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ANALYSTS' IFRS KNOWLEDGE, FORECAST ERROR, AND SEC'S ELIMINATION OF THE 20-F RECONCILIATION

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ABSTRACT

Foreign private issues (FPI) with trading shares in the United States needed to reconcile their annual financial reports (20-F) to the U.S. Generally Accepted Accounting Principles (GAAP) if they prepare the statements with International Financial Reporting Standards (IFRS). However, in November 2007, the SEC eliminated the 20-F reconciliation requirement. Prior studies have investigated the consequences of removing the reconciliation from country-level as well as firm-level characteristics, and have found mixed results. In this paper, we test the effect of the elimination on analyst forecast error based on analyst-individual characteristics. Specifically, we examine whether the effect varies with analysts' knowledge of IFRS. If there is any information loss from removing the reconciliation, the negative impact would be stronger for analysts without IFRS expertise. Therefore, these analysts' forecast error might become larger after the elimination, relative to before the elimination. We test our conjecture with a set of hand-collected data of analysts who follow foreign IFRS filers from 2005 to 2009. Results suggest that, in general, there is no significant change in terms of analysts' forecast error before and after eliminating the reconciliation. However, for analysts who do not have knowledge of IFRS, their forecast error significantly increased in the post-elimination period, while this change is not observed in analysts with IFRS knowledge. Our results not only provide supporting evidence to prior studies and the SEC's Final Rule (2007), but also highlight the importance of analysts' individual characteristics on their forecast properties.

JEL: F23, F37, G28

KEYWORDS: IFRS, 20-F Reconciliation Elimination, Analyst Forecast Properties

INTRODUCTION

Foreign private issuers (FPI) who list their shares in the U.S. capital markets were required to reconcile their annual financial reports (20-F) to the U.S. Generally Accepted Accounting Principles (GAAP). However, on November 15, 2007, the Securities and Exchange Commission (SEC) issued the Final Rule of "Acceptance From Foreign Private Issuers of Financial Statements Prepared in Accordance With International Financial Reporting Standards Without Reconciliation to U.S. GAAP", which states that "the Commission is adopting rules to accept from foreign private issuers in their filings with the Commission financial statements prepared in accordance with International Financial Reporting Standards ("IFRS") as issued by the International Accounting Standards Board ("IASB") without reconciliation to generally accepted accounting principles ("GAAP") as used in the United States" (p.1).

Although the intention of the Rule is "for the protection of investors and the efficiency of capital markets" (p.1), prior studies have found controversial results for the consequences of removing the reconciliation. The proponents claim that the removal would enable managers to "better communicate firm performance without constraints" (Chiu & Lee 2013). Others are concerned that the reconciliation contains useful information for market participants. Therefore, the elimination might result in higher information asymmetry (Chen et al. 2019). Another option is that "reconciliation information is rarely used by investors" (Kim et al. 2012), and the elimination should have no strong influence.

Analysts are important external users of firms' financial statements. Therefore, it is necessary to examine the effect of eliminating the reconciliation on analysts' forecast properties. Kang et al. (2012) and Kim et al. (2012) find that, in general, there is no significant change of analysts' forecast dispersion and forecast error after the elimination requirement. However, their results vary with some country-level and firm-level characteristics, such as home countries' shareholder protection and firms' institutional ownership. In this paper, we extend prior studies by focusing on one vital analyst individual characteristics, the knowledge with IFRS before the elimination. We conjecture that if there is any information loss from removing the reconciliation, the effect would be stronger for analysts who do not have IFRS expertise and thus rely heavily on the reconciliation. Using a hand-collected data set, we separate analysts who follow the foreign IFRS filers between 2005 and 2009 into two categories, analysts with IFRS knowledge and analysts without IFRS knowledge (detailed criteria are provided in Data and Methodology Section). Then we compare their relative forecast error in the pre- and post-elimination periods. Results from regression analyses suggest that overall there is no significant change before and after the elimination, which is consistent with Kang et al. (2012) and Kim et al. (2012). However, for analysts who are not familiar with IFRS, their relative forecast error was significantly increased when foreign IFRS filers stopped the reconciliation information. The results are robust with a different proxy of forecast error, or with the industry-fixed effects.

Our study contributes to the international accounting field in the following ways. Firstly, the evidence provides supports to the SEC's Final Rule (2007). We find that generally analysts' relative forecast error is not significantly affected by the elimination, indicating that there is no observed information loss from removing the reconciliation. Secondly, our findings response to some concerns from the SEC's comment letters which address the importance of having IFRS knowledge. For example, the Corporate Reporting User's Forum states that "We are very familiar with IFRS and as professional investors do not see a role for the Commission in assisting our own understanding. Private US investors, however, may be less familiar with IFRS financial statements and it would make sense for the Commission to encourage the provision of information and training for such investors" (p.7). Our results suggest that for analysts with IFRS expertise, there is no significant effect of removing the reconciliation on their forecasts. However, for analysts who are not familiar with IFRS, they face the information loss after the SEC's Rule and experience increased relative forecast error. Lastly, we highlight the importance of analysts' individual characteristics on their forecast properties. Bradley et al. (2017) find that when analysts' industry working experience matches with the coverage firms' industry, these analysts outperform their peers who do not have that industry's working experience. Our results suggest that not only the related industry experience, but also the knowledge with the firms' accounting standards, can affect analysts' forecast outcomes.

LITERATURE REVIEW

Unlike U.S. domestic firms that must follow the Generally Accepted Accounting Principles (GAAP) issued by the Financial Accounting Standards Board (FASB), foreign firms with trading shares in the U.S. stock exchanges can choose among U.S. GAAP, IFRS, or local countries' GAAPs. The Securities and Exchange Act of 1934 requires foreign firms to file their annual statements with the SEC using form 20-F, which is similar with domestic firms' 10-K reports (https://www.sec.gov/files/form20-f.pdf). Prior to 2007, if foreign firms report their 20-F in IFRS or the local countries' GAAPs, they were required to reconcile the key numbers, such as net income and stockholders' equity, from IFRS (local countries' GAAPs) to U.S. GAAP. This reconciliation is usually illustrated in item 17 or item 18 of the 20-F. We provide an example of a foreign firm (Tenaris) with the detailed information of the reconciliation in Table 1.

Tenaris filed its 20-F in 2006 using IFRS. Item 18, "Reconciliation of net income and shareholders' equity to US GAAP" contains the adjustment from IFRS to U.S. GAAP.

Table 1: Tenaris S.A. Reconciliation of Net Income and Shareholders' Equity to U.S. GAAP for the Years Ended December 31, 2006, 2005 and 2004

	Year Ended December 31,		
	2006	**2005**	**2004**
Net income attributable to equity holders of the Company in accordance with IFRS	1,945,314	1,277,547	784,703
U.S. GAAP adjustments—income (expense)			
Deferred income tax (1)	(4,486)	(5,115)	(8,682)
Equity in investments in associated companies (2)	5,858	10,531	(55,026)
Pension benefits—unrecognized prior service costs (4)	277	(415)	(74)
Changes in fair value of financial assets (5)	—	4,023	(885)
Goodwill amortization (7)	—	—	9,023
Effect of adopting IFRS 3—negative goodwill (8)	10,184	8,687	—
Cost of exchange offer—amortization (9)	—	—	1,060
Minority interest in above reconciling items	169	207	220
Net income in accordance with U.S. GAAP	1,957,316	1,295,465	730,339

	December 31,	
	2006	**2005**
Shareholders' equity in accordance with IFRS	5,338,619	3,507,802
U.S. GAAP adjustments—increase (decrease):		
Deferred income tax (1)	49,452	52,994
Equity in investments in associated companies (2)	(27,530)	(34,362)
Exchange of shares and conversion of debt in investments in associated companies (3)	13,196	(3,938)
Pension benefits—unrecognized prior service costs (4)	—	2,420
Pension benefits—effect of adopting SFAS 158 (4)	(3,113)	—
Goodwill impairment (6)	(21,628)	(21,628)
Goodwill amortization (7)	23,545	23,545
Effect of adopting IFRS 3—negative goodwill (8)	(91,728)	(98,060)
Cost of the exchange offer—original value (9)	(15,900)	(15,900)
Cost of the exchange offer—accumulated amortization (9)	2,066	2,066
Minority interest in above reconciling items	(1,177)	(1,346)
Shareholders' equity in accordance with U.S. GAAP	5,265,802	3,413,593

Table 1 presents an example of a firm's reconciliation of net income and shareholders' equity from IFRS to U.S. GAAP for the year ended December 31, 2006, 2005 and 2004. The information is retrieved from Tenaris S.A., a foreign IFRS filer. The completed financial statement can be downloaded from https://www.sec.gov/Archives/edgar/data/1190723/000119312507147298/d20f.htm#fin28316_65

The adjustment in Tenaris's 20-F indicates that foreign firms' net income and stockholder's equity can be different in IFRS and in U.S. GAAP, resulting from the different treatment of deferred income tax, pension benefits, goodwill impairment, and other divergence between these two accounting standards. Although the reconciliation amount for Tenaris is moderate (for year 2006, the net income and shareholders' equity under IFRS and under U.S. GAAP are $1,945,314 versus $1,957,316 and $5,338,619 versus $5,265,802, respectively), the magnitude for other foreign firms can be significant. For example, Barniv and Myring (2015) mention that a French firm, TOTAL S.A. reported its year 2005's shareholders' equity as €40,645 million with IFRS, but €73,055 million with U.S. GAAP, which is almost double of the amount with IFRS. Henry et al. (2007) examine the reconciled items of 83 foreign firms reporting with IFRS. They find that for the 2004 financial statements, firms' net income under U.S. GAAP, on average, was 59% lower than the net income under IFRS.

