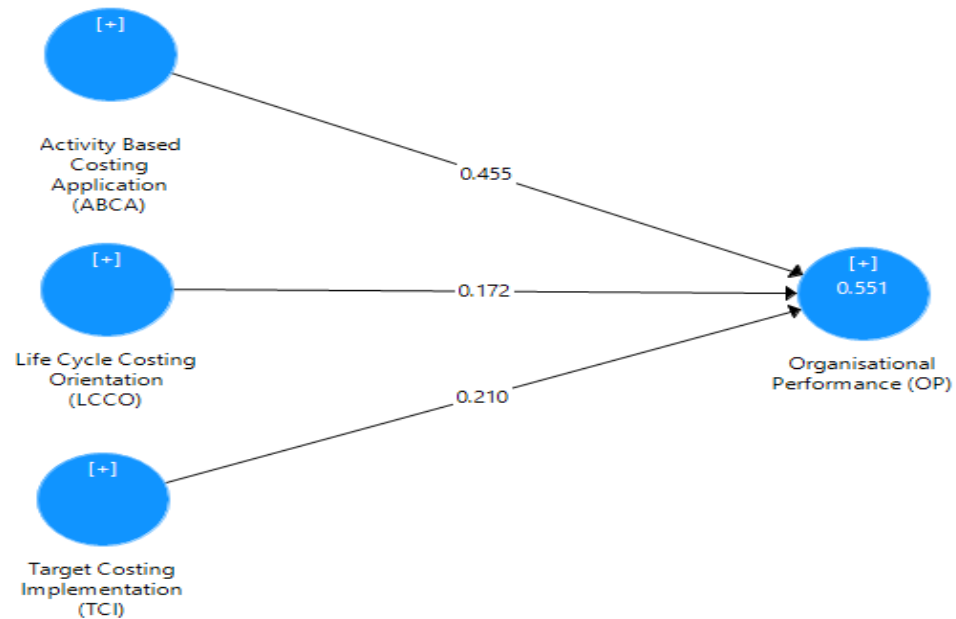
Table 5: Coefficient of Determination (R^2)		
	R Square (R^2)	**R Square Adjusted**
Organizational Performance	0.551	0.545

Independent Variables: ABCA, LCCO & TCI

Furthermore, the relationship between the constructs in PLS-SEM can be determined by examining their path coefficients and related t-statistics computed through the bootstrapping procedure of SmartPLS. The estimates obtained for the structural model relationships are the results of running of PLS-SEM algorithm. The significance of the coefficients is determined through the bootstrapping process. In this analysis, the bootstrapping procedure was carried out. The results are presented in Table 6. There are three (3) paths coefficients and all the coefficients are significant at 10% significant level and each path coefficient shows a positive effect. Activity Based Costing Application (ABCA) has the highest positive effect on Organizational Performance (OP) with path coefficient of 0.455; followed by Target Costing Implementation (TCI) with 0.210 and Life Cycle Costing Orientation with 0.172. Similarly, the

t-statistic value of each independent variable is greater than zero, which indicates that the null hypotheses is rejected.

Table 6: Path Coefficients with Significance Value						
Paths	Hypothesis	Coefficient (β)	Standard Deviation	T- Statistics (β/STDEV)	P-Values	Significant?
ABCA -> OP	1	0.455	0.065	7.031	**0.000**	YES
TCI -> OP	2	0.210	0.094	2.221	**0.026**	YES
LCCO -> OP	3	0.172	0.094	1.837	**0.066**	YES

Discussion of Results

In determining the impact of Activity-Based Costing on Organizational Performance of the sampled firms, the results indicate that Activity Based Costing Application (ABCA) has a direct significant influence on Organizational Performance ($\beta = 0.455$, $p < 0.01$). This result indicates that Activity-Based Costing application positively relates to Organizational Performance. This result supports the findings of many prior studies such as Ali, Malo-Alain, and Haque, 2015; Noordin, et al., 2015; Adigbole and Oludoyi, 2015; Ebben, et al., 2010; Elhamma and Yifei, 2013. Therefore, the hypothesis, *Ho 1: Activity-Based Costing has no significant impact on organizational performance of manufacturing firms* is not supported.

Likewise, the Target Costing Implementation (TCI) has a positive significant impact on the Organizational Performance of the sampled companies. As shown in Table 6, TCI has a significant positive influence on Organizational Performance ($\beta = 0.035$, $p > 0.10$). This implies that the implementation of Target Costing technique does enhance the performance of the firms. The finding of this study is consistent with the outcome of the studies of Alsoboa et al. (2015), Imeokparia and Adebisi (2014), Kaneko et al. (2013), and Huang, Lai and Chun (2012), which report positive effect of target costing implementation on the overall financial performance, return on investment and cost reduction, and strong impact on organizational achievement. Hence, the hypothesis, *Ho 2: Target costing has no significant effect on organizational performance of manufacturing firms* is not supported.

Also, the impact of Life Cycle Costing (LCC) on Organizational Performance of the sampled firms is positive. This result supports the findings of Petrova and Zarudnev (2013) and Ilic, Millicevie and Cvetkovic, et al. (2010), which indicate that a successful implementation of LCC leads to improvement in firm's profitability and strategic goals related to the achievement of firm's competitiveness and profitability, and Bengu and Kara (2010) who argue that the management of a product cost throughout its life cycle can deliver cost reduction and profitability. Life Cycle Costing Orientation (LCCO) has a significant positive influence on Organizational Performance with the $\beta = 0.173$ and $p > 0.10$. Hence, we conclude that the hypothesis, *Ho 3: Life Cycle Costing has no significant influence on organizational performance of manufacturing firms* is rejected.

CONCLUSSION AND RECOMMENDATION

This study investigated the influence of Strategic Cost Management approaches of Activity-Based Costing, Target Costing, and Life Cycle Costing on Organizational Performance of manufacturing firms. The results indicate that these Strategic Cost Management methods have positive impact on firm performance. In the highly automated industry and complex manufacturing processes, we recommend that Nigerian manufacturing firms consider implementing strategic cost management practices as they strive to enhance firm performance and strengthen competitive advantage against foreign competitors.