The American Institute of Certified Public Accountants (AICPA) summarizes the main differences between IFRS and U.S. GAAP into five parts (more details can be found in AICPA website https://www.ifrs.com/overview/General/differences.html): the model of the consolidation, the format of income statement, the treatment of inventory, the calculation of earnings-per-share, and the treatment of development costs. Many accounting firms and financial institutions have provided detailed description regarding the similarities and differences for these two accounting regimes. For example, based on the 2019 guidance of PricewaterhouseCoopers, the divergence comes from the revenue recognition, expense recognition (share-based payments and employee benefits), assets, liabilities, financial liabilities and equity, derivatives and hedging, consolidation, business combinations, leases, and other accounting and reporting topics.

From the academic perspective, prior studies have shown that U.S. GAAP is "rules-based" while IFRS relies more on "principles" (Chen et al. 2015). Donelson et al. (2016) provide five possible reasons why U.S. GAAP contains rules-based characteristics, namely the litigation risk, constraining opportunism, complexity, transaction frequency and age. The other main difference is that U.S. GAAP focuses more on "historical costs" rather than the "fair value" as the IFRS (Ball et al. 2015; Liang and Riedl 2014). PricewaterhouseCoopers 2019 guidance illustrates the fair value versus historical cost in biological assets. Under U.S. GAAP, biological assets can be measured at historical cost or fair value, while under IAS 41, biological assets are only measured at fair value.

In spite of these differences between the two accounting standards, in July 2007, the SEC released the Proposal of "acceptance from foreign private issuers of financial statement prepared in accordance with international financial reporting standards without reconciliation to U.S. GAAP". About 125 respondents from various organizations stated their opinions in the comment letters (all the comment letters can be found at https://www.sec.gov/comments/s7-13-07/s71307.shtml). While some of them supported the proposal, others argued that the elimination is premature. We provide a brief review of these comment letters.

Among the Big 4 auditors, Ernst & Young and KPMG voted for the Proposal since "IFRS issued by the IASB are sufficiently high-quality and comprehensive to be used by FPIs without reconciliation to U.S. GAAP" (KPMG, p.1). PricewaterhouseCoopers and Deloitte, however, expressed their concerns to the Proposal, especially given the "jurisdictional version" of IFRS (Deloitte, p.2). PricewaterhouseCoopers concluded that "we believe that the Proposed Rule's applicability, as currently structured, unnecessarily reduces the number of foreign private issuers that could potentially benefit from the change in regulation" (p.1).

Within the American Accounting Association (AAA), the AAA Financial Accounting Standards Committee reviewed related accounting research from four perspectives, namely the consequences of IFRS adoption, firms' accounting standards and their value relevance, the aggregated properties of the stock market, and the institutional factors in the reporting environment. They claimed that "the quality of IFRS and U.S. GAAP are compatible and that the proposal to allow foreign firms to use IFRS without reconciliation deserve support" (p.6). In contrast, the Financial Accounting and Reporting Section of the AAA "has concluded that eliminating the reconciliation requirement is premature" (p.2). The Committee offered six reasons based on extant academic literature, including material differences between the two accounting regimes, the "home GAAP" preference from the U.S. investors, various implementation of accounting standards, low compliance of foreign firms, benefits from cross-listing exceeding the costs of reconciliation, and the proper standard harmonization procedure.

Other respondents also had different opinions. Some organizations, such as the NYSE Euronext, believed that the convergence projects between IASB and FASB help "neutralize any differences" between the two accounting regimes (p.1). However, others organizations, including the Chartered Institute of Management Accountants and the CFA Institute Center for Financial Market Integrity, were concerned that "the current reconciliation requirement for IFRS to U.S. GAAP serves as a primary tool for identifying the material differences in practice as well as in principle" (CFA Institute Center for Financial Market Integrity, p. 2), therefore, the proposal "might, at this stage, be a step too far for US investors" (p. 3).

The various options from the comment letters parallel with the controversial research findings on the consequences of eliminating the 20-F reconciliation. Some scholars argue that the 20-F reconciliation contains useful information for market participants; therefore, the elimination might cause negative outcomes. As discussed earlier, Henry et al. (2007) conclude that "significant differences exist between results reported using IFRS versus U.S. GAAP despite convergence efforts" (p.7). Supporting their argument, Chen and Sami (2008) notice that the abnormal trading volume in the U.S. capital markets is significantly higher when foreign IFRS firms announce their 20-F earnings with the reconciliation. This phenomenon indicates that U.S. investors view the reconciliation as informative for their equity allocation decisions.

On the other hand, some studies claim that the 20-F reconciliation does not contain incremental information. Jiang et al. (2010) find opposite results from Chen and Sami (2008) by showing an insignificant relation between foreign firms' 20-F earnings and abnormal return volatility (bid-ask spread). Kim et al. (2012) investigate the effect of removing the reconciliation by testing the informed trading and market liquidity. They conjecture that the reconciliation is non-essential given the comparable reporting quality between the U.S. GAAP and the IFRS. The results from the difference-in-difference models indicate insignificant changes of informed trading and market liquidity in the pre- and post-elimination periods.

Another opinion regarding firms' reconciliation, such as Chiu and Lee (2013), is that foreign firms had the pressure to minimize the reconciliation amount; therefore, managers might choose inappropriate accounting treatments that fail to reflect the real underlying performance. If this is the case, removing the elimination can release managers' concerns and improve firms' reporting quality. Their results support the argument by showing less discretionary accruals and more timely loss recognition in firms' earnings after the SEC's Rule. Chen et al. (2015) test IFRS filers' information asymmetry between the insiders and external report users. The results are consistent with Chiu and Lee (2013) by showing decreased information asymmetry after eliminating the reconciliation.

Analysts are important users of foreign firms' financial statements. Therefore, prior studies have tested the effect of eliminating the 20-F reconciliation on analyst forecast properties. Kim et al. (2012) propose the incremental information contained in the 20-F reconciliation is minimal given the compatible earnings quality between IFRS and U.S. GAAP. The elimination of this reconciliation, therefore, will not have a significant impact on information users, such as equity analysts. Their results support the prediction by showing that there is no substantial change in terms of analyst forecast error before and after the elimination. The findings are robust based on firms' various characteristics, such as the level of institutional ownership. Another paper from Kang et al. (2012) finds similar evidence but focuses on analyst forecast dispersion.

They compare foreign firms using IFRS with foreign firms using U.S. GAAP from 2006 to 2009. Results from the difference-in-difference regression models suggest that analyst forecast dispersion is not significantly affected by SEC's Rule of eliminating the reconciliation. However, the insignificant change is only held for foreign firms with weak shareholder protection in their home countries. For foreign firms from strong shareholder protection countries, the information loss from the elimination is not compensated by improved reporting quality. Analysts following these firms experience larger forecast dispersion in the post-elimination period. These two studies show that firm-level characteristics and country-level characteristics are important factors when testing the consequences of eliminating 20-F reconciliation.

Besides firm- and country-level characteristics, prior literature suggests that analyst individual-level characteristics are also related with the forecast properties. For example, Barniv and Myring (2015) find that analyst forecast accuracy is negatively related with the magnitude of the reconciliation amount in foreign firms' 20-F reports. But for analysts who are in the All-Star list, they are able to adjust the inconsistency between IFRS and U.S. GAAP and are less affected by the differences. The importance of analyst individual characteristics is also documented by Bradley et al. (2017) who examine analysts' working background before they became equity analysts. They analyze analysts' LinkedIn information from 1983 to 2011 to test whether analysts' industry working experience can help them issue more accurate forecasts when the firms they follow are in the same industry. The findings suggest that in general, if analysts worked in the same industry as their covered firms, these analysts outperform their peers who do not have the industry experience. Song (2019) finds that when analysts follow Chinese firms listed in the U.S. markets, those analysts who are familiar with China, such as the culture, language, and economy, can provide better forecast service than analysts without Chinese familiarity.

DATA AND METHODOLOGY

The literature review indicates that although prior studies have tested the effect of eliminating the 20-F reconciliation on analyst forecast properties, none of them investigates the importance of analyst individual-level characteristics, such as the analyst's familiarity with IFRS. We aim to fill this gap by testing the effect of analyst's IFRS knowledge on his/her forecast error pre- and post-eliminating the 20-F reconciliation. We predict that for a given analyst, analyst F, who has IFRS knowledge and follows a foreign firm filing with IFRS, since the firm's accounting standards (IFRS) match with that analyst's expertise (IFRS knowledge), the incremental information in the reconciliation, if any, will be minimal for that analyst. In this case, the elimination of the reconciliation might not have a significant effect on the analyst's forecasts since there is no information loss. In the SEC's comment letter, Credit Suisse stated a similar argument that "based on our experience, analysts and investors rarely make use of the reconciliation to U.S. GAAP. Rather, analysts and investors focus almost exclusively on the financial statements prepared under the primary GAAP, respective whether it is IFRS or U.S. GAAP" (p.4). Therefore, our first hypothesis is stated as the following:

H1: For a given analyst who has IFRS knowledge, the forecast error is not significantly affected by the elimination of the 20-F reconciliation.

On the other hand, for a given analyst M who has been using U.S. GAAP instead of IFRS, there will be a mismatching between his expertise (U.S. GAAP) and the accounting standards of the foreign firms (IFRS) that he follows. Under this circumstance, the reconciliation, which contains the adjustment between IFRS and U.S. GAAP, is more valuable for two reasons. Firstly, the analyst can use the reconciliation to have a better understanding of the firm's earnings that are presented with IFRS as well as with U.S. GAAP. Secondly, the U.S. GAAP based reconciliation also enables him to compare that firm with other peers. Standard & Poor's states in the comment letter that "the reconciliation…serves a useful function in highlighting differences in accounting conventions, thereby supporting our analytical process and aiding us in making comparisons among global peers" (p.2). However, after eliminating the reconciliation, this critical information would no longer be available to that analyst. Since there are still material differences between IFRS and U.S. GAAP, that analyst might have a hard time reconciling the earnings by himself. In addition, the reduced comparability between that firm and other peers could also cause further information loss, which leads to increased forecast error. Therefore, our second hypothesis is stated as the following:

H2: For a given analyst who does not have IFRS knowledge, the forecast error is significantly affected by the elimination of the 20-F reconciliation.

Since our research question is the effect of eliminating the 20-F reconciliation, we first get all foreign private issuers' 20-F reports between 2005 and 2009 from the SEC website (https://www.sec.gov/divisions/corpfin/internatl/companies.shtml). Out of the 5,429 firm-year observations, we only keep 644 IFRS observations that provided the reconciliation information. We also require that for any given specific firm, it must be in both pre- and post-elimination periods. We have 409 observations after this step. Observations that do not meet the following restrictions are deleted: non-financial regulated industries, listed in the three main stock exchanges, and having December as the fiscal year-end. We then manually check these 195 firm-year observations with their 20-Fs to make sure there is (not) reconciliation before (after) the SEC's Rule. After getting the firm-year observations, we merge them with the I/B/E/S to obtain the analyst individual data. We have 66 unique analysts who follow the same firm in both pre- and post-elimination periods. This step is important because we aim to compare their forecast error before and after the elimination. Since I/B/E/S only provides the last name and the initial of the first name for each analyst, we use that information and the firms' names to identify the analyst's full name. Out of the 66 unique analysts, we are able to find 65 analysts' names.

For these 65 unique analysts with full names, 18 of them do not have public Linkedin information. In this situation, we search for other professional profiles from the brokerage website, Wall Street website, interviews, Institutional Investor website, and related news to gather that analyst's information. We define "with IFRS knowledge" if the analyst meets one of the two criteria:

1) The analyst resided in IFRS-adoption (IFRS-permitting) countries before the elimination. For example, the LinkedIn for analyst Andrew Benson who followed the foreign firm Syngenta (LinkedIn: https://www.linkedin.com/in/andrew-benson-0438b119/?originalSubdomain=uk), indicates that he has been living in the UK since (at least) 1981 where he got this bachelor degree at University of York. Since the UK mandatorily adopted IFRS in 2005, we propose that the analyst got IFRS-related training in the UK. Therefore, when the SEC removed the elimination in 2007, he already had IFRS knowledge before the Rule. We code him as "with IFRS knowledge".

   Or

2) The analyst focused on foreign firms from IFRS-adoption (IFRS-permitting) countries before the elimination. For example, analyst Alexander Lindstrom, "responsible for Nordic Healthcare Equity Research" (LinkedIn: https://www.linkedin.com/in/alexander-lindstrom-2a49424/). Countries in the Nordic area, including Denmark, Finland, Iceland, and Norway, mandatorily adopted IFRS in 2005. Therefore, we code him as "with IFRS knowledge".

An example of an analyst without IFRS knowledge is analyst Thomas Carpenter. His LinkedIn (https://www.linkedin.com/in/thomas-carpenter-cfa-652b2a145/) indicates that he has stayed in New York and Louisville (Kentucky area) in his career life. We code him as no "IFRS knowledge". We obtain countries' IFRS adoption status from the IASB website and other research papers (Song and Trimble, 2020).

To get the final decision with "IFRS knowledge", each author coded the analysts separately. If they both had the same code, that would be the final decision. If they had different coding, then they discussed before reaching the final code.

After merging with all control variables, we have 242 analyst-firm-year observations (104 firm-year and 25 firm observations) as our final sample. Table 2 presents the sample distribution by year and by industry. While year 2005 and 2009 have fewer observations, the yearly distribution is pretty even in the five years. Most of the observations are concentrated on chemical and allied products, electronic and other electric equipment, and petroleum (coal) products industries.

Table 2: Sample Distribution by Year and by Industry

Year	**Freq.**	**Percent**
2005	38	15.7
2006	57	23.55
2007	54	22.31
2008	54	22.31
2009	39	16.12
Total	**242**	**100**
Industry	**Freq.**	**Percent**
Metal, Mining	9	3.72
Printing & Publishing	3	1.24
Chemical & Allied Products	69	28.51
Petroleum & Coal Products	51	21.07
Primary Metal Industries	25	10.33
Electronic & Other Electric Equipment	66	27.27
Communications	11	4.55
Automotive Dealers & Service Stations	4	1.65
Hotels & Other Lodging Places	4	1.65
Total	**242**	**100**

Table 2 presents the sample distribution by year and by industry. We collect the information of analysts' IFRS knowledge from the I/B/E/S database and the LinkedIn website. The final sample contains 242 analyst-firm-year observations from 2005 to 2009. The yearly distribution is pretty even in the five years. Most of the observations are concentrated on chemical and allied products, electronic and other electric equipment, and petroleum (coal) products industries.

Table 3 shows the descriptive statistics for the full sample (Panel A), IFRS-knowledge sample (Panel B), and No-IFRS-knowledge sample (Panel C). Our main variable, analyst forecast error (ERROR), is measured as the relative forecast error of one specific analyst compared with all other analysts. The dummy variable IFRS is coded as one if the analyst has IFRS knowledge as discussed above, and zero if no IFRS knowledge. We define the post-elimination period (POST) as 2008 and 2009. Since the IFRS-knowledge group and the No-IFRS-knowledge group are different in some firm-level characteristics, we control for these variables in our multivariate regression models (firm size SIZE, firm profitability ROA, firm growth GROW, firm return RET, firm unexpected earnings surprise SURP, forecast horizon HORZ, firm loss LOSS, big 4 auditor Big4, and analyst coverage Cover).