We would like to acknowledge that this study is without a limitation regarding generalization. Because the sample firms are from two states in the western part of Nigeria, there could be a question about whether the sample is representative of the population of manufacturing firms in Nigeria. Hence, the results of this study should be generalized to the populations with caution. Further studies should endeavor to replicate this study in other parts of the country. Furthermore, future work should consider studies that examine influence of other SCM methods such as Balance Scorecard, Total Quality Management in the manufacturing industry.

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US COMMUNITY BANK PROFITABILITY: A CROSS-SECTIONAL AND DYNAMIC PANEL ANALYSIS OF RURAL AND METROPOLITAN BANKS

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ABSTRACT

This study compares 5,286 community banks operating in rural and metropolitan counties from 2000 through the end of 2013 on the variables contributing to bank profitability using pooled OLS, pooled time-series OLS, and dynamic panels methodologies. Following the SCP and competition-fragility literature, one would expect a difference in the variables contributing to profitability. The size of the coefficients indicates that the variables contributing to profitability differ in magnitude when comparing community banks in metropolitan counties to those in rural counties. Both the pooled and time-series OLS models indicate that bank size contributes to profitability more in metropolitan areas; however, on average, rural banks have higher return on assets, higher net interest margins, and higher non-interest income. These findings provide some support for the competition-fragility argument that more competition in banking, as seen in metropolitan areas, leads to lower net interest margins. Arguably, the higher net interest margins and contribution of non-interest income to profits in the concentrated rural bank markets supports the structure-conduct-performance paradigm that when few competitors exist in a market, they are more likely to collude, implicitly or explicitly, to extract higher profits. The findings of this study indicate that community banks are not a homogenous group and highlight the importance of segregating rural and metropolitan banks when examining the US community banking industry.

INTRODUCTION

The US Banking industry in the US has undergone dramatic changes over the past 30 years as restrictions of both the geographic area of operation and the scope of financial services banks can offer have changed dramatically. Until 1911, states regulated banks in the US. Even after federal regulation a two-tiered banking system of both state and federally chartered banks existed and depression era federal regulations limited banks to whatever the state they operated in allowed in terms of geographic areas. The result was a large number of small banks serving communities across the nation. Beyond that, Great Depression era Glass-Steagall Act of 1933, limited the scope financial activities in which commercial banks could participate. Although an in-depth discussion is beyond the scope of this paper, those limitations diminished from the 1930s to the 1980s through various court decisions and legislative and regulatory changes. In the 1980s a series of legislative initiatives, leading up to the Gramm-Leach-Bliley Act of 1999, eliminated most of the remaining limitations on the geographic scope of banks and restrictions on what services entities in the financial services sector could offer. What followed was a

massive progression of acquisitions and mergers as commercial banks, investment banks, and insurance companies combined into comprehensive financial services firms.

In a quest to cover the nation or particular regions of it, publicly traded banks acquired banks across the nation with the vast majority, 87% of branches, being in metropolitan areas. This resulted in a 59% decrease in the number of bank charters and over 80% of all bank assets held by only 107 banks. The remaining 6,356 remaining small banks held only 14% of bank assets. Nonetheless, these small community banks play an important role in the US economy because they continue to provide the vast majority of funding to small businesses and small businesses continue to employee the vast majority of people in the US. In addition, more of the US population is migrating to metropolitan areas, and that is likely where community banks encounter the greatest competition from the massive nationwide and regional banks. Therefore, it is important to understand how deregulation has changed the competitive environment of community banking and examine the two distinct environments, rural and metropolitan, where community banks operate. Previous studies have treated community banks as a homogenous group despite the fact that metropolitan community banks account for over 80% of US bank failures (Morrison, Jung, Jackson, Escobari, & Sturges, 2016). Using FDIC variables that contribute to bank profitability, this study demonstrates that there is a difference in the two competitive environments and highlights the need to segregate when conducting research on US community banks.

LITERATURE REVIEW

Structure-Conduct-Performance and Bank Deregulation

Due to the evolution of banking regulation in the US, the restrictions on geographic operating area resulted in most US banks being small banks with tight ties to the communities that they operated in. Great Depression era legislation, the Glass-Steagall Act of 1933, also limited the scope of bank activities by prohibiting commercial banks from engaging in investment banking (Calomiris, 2010). The Douglas Amendment in 1956 allowed states to establish the guidelines under which banks from other states could do business; however, the banking industry remained highly regulated and the vast majority of US banks operated in single counties or metropolitan areas with only a few competitors. During this same timeframe, legislative activity in the area of anti-trust made inter-industry data available for researchers to analyze using cross-sectional approaches (e.g., Bain, 1951, 1956). These studies provided insight into the relationship between competitor concentration in a particular industry, also referred to as the market structure, and profitability. The use of observable industry structure indicators, such as concentration ratios, to measure the degree of competition lead to the development of the structure-conduct-performance paradigm (SCP) (Schmalensee, 1982, 1985, 1989). From one point of view, in highly concentrated markets competitors can collude, implicitly or explicitly, to extract higher profits. In contrast, profits may be the result of efficiencies that result from economies of scale in plant, firm, and advertising efforts.

In the 1980s, there was a movement to enhance competition in the financial services industry. During the legislative process Stephen Friedman (1981), the Securities and Exchange Commission Commissioner at the time, commented that in the future only ten large banks would

cover the US. Federal Reserve researcher Alton Gilbert (1984) reviewed 45 SCP studies on the banking industry to examine the issues of collusion and efficiencies through achieving economies of scale. He found that the studies on the influence of market structure were highly variable, but did not seem to support that competition concentration leads to collusion in the banking industry and that single small banks do not appear to be more costly to operate than a branch of a large bank. Gilbert (1984) did caution that the studies reviewed did not provide a solid basis to generalize about large banks operating branches across the nation. As the result of a series of legislative actions from the Depository Institutions Deregulation and Monetary Controls Act (DIDMCA) of 1980 to the Gramm-Leach-Bliley Act of 1999 Congress deregulated the US financial services industry. It turns out that Stephen Friedman was wrong only about the number of banks blanketing the nation, as of 2020 it is 4 instead of 10; JP Morgan Chase, Bank of America, Citi Group, and Wells Fargo. At the end of 2011, only 107 banks held 80% of industry assets and federally insured bank and thrift charters fell from 17,901 in 1985 to 7,353 in 2011. However, despite the industry consolidation and increased competition, locally owned community banks have not disappeared. Despite only holding 14% of total bank assets, they are the most common FDIC insured institution and supply most of the credit to small businesses in the US (FDIC CBS, 2012).