Table 3: Descriptive Statistics

Panel A: Full Sample							
Variable	**N**	**Mean**	**25th Pctl**	**Median**	**75th Pctl**	**Std Dev**	
ERROR	242	0.155	-0.161	0.028	0.348	1.554	
IFRS	242	0.496	0	0	1	0.501	
POST	242	0.384	0	0	1	0.487	
SIZE	242	10.702	10.181	11.097	11.816	1.571	
ROA	242	0.109	0.073	0.108	0.150	0.091	
GROW	242	3.717	1.787	2.917	5.063	3.277	
RET	242	0.079	0.049	0.062	0.105	0.043	
SURP	242	0.294	-0.179	0.015	0.310	1.861	
HORZ	242	4.902	4.712	4.886	5.086	0.305	
LOSS	242	0.074	0	0	0	0.263	
Big4	242	0.971	1	1	1	0.168	
Cover	242	2.138	1.609	2.079	2.773	0.765	
Panel B: IFRS-knowledge Group							
Variable	**N**	**Mean**	**25th Pctl**	**Median**	**75th Pctl**	**Std Dev**	
ERROR	120	-0.017	-0.184	0.044	0.365	1.824	
POST	120	0.375	0	0	1	0.486	
SIZE	120	10.780	10.285	11.246	11.779	1.549	
ROA	120	0.111	0.073	0.108	0.158	0.079	
GROW	120	4.090	1.833	3.194	5.118	4.196	
RET	120	0.074	0.045	0.059	0.089	0.041	
SURP	120	0.277	-0.140	0.085	0.310	1.683	
HORZ	120	4.950	4.754	4.938	5.127	0.312	
LOSS	120	0.05	0	0	0	0.219	
Big4	120	0.983	1	1	1	0.129	
Cover	120	1.871	1.386	1.792	2.398	0.722	
Panel C: No-IFRS-knowledge Group							
Variable	**N**	**Mean**	**25th Pctl**	**Median**	**75th Pctl**	**Std Dev**	**Mean-Difference**
ERROR	122	0.324	-0.139	0.000	0.256	1.217	(*)
POST	122	0.393	0	0	1	0.491	
SIZE	122	10.625	10.134	10.963	11.890	1.595	
ROA	122	0.107	0.073	0.108	0.146	0.101	
GROW	122	3.350	1.784	2.769	4.982	1.949	(*)
RET	122	0.085	0.053	0.062	0.114	0.044	(**)
SURP	122	0.311	-0.216	0.008	0.310	2.029	
HORZ	122	4.855	4.650	4.837	5.053	0.291	(**)
LOSS	122	0.098	0	0	0	0.299	
Big4	122	0.959	1	1	1	0.199	
Cover	122	2.400	1.792	2.441	2.996	0.715	(***)

Table 3 shows the descriptive statistics for the full sample (Panel A), IFRS-knowledge sample (Panel B), and No-IFRS-knowledge sample (Panel C). The main variable, analyst forecast error (ERROR), is measured as the relative forecast error of one specific analyst compared with all other analysts. The dummy variable IFRS is coded as one if the analyst has IFRS knowledge, and zero otherwise. The post-elimination period (POST) is year 2008 and 2009. Other control variables are firm size (SIZE), firm profitability (ROA), firm growth (GROW), firm stock return (RET), firm unexpected earnings surprise (SURP), analyst forecast horizon (HORZ), firm loss (LOSS), big 4 auditor (Big4), and analyst coverage (Cover).

Table 4 is the Person correlation matrix using the full sample. Overall, there is no significant relationship between the analyst's relative forecast error (ERROR) and the elimination of the reconciliation (POST). This evidence is consistent with prior studies, such as Kang et al. (2012) and Kim et al. (2012). In the next part, we test whether this finding still holds or not when we control for firm-level characteristics.

Table 4: Person Correlation Matrix

	ERROR	POST	SIZE	ROA	GROW	RET	SURP	HORZ	LOSS	Big4	Cover
ERROR	1										
POST	0.030	1									
SIZE	-0.040	**-0.161**	1								
ROA	-0.049	**-0.337**	**0.454**	1							
GROW	-0.038	**-0.281**	**0.122**	**0.418**	1						
RET	-0.072	**0.178**	**-0.357**	**-0.170**	**-0.118**	1					
SURP	0.068	**-0.199**	-0.066	**-0.169**	0.024	-0.012	1				
HORZ	-0.013	-0.017	-0.006	0.028	0.006	0.038	**0.126**	1			
LOSS	**0.157**	0.035	**-0.421**	**-0.643**	**-0.230**	0.103	**0.323**	0.020	1		
Big4	-0.056	**-0.168**	**0.507**	**0.179**	0.065	**-0.167**	0.019	-0.046	**-0.139**	1	
Cover	0.013	-0.090	**0.281**	0.062	**-0.133**	0.062	0.052	**-0.109**	0.011	**0.165**	1

Table 4 is the Person correlation matrix with the full sample. Variables in the matrix are: analyst relative forecast error (ERROR), analysts' IFRS knowledge (IFRS), post-elimination period (POST), firm size (SIZE), firm profitability (ROA), firm growth (GROW), firm stock return (RET), firm unexpected earnings surprise (SURP), analyst forecast horizon (HORZ), firm loss (LOSS), big 4 auditor (Big4), and analyst coverage (Cover). Variables in bold are significant at the 10% level.

RESULTS AND DISCUSSION

To test our hypotheses, we run the following multivariate regression model:

$$ERROR = \beta_0 + \beta_1 POST + \beta_2 SIZE + \beta_3 ROA + \beta_4 GROW + \beta_5 RET + \beta_6 SURP + \beta_7 HORZ + \beta_8 LOSS + \beta_9 Big4 + \beta_{10} Cover + error\ term \quad (1)$$

We define an analyst's relative forecast error (ERROR) as the difference between his/her forecast error (the deflated absolute value of his/her most recent forecast minus firm's actual earnings) and the median of all other analysts' forecast error (the deflated absolute value of median consensus forecast minus firm's actual earnings). We follow Kang et al. (2012) and code the post-elimination period (POST) as year 2008 and 2009. Our results are quantitatively similar when we include year 2007 in the post period.

As discussed early, we include several firm-level characteristics as the control variables. Prior studies (Hwang et al. 1996; Lang & Lundholm, 1996; Behn et al. 2008) have found that analyst forecast error is associated with firm's size (SIZE), firms' profitability (ROA), firm's growth rate (GROW), firm's return (RET), firm's unexpected earnings surprise (SURP), analyst forecast horizon (HORZ), firm's loss (LOSS), the auditor of the firm (Big 4), and analyst coverage (Cover).

We present our main results in Table 5. Panel A shows the results with the full sample. Model 1 only includes the control variables while Model 2 is with industry fixed effects. The coefficient on the main variable "POST" is insignificant in both models, indicating that overall, analyst relative forecast error is not significantly related with the SEC's Rule of removing the reconciliation. This finding is consistent with Kang et al. (2012) and Kim et al. (2012). Both studies document that the elimination has no significant impact on analyst forecast's dispersion and forecast error. One possible reason is, as explained in the literature review part, IFRS and U.S. GAAP are comparable accounting standards. Therefore, there is no material information contained in the reconciliation for analysts. When the SEC removed the reconciliation, it would not have a significant effect on analysts' forecasts.

Table 5: Main Results

Panel A: Full Sample		
Variable	**Model 1 Coefficient**	**Model 2 Coefficient**
POST	**0.236**	**0.261**
SIZE	0.001	-0.082
ROA	2.191	2.890
GROW	-0.012	0.008
RET	-3.586	-5.315
SURP	0.029	0.024
HORZ	-0.108	-0.066
LOSS	1.313**	1.301**
Big4	-0.511	-0.530
Cover	0.034	-0.136
Intercept	0.996	1.687
Industry Fixed-effect	NO	YES
Observations	242	242
R-squared	0.045	0.063
Adjusted R-squared	0.003	0.006
Panel B: IFRS-knowledge Group		
Variable	**Model 1 Coefficient**	**Model 2 Coefficient**
POST	**0.041**	**0.090**
SIZE	0.183	0.074
ROA	1.555	3.647
GROW	-0.008	-0.006
RET	-7.980*	-9.405*
SURP	0.147	0.132
HORZ	-0.574	-0.399
LOSS	0.518	0.577
Big4	-3.055*	-2.781
Cover	-0.070	-0.185
Intercept	4.353	4.121
Industry Fixed-effect	NO	YES
Observations	120	120
R-squared	0.100	0.116
Adjusted R-squared	0.017	0.085
Panel C: No-IFRS-knowledge Group		
Variable	**Model 1 Coefficient**	**Model 2 Coefficient**
POST	**0.584****	**0.712*****
SIZE	-0.166	-0.371**
ROA	3.771*	2.499
GROW	-0.056	0.151
RET	-0.555	-1.159
SURP	-0.058	-0.045
HORZ	0.557	0.345
LOSS	1.789***	1.825***
Cover	0.141	0.152
Intercept	-2.241	-0.346
Industry Fixed-effect	NO	YES
Observations	122	122
R-squared	0.195	0.240
Adjusted R-squared	0.122	0.132