Beyond deregulation, technology has dramatically changed the competitive environment of banking in the last 10 to 15 years. Internet banking has gone from a novel concept to a service that bank customers expect. More recently, smartphones have enabled mobile banking and the ability to take a photo of a check to deposit it. Combined with mobile electronic payments this is quickly making visits to a physical bank a rare event. On the one hand, technology can bring cost reductions that lead to greater efficiency; however, the initial capital investment and the need for highly skilled, therefore costly, support staff can put technology implementation out of the reach of small banks. Community banks in large metropolitan areas would arguably have a larger customer base and assets to cover technology implementation and support cost; however, those are the community banks most likely confronting the highest concentration of competition from the large nationwide and regional banks. This is because the large banks have focused on acquisitions in metropolitan areas while avoiding the small rural communities. Therefore, this study compares the factors contributing to community bank profitability on rural versus metropolitan areas.

Determinants of Community Bank Profitability

Studies examining bank profitability have mostly used the SCP paradigm focusing on market concentration and bank efficiency (e.g., Berger, 1995a; Smirlock, 1985). As discussed previously, the dispute lies in the underlying causation of market power or efficiency through economies of scale. However, regardless of the level of market concentration, exogenous economic conditions affect community bank profits; however, when faced with favorable economic conditions, managerial skill will result in some banks performing better than others (Kupiec & Lee, 2012). Although return on equity (ROE) and return on assets (ROA) are often used to measure firm profitability, the study of community banks brings an interesting problem because about one-third of small banks are Type-S corporations. Because Type-S corporations act as a pass-through entities that pay no income tax at the corporate level and pass the profits on to shareholders who pay income tax at the individual level, comparing ROA or ROE between

Type-S and Type-C banks would be erroneous. Therefore, this study uses pre-tax ROA as a measure of profitability (FDIC variable ptxroa).

Traditionally, banks make profits by operating as financial intermediaries by paying interest on deposits and loaning those funds out at higher rates. As a result, the gross profit from interest comes from the difference in those rates, which is the net interest margin (FDIC variable NIMY). In highly competitive markets banks would offer higher interest rates to attract depositors; however, by the same reasoning, to attract good clients to lend to banks would have to offer attractive loan rates and the net interest margin would be lower in these markets. However, partly due to competition and partly due to deregulation, banks have turned to generating income through non-interest activities that range from fees on services to operations in the forward and futures markets (FDIC variable noniiay). As is the case in any business, operating expenses reduce the gross profits and in banking terminology these are non-interest expenses (FDIC variable nonixay); the more efficient a bank is the lower its relative non-interest expense. Efficiency can come through reaching economy of scale and bank asset size maybe used as a proxy (FDIC variable asset5).

Given that the interest income is the difference in the rates paid on deposits and the interest charged for loans and that higher riskier loans pay higher interest rates, banks can arguably increase profitability by taking on riskier loan portfolios. Because of competition for deposits, there is a lower limit of what a bank can pay and retain sufficient deposits to lend. This is the basis of the charter value or competition-fragility views (Hellmann, Murdock, & Stiglitz, 2000; Keeley, 1990). Because deposit insurance can act as a put option that limits bank shareholder losses to the capital invested, banks may take on more risk and maintain lower capital to asset ratios (CAR). While the literature is not conclusive (Canoy, van Dijk, Lemmen, de Mooij, & Weigand, 2001; Carletti & Hartmann, 2003), Berger (1995b) found that higher CAR correlated with higher profits. One possible explanation is that higher CAR leads to lower insurance premiums, and that contributes to higher profits. Under either argument, CAR is an important factor in explaining bank profitability (FDIC variable eqv).

MODELS

The data comes from the FDIC quarterly Performance and Conditions Ratios reports. Because this study focuses only on community banks, we restrict the data to those banks that met the definition of community banks in the 2012 FDIC Community Banking Study that reported for the fourth quarter of 2012. The data is from individual banks and excludes bank holding companies. To avoid the issues related to ratios with De Novo banks, we excluded institutions that joined the FDIC after January 2, 1998. A dummy variable indicated whether the bank operated in a rural (0) or metropolitan (1) county. The data contains 296,098 observations from the quarterly FDIC Performance Reports from 5,286 unique community banks operating from 2000 through the end of 2013.

The methodology in this paper follows that used by Goddard, Molyneux, and Wilson (2004) to evaluate the determinants of profitability of banks across European countries. The content of the model is as follows:

$$\prod_{i,t} = f(\prod_{i,t-1}, s_{i,t}, o_{i,t}, c_{i,t} \, d_{1,i}) \tag{1}$$

Where $\prod i,t$ is the profit of the bank i in year t, as measured by pre-tax return on assets; s i,t is the natural logarithm of total assets average over the preceding five years; oi,t is the off balance sheet or non-interest income; ci,t is CAR; and d 1,i = 1 for metro and 0 for rural. The inclusion of s i,t captures any relationship between bank size and profitability. Following the SCP literature, a positive sign may indicate that large banks may benefit from economies of scale or scope or they may benefit from brand image. In the alternative, a negative sign may indicate that size results in diseconomies of scale.

Since deregulation began, banks have increased income via non-interest income generated through fees for services and various contingent liabilities such as letters of credit, and other non-traditional banking activities including operations in the forward and futures markets. In competitive markets, non-interest income may play an important role in profitability. CAR is a crude proxy for risk; however, the competition-frailty view argues that less CAR contributes to profitability while the lower deposit insurance premium view argues that higher CAR results in greater profitability. Nonetheless, the goal of this study is not to resolve these differences but to better understand the factors that contribute to bank profitability in community banks operating in rural and metropolitan areas.