*Table 5 shows the main results. Panel A, B and C present the results with the full sample, IFRS-knowledge group, and no-IFRS-knowledge group, respectively. For each panel, Model 1 only includes all control variables while Model 2 is with industry fixed effects. Variables in the models are: analyst forecast error (ERROR), analysts' IFRS knowledge (IFRS), post-elimination period (POST), firm size (SIZE), firm profitability (ROA), firm growth (GROW), firm stock return (RET), firm unexpected earnings surprise (SURP), analyst forecast horizon (HORZ), firm loss (LOSS), big 4 auditor (Big4), and analyst coverage (Cover).***, **, and * indicate the significance at the 1% level, 5% level, and 10% level.*

Panel B is the result when we only use analysts with IFRS knowledge as the sample to test hypothesis 1. Similar with the full sample result, there is no significant change for analysts' relative forecast error in the post-elimination period compared with the pre-elimination period. This finding echoes with Credit Suisse's statement that "analysts and investors rarely make use of the reconciliation to U.S. GAAP". Since these analysts are familiar with IFRS, which is the same accounting standards as the firms they follow, it is not surprising that the reconciliation is not valuable for these analysts. Therefore, their forecast behavior will be constant before and after the elimination. Our first hypothesis is supported.

The last panel, Panel C, shows the result for hypothesis 2 using analysts without IFRS knowledge as the observations. Contrary to results in Panel A and Panel B, results in Panel C indicate that for analysts who have no IFRS knowledge, such as analysts that just worked in a local U.S. domestic brokerage and only know U.S. GAAP, their relative forecast error is increased in the post-elimination period. The coefficient is positively significant at the 1% level in the fixed-effect model (Model 2). The possible reason is that for analysts who do not have IFRS knowledge, when they follow IFRS foreign filers, they had to rely heavily on the reconciliation that contains the adjustment between IFRS and U.S. GAAP. The reconciliation is valuable and essential for these analysts by enabling them to understand the business performance and comparing the earnings with other peers. Standard & Poor's had a similar argument that "the reconciliation…serves a useful function in highlighting differences in accounting conventions, thereby supporting our analytical process and aiding us in making comparisons among global peers". When the SEC removed the elimination, these analysts lost the important information of the reconciliation; therefore, their relative forecast error would be higher in the post-elimination period. The findings support our second hypothesis.

We reran all the tests using the mean consensus forecasts as the robustness tests. The results of the fixed effect model are presented in Table 6. We observe similar results that for the full sample and the IFRS-knowledge sample, there is no significant change for analysts' relative forecast error in the post-elimination period, however, for analysts without IFRS knowledge, their relative forecast error is increased significantly after removing the reconciliation.

Table 6: Robustness Tests

VARIABLE	Full Sample Coefficient	IFRS-knowledge Group Coefficient	No-IFRS-knowledge Group Coefficient
POST	**0.224**	**0.115**	**0.598****
SIZE	-0.065	0.078	-0.338**
ROA	1.974	2.811	0.931
GROW	0.011	-0.004	0.180
RET	-6.534**	-10.607*	-2.819
SURP	0.064	0.152	0.004
HORZ	-0.174	-0.502	0.244
LOSS	0.901	0.157	1.376**
Big4	-0.867	-3.043*	0.939
Cover	-0.176	-0.224	0.110
Intercept	2.341	4.648	0.266
Industry Fixed-effect	YES	YES	YES
Observations	242	120	122
R-squared	0.070	0.127	0.220
Adjusted R-squared	0.012	0.031	0.132

*Table 6 presents the results for robustness test using the mean consensus forecasts. All regression models are with industry fixed effects. Variables in the models are: analyst forecast error (ERROR), analyst's IFRS knowledge (IFRS), post-elimination period (POST), firm size (SIZE), firm profitability (ROA), firm growth (GROW), firm stock return (RET), firm unexpected earnings surprise (SURP), analyst forecast horizon (HORZ), firm loss (LOSS), big 4 auditor (Big4), and analyst coverage (Cover).***, **, and * indicate the significance at the 1% level, 5% level, and 10% level.*

CONCLUDING COMMENTS

In this study, we try to test the effect of analyst-individual characteristics, such as his/her knowledge with IFRS, on the forecast error after the SEC eliminated foreign firms' 20-F reconciliation. We propose that the insignificant change of analysts' forecast properties from prior studies (Kim et al. 2012) may not hold for analysts who do not have IFRS knowledge and who rely heavily on the reconciliation information. We test our prediction with a hand-collected data set of analysts who follow foreign IFRS firms in the U.S. capital markets. Results suggest that, on average, for the full sample and the sample only with analysts having IFRS knowledge, there is no significant change in terms of analysts' relative forecast error. But for analysts without IFRS knowledge, their relative forecast error was significantly increased after eliminating the reconciliation.

Our findings not only support the SEC's Rule of removing the reconciliation by showing that in general, analysts' performance is not affected by the elimination of the reconciliation, but also highlight the importance of analysts' accounting knowledge on IFRS for their forecasts. These findings echo with the SEC's suggestion that information users "may need to obtain training or education in IFRS before they are comfortable working without the U.S. GAAP reconciliation" (SEC 2007, P.23).

One limitation of our paper is the relative small sample size. Later studies can expand the sample and include more years to see whether the difference between IFRS-knowledge analysts and no-IFRS-knowledge analyst still hold in the long term.

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IMPACT OF THE 2017 TAX CUTS AND JOBS ACT ON FOREIGN CASH HOLDINGS OF U.S. MULTINATIONAL CORPORATIONS

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ABSTRACT

U.S. Multinational Corporations (MNCs) generate significant amounts of income in foreign countries through their international affiliates and subsidiaries. Prior to 2018, this income was subject to U.S. taxation only when repatriated to the U.S., creating an incentive for those firms to retain these earnings in their foreign subsidiaries and leading to the accumulation of large amounts of cash held by U.S. corporations outside of the U.S. The Tax Cuts and Jobs Act (TCJA), which was signed into law by President Trump on December 22, 2017, changed the corporate taxation of U.S. MNCs to a territorial system and created an immediate tax liability for U.S. MNCs' "deemed repatriation" of their past foreign earnings. A primary objective of the change in the corporate tax structure was to encourage repatriation of accumulated foreign cash, as well as to eliminate the incentives to accumulate cash in foreign jurisdictions. This study examines the impact of the tax law changes on cash transactions and cash holdings of U.S. MNCs. Our results indicate a major policy goal of TCJA was largely accomplished, resulting in U.S. MNCs repatriating significant amounts of accumulated foreign cash, as well as reducing the future retention of earnings in foreign jurisdictions.

JEL: G14, G38, H25

KEYWORDS: Multinational Corporations, Tax Cut and Jobs Act, Foreign Cash, Trapped Cash

INTRODUCTION

U.S. based multinational corporations (MNCs) play a significant role in today's global economy, operating in many countries through international affiliates and subsidiaries, and generating significant amounts of sales and profits in foreign jurisdictions. Prior to 2018, U.S. authorities did not tax income generated by U.S. companies in foreign jurisdictions until these funds were repatriated to the U.S. This policy created a significant incentive for U.S. MNCs to retain income earned internationally in their foreign operations and subsidiaries, thereby avoiding U.S. taxation, which was significantly higher than most foreign jurisdictions. Smolyansky, Suarez, and Tabova (2018) estimate that by the end of 2017, U.S. MNCs had accumulated approximately $1 trillion in foreign holdings of cash and cash equivalents, excluding amounts permanently invested in the companies' foreign operations. Pozsar (2018) shows that much of this cash is held in U.S.-dollar denominated fixed income assets such as U.S. Treasury Bonds. The tax-driven strategy of retaining excessive amounts of cash in foreign subsidiaries may be inefficient, leading to excessive investment in these foreign subsidiaries and negatively affecting the values of these MNCs, in addition to depressing U.S. tax collections. Specifically, Harford, Wang, and Zhang (2017) provide evidence that foreign cash is valued less than domestic cash and that this discount is greater than the pure tax effect. They find that MNCs subject to repatriation taxes underinvest domestically and overinvest abroad. In 2004, the American Jobs Creation Act (AJCA) was passed as a temporary tax holiday to induce repatriation of foreign earnings, increase tax revenue, and increase domestic investment by U.S. MNCs. The AJCA resulted in over $290 billion of foreign earnings being repatriated (Blouin and Krull, 2009) and reduced the propensity for value-decreasing acquisitions (Edwards, Kravet, and Wilson, 2016). Faulkender and Petersen (2012) found that the repatriation of earnings funded approved domestic investments among capital-constrained firms, but no increase in investment from unconstrained firms, which accounted for the majority of repatriated funds. Following the temporary increase in repatriations induced by the TCJA, U.S. MNCs began once again accumulating significant cash abroad. DeSimone, Piotroski, and Tomy (2019) argue that the temporary success of the AJCA in bolstering tax revenues fueled discussion of further similar legislation (introduced but not enacted beginning in 2008) resulting in expectations of similar future legislation and creating an incentive for MNCs to accumulate even more foreign cash in anticipation of future tax relief. The Tax Cuts and Jobs Act (TCJA), which was signed into law by President Trump on December 22, 2017, reduced U.S. corporate tax rates, changed the corporate taxation of U.S. MNCs to a territorial system, and created an immediate tax liability for these MNCs' "deemed repatriation" of their past unrepatriated foreign earnings.