The pooled cross-sectional time-series structure of the data set enables the estimation of several variants of the relationship summarized in (1).

Pooled cross-sectional time-series model, estimated using OLS

$$\prod_{i,t} = \alpha_1 + \alpha_2 \prod_{i,t-1} + \alpha\, s_{i,t} + \alpha\, o_{i,t} + \alpha\, c_{i,t} + \alpha\, d_{1,i} + u_{i,t}$$
$$i = 1,\ldots\ldots N,\ t = 2 \ldots\ldots T \tag{2}$$

Cross-sectional model, estimated using OLS

$$\prod_{i,t} = \beta_1 + \beta\, s_{i,t} + \beta\, o_{i,t} + \beta\, c_{i,t} + \beta\, d_{1,i} + w_{i,t}$$
$$i = 1,\ldots\ldots N \tag{3}$$

Dynamic panel model GMM

$$\prod_{i,t} = \Upsilon_1 + \Upsilon_2 \prod_{i,t-1} + \Upsilon\, s_{i,t} + \Upsilon\, o_{i,t} + \Upsilon\, c_{i,t} + \eta_i + v_{i,t}$$
$$i = 1,\ldots\ldots N,\ t = 2 \ldots\ldots T \tag{4}$$

The pooled model, equation (2), assumes that cross-sectional variation in any independent variable has the same implication for profit variation over time in that variable for an independent bank. During the period from 2000 to 2013, there were major shocks that included a terrorist attack and a banking crisis that resulted in two recessions. Given that banking profits correlate with economic expansion and recession (Kupiec & Lee, 2012), the use individual bank differences from yearly means of all banks in the sample removes the exogenous effects of the economic cycle; in other words, economy-normalized values. Estimating the equations using both the data as reported and differenced from yearly means for all community banks provides some ability to understand how economic expansion and contraction effects profitability in rural and metropolitan banks differently.

RESULTS

Table 1 reports the summary data on the untransformed dependent and independent variables used in the empirical model. Table 1 reports the summary data for all community banks (observations = 296,098) and for community banks operating in the rural (observations = 160,142) and metropolitan (observations = 135,696) areas. This data indicates that on average, rural banks have higher return on assets, higher net interest margins, and higher non-interest income. These findings provide some support for the competition-fragility argument that more competition in banking, as seen in metropolitan areas, leads to lower net interest margins. Arguably, the higher net interest margins and contribution of non-interest income to profits in the concentrated rural bank markets supports the structure-conduct-performance paradigm that when few competitors exist in a market, they are more likely to collude, implicitly or explicitly, to extract higher profits.

Table 1							
Descriptive Statistics							
All Community Banks							
	roaptx	asset5	noniiay	eqv	nimy	nonixay	observations
mean	1.358655	229266.6	0.809128	10.97072	3.987371	3.065103	296,098
sd	3.483859	428960.3	5.615186	3.809603	0.955995	3.807264	
min	-212.39	1055.25	-23.02	-1.69	-3.24	-0.23	
max	419.01	1.30E+07	1066.4	95.9	72.64	1099.33	
Rural Community Banks							
mean	1.434388	146835.1	0.691578	11.07118	4.026	2.944052	160,402
sd	1.883635	205449.8	0.86468	3.568647	0.918214	1.136296	
min	-141.32	1055.25	-6.63	-0.62	0	0	
max	53.86	4511235	87.28	81.55	72.64	72.64	
Metro Community Banks							
mean	1.269134	326706.2	0.94808	10.85198	3.941708	3.208193	135,696
sd	4.719703	578010.3	8.239063	4.072919	0.996888	5.483222	
min	-212.39	2816	-23.02	-1.69	-3.24	-0.23	
max	419.01	1.30E+07	1066.4	95.9	29.02	1099.33	

Pooled OLS Regressions

Tables 2 through 7 report the results of pooled OLS regressions for both the economy-normalized data, which is the difference in the individual bank value and the mean for the year of all banks on for that variable.

Table 2					
POOLED OLS ALL BANKS USING NON-ECONOMY-NORMALIZED					
Source	SS	df	MS		Nuber of obs =	296098
					F(5,296092) =	.
Model	2586444.01	5	517288.8		Prob > F =	0.0000
Residual	1007365.93		3.402205		R-squared =	0.7197
					Adj R-Squared =	0.7197
Total	3593809.94		12.1373		Root MSE =	1.8445
roaptx	Coef.	Std. Err.	t	P>(t)	[95% Conf. Interval]	
lnasset5	-0.0525325	0.0031807	-16.52	0.0000	-0.5876650	-0.4629850
noniiay	0.998067	0.0012559	794.68	0.0000	0.9956054	1.0005290
eqv	0.0013112	0.0009108	1.44	0.1500	-0.0004738	0.0030963
nimy	0.8185951	0.0036912	221.77	0.0000	0.8113605	0.8258297
nonixay	-1.002629	0.0018636	-538	0.0000	-1.0062810	-0.9989760
_cons	0.9590993	0.0447775	21.42	0.0000	0.8713366	1.0468620

Table 3					
POOLED OLS ALL BANKS USING ECONOMY-NORMALIZED					
Source	SS	df	MS		Nuber of obs =	296098
					F(5,296092) =	.
Model	2583750.98	5	516750.19		Prob > F =	0.0000
Residual	878563.16		2.967196		R-squared =	0.7462
					Adj R-Squared =	0.7462
Total	3462314.13		11.6932		Root MSE =	1.7226
droaptx	Coef.	Std. Err.	t	P>(t)	[95% Conf. Interval]	
dlnasset5	-0.0428519	0.0030309	-14.14	0.0000	-0.0487924	-0.0369113
dnoniiay	0.9984751	0.0011749	849.87	0.0000	0.9961724	1.0007780
deqv	0.0042829	0.000853	5.02	0.0000	0.0026110	0.0059549
dnimy	0.8220789	0.0035092	234.26	0.0000	0.8152010	0.8289569
dnonixay	-1.003457	0.0017441	-575.34	0.0000	-1.0068760	-1.0000390
_cons	-5.41E-06	0.0031656	0.00	0.9990	-0.0062099	0.0061991