Clemons and Shevlin (2016) discuss the importance of academic research directly applicable to policy making and argue that the most effective way for academic research to influence tax policy is to directly address tax policy in academic research. In this study, we review the impact of the TCJA on U.S. MNCs' decisions on repatriation of foreign earnings and foreign cash holdings. We observe that one of the primary policy objectives of the TCJA with regard to U.S. MNCs is indeed accomplished, resulting in significant repatriation of foreign cash holdings and reducing the future retention of foreign earnings in foreign jurisdictions. The remainder of the paper is organized as follows. The next section summarizes the relevant literature. Next, we discuss the data and methodology used in the study. The results are presented in the following section. The paper closes with some concluding comments.

LITERATURE REVIEW

Prior to the enactment of the Tax Cuts and Jobs Act (TCJA) of 2017, which became effective January 1, 2018, the U.S. corporate income tax rate was one of the highest in the world. Jahnsen and Pomerleau (2017) estimate that the combined federal and state taxation for U.S. corporations of 38.91% gave the United States the fourth highest statutory corporate income tax rate in the world. Bunn (2018) estimates that the passage of the TCJA reduced the combined Federal and state corporate tax rate in the U.S. to 25.84%, substantially lowering its rank to 83rd highest in the world. Table 1 provides a summary of statutory corporate income tax rates by region in 2017 and 2018, as reported by Jahnsen & Pomerlau (2017) and Bunn (2018). Under longstanding U.S. tax code, U.S. based corporations were taxed on foreign earnings only when they repatriated these earnings to the U.S., with credit for foreign taxes paid. Since U.S. tax rates were significantly higher than the tax rates in most countries where U.S. multinational corporations (MNCs) operate, repatriation of earnings generated by foreign affiliates and subsidiaries by transferring the funds to the U.S. parent company would result in a significant tax liability for those MNCs. Therefore, the U.S. tax code provided a clear incentive for MNCs to keep, accumulate, and invest earnings generated by their foreign affiliates and subsidiaries outside U.S. jurisdiction, in order to minimize their tax liability.

The literature includes a significant amount of evidence to indicate the U.S. MNCs indeed behaved as expected given the above incentive structure, accumulating significant amounts of permanently reinvested foreign earnings, and holding significant amounts of cash and cash equivalents in their foreign subsidiaries. McKeon (2017) reports that Russell 1000 companies held over \$2.6 trillion in permanently reinvested earnings (PRE) in their foreign operations and affiliates in 2016. Smolyansky, Suarez, and Tabova (2018) estimate U.S. MNCs holdings of foreign cash and cash equivalents at the end of 2017 at approximately \$1 trillion. Huang, Manakyan, and Mathers (2020) estimate aggregate foreign cash holdings of Russell 1000 companies at over \$923 billion in 2016 and over \$912 billion in 2017, based on hand collected data from U.S. corporations' SEC 10-K filings. Foley, Hartzell, Tittman, and Twite (2007) show that firms facing higher repatriation tax rates hold higher levels of cash abroad in affiliates in lower tax jurisdictions.

Faulkender, Hankins, and Petersen (2019) find that U.S. MNCs' foreign cash balances are explained by low foreign tax rates and relaxed restrictions on income shifting.

Table 1: Average Statutory Corporate Tax Rate by Region or Group

	2017		2018	
Region or Group	**Average Rate**	**GDP Weighted Average Rate**	**Average Rate**	**GDP Weighted Average Rate**
Africa	28.73%	28.20%	28.81%	28.39%
Asia	20.05%	26.26%	20.65%	26.42%
Europe	18.35%	25.58%	18.38%	25.43%
North America	23.08%	37.01%	23.01%	26.22%
Oceania	23.67%	27.10%	22.00%	27.04%
South America	28.73%	32.98%	28.08%	32.20%
BRICS	28.32%	27.34%	28.40%	27.33%
EU	21.82%	26.25%	21.86%	26.03%
G20	28.04%	30.90%	27.37%	27.18%
G7	29.57%	33.48%	27.63%	27.21%
OECD	24.18%	31.12%	23.93%	26.58%
World	22.69%	29.41%	23.03%	26.47%
USA	38.91%		25.84%	

This table provides the average statutory corporate tax rates by region for the pre-TCJA period of 2017 and the post-TCJA period of 2018. The data are sourced from Tax Foundation Fiscal Fact No: 559, Jahnsen and Pomerlau (2017) and Tax Foundation Fiscal Fact No: 623 Bunn (2018).

The hoarding of idle cash and overinvestment in foreign subsidiaries results in a reduction of U.S. tax revenue in addition to having numerous negative effects for these MNCs. Harford, Wang, and Zhang (2017) show that the value shareholders place on foreign cash is lower than domestic cash and that this discount is greater than the pure tax effect, depressing the valuations of these MNCs. They find that this valuation effect is related to financing frictions and agency problems, as MNCs subject to repatriation taxes underinvest domestically and overinvest abroad. Similarly, Edwards, Kravet, and Wilson (2016) and Hanlon, Lester, and Verdi (2015) find that U.S. MNCs with significant permanently reinvested earnings held as cash make less profitable cash acquisitions of foreign targets, indicating suboptimal decision making resulting from excess cash holdings. By contrast, Campbell, Dhaliwal, Krull, and Schwab (2018) find that overall excess foreign cash is not discounted relative to domestic cash, but that excess foreign cash held in high agency cost environments carries a discount. They suggest that such a discount is due to the country-specific location of assets and is likely to persist even after corporate tax reform.

Albring (2006) and De Simone and Lester (2018) demonstrate that trapped cash abroad induces MNCs to increase their domestic borrowing to fund shareholder payout and domestic investment. Finally, Fabrizi, Parbonetti, Ipino, and Magnan (2016) show that cash held abroad generates uncertainty among market participants. Greater foreign cash holdings are associated with greater information uncertainty among analysts resulting in more dispersed beliefs and abnormal trading volumes among investors. The American Job Creation Act (AJCA) enacted in 2004 provided a temporary repatriation tax holiday to encourage repatriation of foreign earnings and increase tax revenue. The AJCA created a onetime dividend received deduction of 85% on extraordinary repatriations of up to $500 million of PRE disclosed in the most recent financial statements, resulting in a reduction in the effective U.S. tax on those foreign earnings from 35 to 5.25 percent. Blouin and Krull (2009) estimate that the AJCA resulted in the repatriation of over $290 billion of foreign earnings. Smolyanski et al (2018) place the estimated repatriation in 2005 at $312 billion. Though well intentioned, the AJCA was only a temporary measure, with only a short-term impact. DeSimone, Piotroski, and Tomy (2019) argue that the AJCA may indeed have had the opposite long-term impact than intended. They contend that the temporary nature of the AJCA and discussion of further similar legislation introduced but not enacted beginning in 2008, resulted in expectations of similar future legislation and created an incentive for MNCs to accumulate even more foreign cash by delaying repatriations in anticipation of future tax relief.

The TCJA permanently addressed the foreign overinvestment and cash hoarding issue by changing to a territorial taxation system for U.S. corporations. Effective 2018, corporate income is taxed in the country it is earned, and only income earned by corporations in the U.S. is taxed in the U.S. In addition, the top federal corporate tax rate was reduced to 21%, bringing it more in line with taxation rates in regions where U.S. MNCs operate and reducing the need for tax-driven reinvestment strategies. In addition, the TCJA "deemed repatriation" provision imposed a one-time tax of 15.5% on foreign liquid assets and 8% on illiquid assets, payable over eight years, regardless of whether these funds are repatriated (York 2018). Other important provisions included the minimum tax on global intangible low-taxed income (GILTI), which is explained in detail in Pomerlau (2019); the base erosion and anti-abuse tax (BEAT), explained in detail in Forst and Fuller (2020); the deduction for foreign derived intangible income (FDII), explained in detail in Karnis (2019); 100% deduction for dividends received from 10% owned foreign corporations; and 100% bonus depreciation for most capital expenditures for the next five years. The combined impact of these changes should be to substantially reduce or eliminate the incentive for MNCs to hoard cash abroad, serving the dual purpose of increasing U.S. tax revenue and incentivizing more efficient and value maximizing investments by MNCs. Wagner, Zeckhauser, and Ziegler (2018) review the valuation of U.S. firms during the "legislative period" leading up to the passage of the TCJA, and find that high tax firms were big beneficiaries, while firms with significant foreign exposures lagged. Similarly, Huang, Manakyan, and Mathers (2020) find that though the overall market reaction to the TCJA was positive, the valuation impact on firms with greater foreign exposure was negative.

DATA AND METHODOLOGY

To examine the impact of the Tax Cuts and Jobs Act (TCJA) on foreign cash holdings of U.S. multinational corporations (MNCs), we start with an examination of international transactions in primary income data produced by the U.S. Bureau of Economic Analysis (BEA) for the entire data availability range of 1999 to 2019. This data source identifies the foreign earnings of MNCs, the dividends repatriated to the U.S. parent companies, and the amounts reinvested in foreign affiliates. Table 2 below is based on the BEA data on the aggregate foreign income of U.S. MNCs and their dividends paid to their U.S. parent companies. We calculate the aggregate value of cumulative reinvestment of foreign earnings by U.S. MNCs as the cumulative sum of reinvested earnings starting in 1999, as described in equation (1).

$$Cumulative\ Reinvested\ Earnings_n = \sum_{t=1999}^{n} Reinvested\ Earnings_t \tag{1}$$

Note that this computation differs from the permanently reinvested earnings (PRE) reported on company financial statements, as it includes amounts held in cash, cash equivalents, and other short-term investments as well as PRE. We compute the aggregate repatriation ratio of foreign earnings by U.S. MNCs for each year *t* as the ratio of the dividends and withdrawals amount to the foreign income amount reported by the BEA for each year, as described in equation (2).

$$Repatriation\ Ratio_t = \frac{Dividends\ and\ Withdrawals_t}{Foreign\ Income_t} \tag{2}$$

We observe that by 2017, U.S. MNCs had accumulated over $3.869 trillion in reinvested foreign earnings. This amount is consistent with estimates in earlier literature. Smolyansky, Suarez, and Tabova (2018), estimate U.S. MNCs foreign cash and cash equivalent holdings at the end of 2017 at approximately $1 trillion, and McKeon (2017) reports that Russell 1000 companies held over $2.6 trillion in permanently reinvested earnings (PRE) in their foreign operations and affiliates in 2016. The combination of these estimates is similar in magnitude to our estimate of cumulated foreign earnings using BEA data. In addition, we examine the foreign cash and cash equivalent holdings of U.S. MNCs over the 2014 to 2018 period using hand collected data from the annual 10-K reports of U.S. MNCs. We start with all firms included in the Russell 1000 index in 2018, which roughly represents the largest 1000 U.S. firms by market capitalization. Eliminating Utilities and REITs leaves a sample of 835 firms that have data available on Compustat during the study period.

Table 2: U.S. Multinational Corporations' International Transactions in Primary Income, 1999-2019

	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Foreign Income	125,990	144,834	122,258	139,300	178,206	240,334	279,062
Dividends and Withdrawals	62,536	52,863	53,235	54,601	59,459	81,555	298,712
Reinvested Earnings	63,454	91,971	69,023	84,698	118,747	158,779	-19,650
Cumulative Reinvested Earnings	63,454	155,425	224,448	309,146	427,893	586,672	567,022
Repatriation Ratio	49.6%	36.5%	43.5%	39.2%	33.4%	33.9%	107.0%
	2006	2007	2008	2009	2010	2011	2012
Foreign Income	306,768	354,311	397,401	354,854	430,360	459,739	448,869
Dividends and Withdrawals	101,686	132,833	172,448	128,561	132,616	151,122	164,883
Reinvested Earnings	205,082	221,478	224,954	226,293	297,744	308,617	283,987
Cumulative Reinvested Earnings	772,104	993,582	1,218,536	1,444,829	1,742,573	2,051,190	2,335,177
Repatriation Ratio	33.1%	37.5%	43.4%	36.2%	30.8%	32.9%	36.7%
	2013	2014	2015	2016	2017	2018	2019
Foreign Income	459,144	462,484	433,903	441,025	534,351	560,746	552,428
Dividends and Withdrawals	144,080	157,763	149,075	161,491	184,170	850,868	396,333
Reinvested Earnings	315,064	304,721	284,829	279,534	350,181	-290,123	156,095
Cumulative Reinvested Earnings	2,650,241	2,954,962	3,239,791	3,519,325	3,869,506	3,579,383	3,735,478
Repatriation Ratio	31.4%	34.1%	34.4%	36.6%	34.5%	151.7%	71.7%

Source: Bureau of Economic Analysis (BEA) International transactions data, table 4.1 (U.S. International transactions in primary income). The BEA identifies the Foreign Income of multinational corporations, the Dividends and Withdrawals repatriated to the US parent companies, and the Reinvested Earnings, which are the amounts reinvested in foreign affiliates. We calculate Cumulative Reinvested Earnings as the cumulative sum of Reinvested Earnings starting in 1999, $Cumulative\ Reinvested\ Earnings_n = \sum_{t=1999}^{n} Reinvested\ Earnings_t$ *. We calculate* $Repatriation\ Ratio_t = \frac{Dividends\ and\ Withdrawals_t}{Foreign\ Income_t}$*. All dollar values are reported in millions of U.S. dollars.*

We collect annual 2014 to 2018 fiscal year financial information from Compustat, including total assets, total cash and cash equivalents, total revenues, and foreign revenues. In addition, we hand collect the reported amount of cash held in foreign jurisdictions in fiscal years 2014 to 2018 from SEC 10-K filings using key word searches and manual reading of filings to identify foreign cash holdings. Yang (2015) documents that the Securities and Exchange Commission (SEC) began issuing comment letters on foreign cash holdings in its review of 10-K filings in 2011. These comment letters were more likely for large firms and those with a significant amount of permanently reinvested earnings. While the apparent SEC interest in foreign cash holdings increased their disclosure, not all firms choose to disclose this information. In addition, total foreign cash holdings of U.S. MNCs are heavily concentrated in the largest firms. Smolyansky, Suarez, and Tabova (2019) estimate that prior to the passage of the TCJA, the top 15 holders of foreign cash accounted for approximately 80 percent of total foreign cash holdings, and these firms held approximately 80 percent of their total cash abroad. In Table 3, we provide descriptive statistics for our sample of companies with all variables winsorized at the 1% level to minimize the impact of outliers. Of the 801 firms in the sample in 2014, 589 (73.5%) report foreign income (PIFO), but only 347 (43.3%) report their 2014 foreign cash holdings. The number of firms reporting foreign cash, and total foreign cash reported, peaks in fiscal year 2016, and drops substantially in 2018. The average (median) firm in our sample has total assets of nearly $32 ($7.5) billion and net assets (total assets reduced by cash and cash equivalents) of just over $28 ($6.6) billion. For the 589 firms who report foreign income in 2014, the average (median) PIFO ratio (ratio of pre-tax foreign income to total revenues) is 5.34% (3.57%).

For those firms reporting foreign cash holdings, the average (median) foreign cash is 14.52% (7.11%) of net assets in 2014, declining to 8.45% (4.47%) in 2018. The mean (median) ratio of foreign cash to total cash is 54.86% (55.60%) in 2014, and rises over the next two years before dropping to 58.22% (58.95%) in 2017 and 52.80% (53.66%) in 2018. The mean (median) percentage change in foreign cash from 2014 to 2015 is 12.07% (5.48%). Average growth in foreign cash remains high in the following two years, with an average increase above 20% each year, before a large decline to -7.07% (-12.57%) in 2018. This provides initial confirmation of the repatriation of foreign cash following the TCJA. Table 3 also shows that aggregate foreign cash for the full sample follows a similar pattern of increasing from $631.6 billion in 2014 to $921.7 billion in 2016 before declining slightly to $907.9 billion in 2017 and falling more dramatically to $256.5 billion in 2018. We note a corresponding change in the number of firms reporting their foreign cash holdings, from 347 in 2014 to 377 in 2016, declining to 360 in 2017 and 336 in 2018. Therefore, there are two major concerns with drawing conclusions from these observed patterns and the hand-collected foreign cash data from 10-k reports. The first is that the 2017 fiscal year can include reporting dates from both the pre- and post-TCJA periods depending on the company's fiscal year cycle. The second is that we find that many of the largest holders of foreign cash stop reporting their foreign cash holdings after the passage of the TCJA. We discuss and adjust for both of these issues in the following section.