Table 4						
POOLED OLS RURAL BANKS USING NON-ECONOMY-NORMALIZED						
Source	SS	df	MS		Nuber of obs =	160402
					F(5,160396) =	7987.28
Model	113453.59	5	22690.72		Prob > F =	0.0000
Residual	455662.02	6	2.8409		R-squared =	0.1994
					Adj R-Squared =	0.1993
Total	569115.61		3.5481		Root MSE =	1.6855
roaptx	Coef.	Std. Err.	t	P>(t)	[95% Conf. Interval]	
lnasset5	-0.0450983	0.0045527	-9.91	0.0000	-0.0540215	-0.0361751
noniiay	1.077926	0.0073078	147.50	0.0000	1.0636030	1.0922490
eqv	-0.0027492	0.0012271	-2.24	0.0250	-0.0051543	-0.0003441
nimy	0.9005445	0.0056208	160.22	0.0000	0.8895278	0.9115613
nonixay	-1.132732	0.0064456	-175.74	0.0000	-1.1453650	-1.1200990
_cons	0.9422624	0.0623413	15.11	0.0000	0.8200747	1.0644500

Table 5						
POOLED OLS RURAL BANKS USING ECONOMY-NORMALIZED						
Source	SS	df	MS		Nuber of obs =	160402
					F(5,160396) =	9984.79
Model	113154.89	5	22630.78		Prob > F =	0.0000
Residual	363544.70	6	2.2665		R-squared =	0.2374
					Adj R-Squared =	0.2373
Total	476699.59		2.9719		Root MSE =	1.5055
droaptx	Coef.	Std. Err.	t	P>(t)	[95% Conf. Interval]	
dlnasset5	-0.0447315	0.0041818	-10.7	0.0000	-0.0529277	-0.0365354
dnoniiay	1.085784	0.0065819	164.97	0.0000	1.0728840	1.0986850
deqv	-0.0001967	0.0010996	-0.18	0.8580	-0.0023518	0.0019584
dnimy	0.9196494	0.0051538	178.44	0.0000	0.9095480	0.9297508
dnonixay	-1.149914	0.0058443	-196.76	0.0000	-1.1613690	-1.1384590
_cons	0.0220373	0.003977	5.54	0.0000	0.0142424	0.0298321

Table 6						
POOLED OLS METRO BANKS USING NON-ECONOMY-NORMALIZED						
Source	SS	df	MS		Nuber of obs =	135696
					F(5,135690) =	.
Model	2472735.17	5	494547.035		Prob > F =	0.0000
Residual	549951.71		4.053		R-squared =	0.8181
					Adj R-Squared =	0.8181
Total	3022686.89		22.2756		Root MSE =	2.0132
roaptx	Coef.	Std. Err.	t	P>(t)	[95% Conf. Interval]	
lnasset5	-0.0604381	0.0049594	-12.19	0.0000	-0.0701585	-0.0507178
noniiay	0.9916712	0.0014136	701.54	0.0000	0.9889007	0.9944418
eqv	0.0017462	0.0013703	1.27	0.2030	-0.0009395	0.0044320
nimy	0.7977294	0.005632	141.64	0.0000	0.7866908	0.8084681
nonixay	-0.9910865	0.0021221	-467.03	0.0000	-0.9952458	-0.9869273
_cons	1.071039	0.0709305	15.1	0.0000	0.9320160	1.2100610

Table 7						
POOLED OLS METRO BANKS USING ECONOMY-NORMALIZED						
Source	SS	df	MS		Nuber of obs =	135696
					F(5,135690) =	.
Model	2470699.04	5	494139.81		Prob > F =	0.0000
Residual	512765.94		3.7790		R-squared =	0.8281
					Adj R-Squared =	0.8281
Total	2982464.98				Root MSE =	1.944
droaptx	Coef.	Std. Err.	t	P>(t)	[95% Conf. Interval]	
dlnasset5	-0.0412878	0.0048799	-8.4600	0.0000	-0.5085240	-0.0317232
dnoniiay	0.9913288	0.0013664	725.5100	0.0000	0.9886507	0.9940069
deqv	0.0044963	0.001328	3.3900	0.0010	0.0070992	0.0070992
dnimy	0.7958965	0.0055364	143.7600	0.0000	0.8067478	0.8067478
dnonixay	-0.9904214	0.0020519	-482.7000	0.0000	-0.9862998	-0.9863998
_cons	-0.0414837	0.0055142	-7.5200	0.0000	-0.0306759	-0.0306759

In the pooled OLS analysis from both the economy-normalize and non-economy-normalized data, the coefficient for net interest margin (nimy) is significantly higher for rural banks and the coefficient for bank size (asset5) is negative for both rural and metropolitan banks. The higher net interest rate margin in rural areas where banking competition is more concentrated supports the SCP paradigm. The negative coefficient for bank size (asset5) provides some support for the position that large banks may encounter diseconomies of scale. Kupiec and Lee (2012) found a curvilinear relationship between size and profitability in community banks where banks as small as $300 million in assets achieved a significant proportion of the gain in

profits while banks over $1 billion in assets were less profitable. As expected, the coefficient for non-interest expense is negative in all tables. The fact that CAR (eqv) varies in the level of significance across the different analyses is interesting and calls for further investigation. It is noteworthy that there were changes in capital requirements after the 2008 financial crisis and this warrants comparison before and after the changes to gain a better understanding of these results.

Pooled Time Series OLS Regressions

Tables 8 through 13 report the results of pooled time-series OLS regressions for both the economy-normalized data, which is the difference in the individual bank value and the mean for the year of all banks on that variable, and the data without any adjustment. Because this is quarterly data, we lag the dependent variable, pre-tax ROA, by 4 observations to capture the profit from one year before.

Table 8						
POOLED TS OLS ALL BANKS USING NON-ECONOMY-NORMALIZED						
Fixed-effects (within) regression				Number of obs =		264808
Group variable: crossid				Number of groups =		5466
R-sq:	within =	0.1913		Obs per group: min =		17
	between =	0.9837			avg =	48.4
	overall =	0.6838			max =	52
				$F(6,259336) =$		10222.39
				Prob > F =		0.0000
roaptx	Coef.	Std. Err.	t	P>(t)	[95% Conf. Interval]	
roaptx						
L4.	-0.0151202	0.001825	-8.28	0.0000	-0.1869720	-0.0115432
lnasset5	-0.2956692	0.0128646	-22.98	0.0000	-0.3208835	-0.2704548
noniiay	1.016689	0.0051139	198.81	0.0000	1.0066660	1.0267130
eqv	0.0239564	0.0021096	11.36	0.0000	0.0198216	0.0280912
nimy	0.8786408	0.0068121	128.98	0.0000	0.8652892	0.8919924
nonixay	-1.079463	0.0053617	-201.33	0.0000	-1.0899720	-1.0689540
_cons	3.559793	0.161227	22.08	0.0000	30243793	3.875794
sigma_u	0.5451846					
Sigma_e	1.8953757					
rho	0.07641415	(fraction of variance due to u_i)				
F test that all u_i = 0 :		F(5465, 259336) = 2.57			Prob > F = 0.0000	

Table 9						
POOLED TS OLS ALL BANKS USING ECONOMY-NORMALIZED						
Fixed-effects (within) regression			Number of obs =			264808
Group variable: crossid			Number of groups =			5466
R-sq:	within =	0.2077		Obs per group: min =		17
	between =	0.9858			avg =	48.4
	overall =	0.7145			max =	52
				F(6,259336) =		11331.89
				Prob > F =		0.0000
droaptx	Coef.	Std. Err.	t	P>(t)	[95% Conf. Interval]	
droaptx						
L4.	-0.0014562	0.0018147	-0.80	0.4220	-0.0080131	0.0021006
dlnasset5	-0.2532024	0.0167308	-15.13	0.0000	-0.2859942	-0.2204105
dnoniiay	1.00999	0.0047955	210.61	0.0000	1.0005910	1.0193900
deqv	0.0263796	0.0019936	13.23	0.0000	0.0224722	0.0302870
dnimy	0.9175164	0.0065621	139.82	0.0000	0.9046549	0.9303780
dnonixay	-1.076489	0.0050965	-211.22	0.0000	-1.0864780	-1.0665000
_cons	-0.0057685	0.0034263	-1.68	0.0920	-0.0124839	0.0009469
sigma_u	0.50932716					
Sigma_e	1.7628287					
rho	0.07704665	(fraction of variance due to u_i)				
F test that all u_i = 0 :	F(5465, 259336) = 2.74				Prob > F = 0.0000	

Table 10						
POOLED TS OLS RURAL BANKS USING NON-ECONOMY-NORMALIZED						
Fixed-effects (within) regression				Number of obs =		142943
Group variable: crossid				Number of groups =		3106
R-sq:	within =	0.1137		Obs per group: min =		1
	between =	0.6879			avg =	46
	overall =	0.177			max =	52
				F(6,139831) =		2989.01
				Prob > F =		0.0000
roaptx	Coef.	Std. Err.	t	P>(t)	[95% Conf. Interval]	
roaptx						
L4.	-0.286746	0.0025348	-11.31	0.0000	-0.0336429	-0.2370630
lnasset5	-0.2600908	0.0179843	-14.46	0.0000	-0.2953396	-0.2248420
noniiay	1.177087	0.0108638	108.35	0.0000	1.1557940	1.1983800
eqv	0.010226	0.0029607	3.45	0.0001	0.0044231	0.0160290
nimy	0.9447741	0.009168	103.05	0.0000	0.9268051	0.9627431
nonixay	-1.21727	0.0105515	-115.36	0.0000	-1.2379500	-1.1965890
_cons	3.302526	0.2191399	15.07	0.0000	2.873016	3.732036
sigma_u	0.45151986					
Sigma_e	1.7541192					
rho	0.0621403	(fraction of variance due to u_i)				
F test that all u_i = 0 :		F(3105, 139831) = 2.13			Prob > F = 0.0000	

Table 11						
POOLED TS OLS RURAL BANKS USING ECONOMY-NORMALIZED						
Fixed-effects (within) regression				Number of obs =		142943
Group variable: crossid				Number of groups =		3106
R-sq:	within =	0.1349		Obs per group: min =		1
	between =	0.6349			avg =	46
	overall =	0.1937			max =	52
				F(6, 139831) =		3633.01
				Prob > F =		0.0000
droaptx	Coef.	Std. Err.	t	P>(t)	[95% Conf. Interval]	
droaptx						
L4.	-0.0086261	0.0025089	-3.44	0.0010	-0.0135536	-0.0037187
dlnasset5	-0.0466864	0.023388	-17.39	0.0000	-0.4525265	-0.3608462
dnoniiay	1.194264	0.0098972	120.67	0.0000	1.1748660	1.2136620
deqv	0.0136587	0.0026671	5.12	0.0000	0.0084312	0.0188861
dnimy	0.9976664	0.008516	117.15	0.0000	0.9809752	1.0143580
dnonixay	-1.256684	0.0097787	128.51	0.0000	-1.2758500	-1.2375180
_cons	-0.0843095	0.0077981	-10.81	0.0000	-0.0995937	-0.0690254
sigma_u	0.51602911					
Sigma_e	1.5597466					
rho	0.09865752	(fraction of variance due to u_i)				
F test that all u_i = 0 :		F(3105, 139831) = 2.39				Prob > F = 0.0000

Table 12						
POOLED TS OLS METRO BANKS USING NON-ECONOMY-NORMALIZED						
Fixed-effects (within) regression				Number of obs =		121865
Group variable: crossid				Number of groups =		2652
R-sq:	within =	0.2468		Obs per group: min =		1
	between =	0.9868			avg =	46
	overall =	0.7889			max =	52
				F(6, 119207) =		6508.77
				Prob > F =		0.0000
roaptx	Coef.	Std. Err.	t	P>(t)	[95% Conf. Interval]	
roaptx						
L4.	-0.0059829	0.0026497	-2.26	0.0240	-0.0111762	-0.0007896
lnasset5	-0.3870837	0.0204479	-18.93	0.0000	-0.4271612	-0.3470063
noniiay	0.9792774	0.0063348	154.59	0.0000	0.9668613	0.9916934
eqv	0.0349243	0.0031389	11.13	0.0000	0.0287720	0.0410765
nimy	0.8714233	0.011354	76.75	0.0000	0.8491697	0.8936768
nonixay	-1.054804	0.0069426	-151.93	0.0000	-1.0684110	-1.0411960
_cons	4.574221	0.263749	17.34	0.0000	4.057276	5.091167
sigma_u	0.77265					
Sigma_e	2.0447255					
rho	0.12494804	(fraction of variance due to u_i)				
F test that all u_i = 0 :		F(2651, 119207) =				Prob > F = 0.0000

The time-series OLS results also show that the net interest rate margin of rural banks is higher than that of their metropolitan counterparts. The time-series OLS data also indicates that CAR differs from the results in the pooled cross-sectional regressions. In the time-series regressions, CAR (eqv) is positive and significant across all regressions. An interesting result is that lagged pre-tax ROA is negative when significant, although size of the coefficient is relatively small. This warrants further investigation. Otherwise, the signs of the coefficients are the same as in the cross-sectional OLS regressions with size (asset5) and non-interest expense being (nonixay) negative.

Table 13						
POOLED TS OLS METRO BANKS USING ECONOMY-NORMALIZED						
Fixed-effects (within) regression				Number of obs =		121865
Group variable: crossid				Number of groups =		2652
R-sq:	within =	0.2525		Obs per group: min =		1
	between =	0.9906			avg =	46
	overall =	0.8054			max =	52
				F(6, 119207) =		6710.78
				Prob > F =		0.0000
droaptx	Coef.	Std. Err.	t	P>(t)	[95% Conf. Interval]	
droaptx						
L4.	0.0017847	0.0026506	0.07	0.5010	-0.0034105	0.0069799
dlnasset5	-0.219934	0.0270817	-8.12	0.0000	-0.2730137	-0.1668543
dnoniiay	0.972894	0.0061332	158.63	0.0000	0.9608731	0.9849149
deqv	0.0339648	0.0030848	11.01	0.0000	0.0279186	0.0400111
dnimy	0.9223176	0.0113704	81.12	0.0000	0.9000318	0.9446034
dnonixay	-1.039375	0.0067974	-152.91	0.0000	-1.0526980	-1.0260530
_cons	0.025413	0.0107307	2.37	0.0180	0.004381	0.0464449
sigma_u	0.67401676					
Sigma_e	1.9709322					
rho	0.10472332	(fraction of variance due to u_i)				
F test that all u_i = 0 :		F(2651, 119207) = 2.95				Prob > F = 0.0000

Dynamic Panel Estimation

The null hypothesis of the Sargan test that the over-identifying restrictions are valid were rejected for both the non-economy-normalized and economy-normalized panel regressions; therefore, they are not valid. The Arellano-Bond test for zero autocorrelation in first-differenced errors revealed evidence of misspecification for the non-economy-normalized panel regressions. However, there was no evidence of misspecification in the economy-normalized regressions. Despite the results of the Sargan test, we follow Goddard, Molyneux, and Wilson (2004), who encountered similar issues, and provide the results of the economy-normalized regressions with the above caveat.

Table 14						
DYNAMIC PANEL ALL BANKS USING ECONOMY-NORMALIZED DATA						
Arellano-Bond dynamic panel-data estimation			Number of obs =			249338
Group variable: crossid			Number of groups =			5466
Time variable: timeid						
			Obs per group: min =			16
				avg =		45.61617
				max =		51
Number of instruments - 1.5e+03			Wald chi 2(9) =			2444.07
			Prob > chi 2 =			0.0000
One-step results		(Std. Err. adjusted for clustering on crossid)				
		Robust				
dr0roaptx	Coef.	Std. Err.	z	P>(z)	[95% Conf. Interval]	
dr0roaptx						
L1.	0.3973775	0.0441071	9.01	0.000	0.3109292	-0.4838258
L2.	-0.0175836	0.0152226	-1.16	0.248	-0.0474193	0.0122521
L3.	-0.01011649	0.0191132	-5.29	0.000	-0.1386261	-0.0637036
L4.	0.0369237	0.118291	3.12	0.002	0.0137390	0.0601083
dlnasset5	-2.720921	0.222671	-12.22	0.000	-3.1573480	-2.2844940
dnoniiay	0.8255317	0.051451	16.05	0.000	0.7246896	0.9263738
deqv	0.0777918	0.0186109	4.18	0.000	0.0413152	0.1142685
dnimy	0.7787569	0.465123	16.74	0.000	0.6875944	0.8699194
dnonixay	-0.8508638	0.068657	-12.39	0.000	-0.9854290	-0.7162986
_cons	0.0321022	0.0397568	0.81	0.419	-0.0458197	0.1100241
Instruments for differenced equation						
	GMM-type: L(2/.).dr0aptx					
	Standard: D.dlnassat5 D.dnoniiay D.deqv D.dnimy D.dnoixay					
Instruments for level equation			Standard: _cons			

Table 15						
DYNAMIC PANEL RURAL BANKS USING ECONOMY-NORMALIZED						
Arellano-Bond dynamic panel-data estimation			Number of obs =			134391
Group variable: crossid			Number of groups =			3103
Time variable: timeid						
			Obs per group: min =			1
				avg =		43.31002
				max =		51
Number of instruments - 1.5e+03			Wald chi 2(9) =			52572.28
			Prob > chi 2 =			0.0000
One-step results			(Std. Err. adjusted for clustering on crossid)			
		Robust				
dr0roaptx	Coef.	Std. Err.	z	P>(z)	[95% Conf. Interval]	
dr0roaptx						
L1.	0.4498633	0.002912	154.49	0.000	0.4441559	0.4555707
L2.	-0.0310608	0.0029281	-10.61	0.000	-0.0036800	-0.0253219
L3.	-0.1364222	0.0027547	-49.52	0.000	-0.1418214	-0.1310231
L4.	0.0647087	0.002365	27.36	0.000	0.0600733	0.0693440
dlnasset5	-3.173356	0.075241	-42.18	0.000	-3.3208230	-3.0258840
dnoniiay	1.065877	0.0126253	84.42	0.000	1.0411320	1.0906220
deqv	0.0288549	0.0055402	5.21	0.000	0.0179963	0.0397135
dnimy	0.78339973	0.0138901	56.4	0.000	0.7561731	0.8106214
dnonixay	-1.117461	0.0127226	-87.81	0.000	-1.1424050	-1.0925170
_cons	-8499601	0.029723	-40.53	0.000	-891065	-0.8088553
Instruments for differenced equation						
	GMM-type: L(2/.).dr0aptx					
	Standard: D.dlnassat5 D.dnoniiay D.deqv D.dnimy D.dnoixay					
Instruments for level equation			Standard: _cons			

Table 16						
DYNAMIC PANEL METRO BANKS USING ECONOMY-NORMALIZED						
Arellano-Bond dynamic panel-data estimation			Number of obs =			114947
Group variable: crossid			Number of groups =			2652
Time variable: timeid						
			Obs per group: min =			1
				avg =		43.34351
				max =		51
Number of instruments - 1.5e+03			Wald chi 2(9) =			1468.22
			Prob > chi 2 =			0.0000
One-step results			(Std. Err. adjusted for clustering on crossid)			
		Robust				
dr0roaptx	Coef.	Std. Err.	z	P>(z)	[95% Conf. Interval]	
dr0roaptx						
L1.	0.3685604	0.062088	5.94	0.000	0.0246870	0.4902506
L2.	-0.0129432	0.0175742	-0.74	0.461	-0.0473881	0.0215017
L3.	-0.0845967	0.0237472	-3.56	0.000	-0.0121140	-0.0380530
L4.	0.0199218	0.0136042	1.46	0.143	-0.0067419	0.0465855
dlnasset5	-1.644753	0.3033744	-5.42	0.000	-2.2387560	-1.0495500
dnoniiay	0.8151457	0.0397175	20.52	0.000	0.7373007	0.8929906
deqv	0.102721	0.0309129	3.32	0.001	0.0421327	0.1633092
dnimy	0.9003749	0.0895391	10.06	0.000	0.7248815	1.0758680
dnonixay	-0.8179056	0.0532217	-15.37	0.000	-0.9222183	-0.7135929
_cons	0.5602436	0.1056296	5.3	0.000	0.3532133	0.7672738
Instruments for differenced equation						
GMM-type: L(2/.).dr0aptx						
Standard: D.dlnassat5 D.dnoniiay D.deqv D.dnimy D.dnoixay						
Instruments for level equation			Standard: _cons			

CONCLUSIONS

This study demonstrates that US community banks are not a homogenous group. Rural and metropolitan community banks have differences on the variables contributing to profitability. Therefore, it is important to segregate the two when conducting studies on community banking in the US. This study compares community banks operating in rural and metropolitan counties on the variables attributing to bank profitability using pooled OLS, pooled time-series OLS, and dynamic panels methodologies. Following the SCP and competition-fragility literature and given that community banks operating in metropolitan areas are facing direct competition from massive nationwide and regional banks whereas rural community banks are not to a great extent, one would expect a difference in the variables contributing to

profitability. This study is exploratory in nature in that the purpose is to provide informative insight into areas in need of further research.

Overall, the three methodologies are more alike than different in that the signs of the coefficients are substantially alike across all three methodologies. The size of the coefficients indicates that the variables contributing to profitability differ in magnitude when comparing community banks in metropolitan counties to those in rural counties. Both the pooled and time-series OLS models indicate that bank size contributes to profitability more in metropolitan areas. Perhaps, in a rural community with only a few banks size is not as important when it comes to attracting and retaining customers. In the results from the dynamic panel analysis, metropolitan banks have a smaller size coefficient than rural banks; however, we must view these results with caution given the results of the Sargan test.

The results across all three methodologies provide some interesting insight into net interest margins, non-interest income, and non-interest expenses. Traditionally, the majority of bank profit comes from the difference in the rate paid for deposits and the rates charged for loans. In both the pooled OLS and pooled time-series OLS models, net-interest margins contribute less to profitability in metropolitan banks. This would conform to the competition-fragility argument that competition in the banking sector leads to lower net interest margins. One might expect that banks in metropolitan areas might have more opportunities to profit from non-interest fee income; however, the results from the pooled OLS, pooled time-series OLS, and dynamic panel models indicate that non-interest income contributes less to profitability in metropolitan banks. One possibility might be that metropolitan banks compete with massive nationwide and regional banks and as a result have to compete by offering free or lower cost services whereas the SCP paradigm indicates that small banks in rural communities have a greater ability to collude on fees such as checking, overdraft, letters of credit, and charges for other services. Non-interest expense is negative in all results as expected. The results from the pooled OLS, pooled time-series OLS, and dynamic panel models indicate that non-interest expense has less of an impact on profits in metropolitan banks. Given the higher real estate and labor prices in metropolitan areas, one might expect non-interest expense to have more of a negative impact on profits in big cities than small towns. However, it may be possible that efficiencies achieved though economies of scale in metropolitan banks may result in non-interest expenses being less of a factor. In the results from the dynamic panel analysis, metropolitan banks have a larger net interest margin coefficient than rural banks; however, we must view these results with caution given the results of the Sargan test.

Finally, the coefficient for equity was small but positive and significant across all methodologies, except cross-sectional OLS by type, with the coefficient being larger for metropolitan banks. However, future research needs to examine this variable before and after the financial crisis because there were regulatory changes that required increases in CAR after the crisis. It would be interesting to examine the difference in CAR between rural and metropolitan banks prior to the regulatory changes. Given the wide fluctuation in economic conditions over the period of this study, we ran all studies using economy-normalized data where we subtracted the individual bank numbers for each variable from the year mean for all banks. This did not lead to any changes in the signs of coefficients; however, it is noteworthy that only the economy-

normalized dataset passed the Arellano-Bond test for zero autocorrelation in first-differenced errors. However, both data samples failed to pass the Sargan test and as a result, one must view the dynamic panel results with caution.

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