Table 3: Descriptive Statistics of Sample Russell 1000 Firms

Unbalanced Panel 2014-2018	2014	2015	2016	2017	2018
Mean Total Assets	31,958	32,830	33,959	35,638	36,544
Median Total Assets	7,538.0	8,075.0	8,709.1	9,231.4	9,783.0
N	801	813	832	835	833
Mean Net Assets	28,051	28,913	29,924	31,311	32,541
Median Net Assets	6,640.6	7,108.0	7,644.1	8,393.2	9,028.9
N	801	813	832	835	833
Mean PIFO Ratio	5.34%	4.50%	4.51%	5.51%	5.78%
Median PIFO Ratio	3.57%	3.13%	2.94%	3.47%	3.66%
N	589	600	621	632	630
Mean Foreign Cash	1,306.4	1,381.5	1,526.0	1,486.1	763.45
Median Foreign Cash	321.50	318.50	365.00	402.00	266.65
N	347	371	377	360	336
Mean % change in Foreign Cash		12.07%	23.35%	22.02%	-7.07%
Median % change in Foreign Cash		5.48%	14.55%	16.06%	-12.57%
N		342	365	350	320
Mean Foreign Cash/Total Cash	54.86%	58.83%	60.23%	58.22%	52.80%
Median Foreign Cash/Total Cash	55.60%	61.00%	64.17%	58.95%	53.66%
N	346	371	375	360	336
Mean Foreign Cash/Net Assets	14.52%	14.11%	14.47%	14.50%	8.45%
Median Foreign Cash/Net Assets	7.11%	5.95%	5.97%	6.21%	4.47%
N	346	371	375	359	336
Total Foreign Cash	631,619	792,114	921,681	907,894	256,503

This table provides descriptive statistics for our sample of companies by year, with all variables winsorized at the 1% level. Total assets is Compustat data item AT. Net Assets is defined as total assets (AT) minus total cash (CHE). Total Cash is total cash and equivalents (CHE). PIFO Ratio is defined as pre-tax foreign income (PIFO) divided by total revenue (REVT). Foreign Cash is hand-collected from firms' annual 10-K filings, when reported. Compustat data item codes used in the data definitions are in parentheses. All dollar values are reported in millions of U.S. dollars.

In addition, we further examine the impact of the TCJA on changes in the foreign cash holdings of U.S. MNCs using ordinary least squares regression analysis for the 2014 to 2018 period while controlling for various firm-level characteristics. In our regression specified as

$$FCTC_{it} = \beta_0 + \beta_1 TX_{it} + \beta_2\, Size_{it} + \beta_3 MB_{it} + \beta_4 DA_{it} + \beta_5 ROA_{it} + \beta_6 PIFOR_{it} + \beta_7 CASHR_{it} + \sum_{j=1}^{9} \gamma_j\, D_j \; + e_{i,t} \tag{3}$$

The dependent variable $FCTC_{it}$ is the ratio of foreign cash to total cash held by the firm *i* in fiscal year *t*. TX_{it} is a dummy variable with a value of one for post-TCJA observations (fiscal year 2018), and zero for pre-TCJA observations. $Size_{it}$ is firm size measured as the natural logarithm of total assets, MB_{it} is the firm's market-to-book ratio, DA_{it} measures leverage calculated as the total debt to total asset ratio, ROA_{it} measures profitability as the ratio of net income to total assets, $PIFOR_{it}$ measures international exposure of the firm as the ratio of foreign pretax income to total revenues, and $CASHR_{it}$ is a measure of the firm's liquidity calculated as the ratio of total cash to total assets. D_j are dummy variables to control for industry fixed effects based on 10 industry groups using two-digit SIC codes. D_j is equal to one for firm *i's* two-digit industry code, or zero otherwise. Since we have used ten industry groups using two-digit SIC, we include nine industry dummy variables in the regression specification to avoid multicollinearity. Finally, e_{it} is the error term. We cluster standard errors by firm to account for possible autocorrelation in foreign cash holdings over time (Petersen 2009). We include an alternate specification for our regression analysis with the dependent variable $\Delta FCNA_{it}$ denoting approximate repatriation activity by the firm, measured as the change in foreign cash for firm *i* scaled by the net assets of firm *i* in fiscal year *t*, with all other variables as described above.

$$\Delta FCNA_{it} = \beta_0 + \beta_1 TX_{it} + \beta_2\, Size_{it} + \beta_3 MB_{it} + \beta_4 DA_{it} + \beta_5 ROA_{it} + \beta_6 PIFOR_{it} + \beta_7 CASHR_{it} + \sum_{j=1}^{9} \gamma_j\, D_j + e_{i,t} \tag{4}$$

Foreign cash data is collected from corporations' 10-K reports as discussed above. An issue with the hand collected 10-K data is that the 2017 fiscal year can include dates from both the pre- and post-TCJA periods depending on the company's fiscal year cycle. Therefore, we calculate the change in foreign cash as the annual change in foreign cash for each year, but skip fiscal year 2017, and include the change in foreign cash from fiscal year 2016 to fiscal year 2018 which accounts for the smaller number of observations for this variable. Table 4 provides summary statistics for the variables used in the regression analysis.

Table 4: Summary Statistics of Variables Used in the Regression Analysis

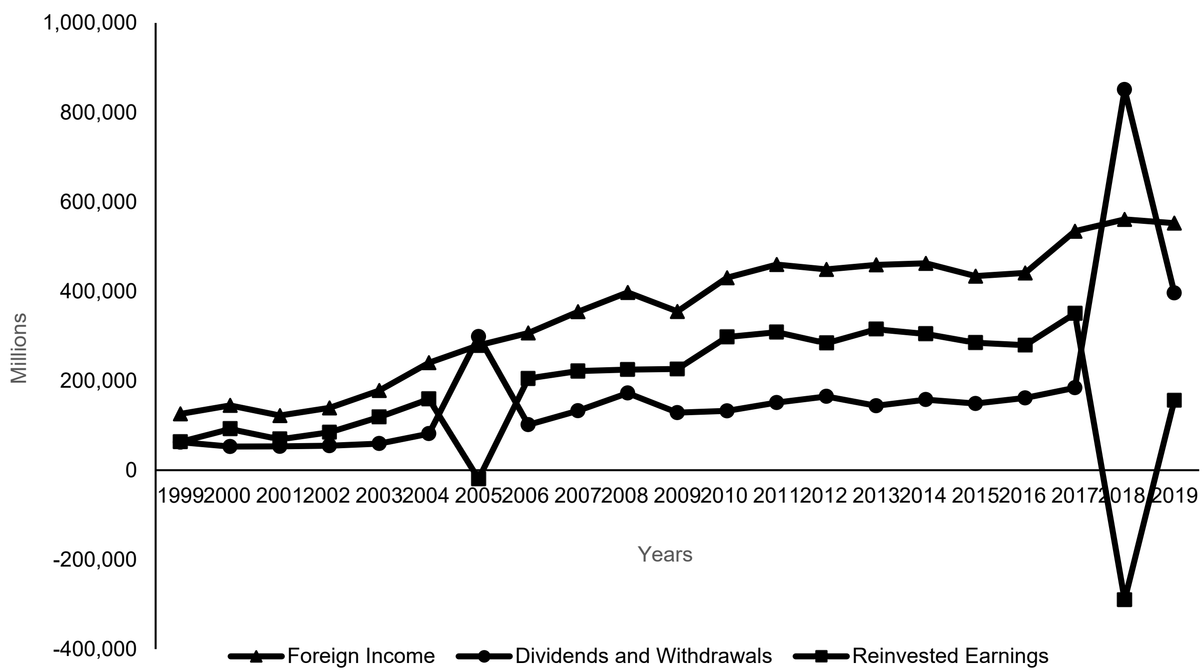
	N	Mean	Median	10th Pctl	90th Pctl	Std Dev
FCTC	1350	0.5774	0.6027	0.1280	0.9551	0.3210
ΔFCNA	996	0.0074	0.0026	-0.0425	0.0707	0.0684
SIZE	1350	8.8467	8.7328	7.4112	10.4400	1.2245
MB	1350	4.3495	3.8006	1.2054	11.7348	13.7377
DA	1350	0.2896	0.2736	0.0237	0.5492	0.1901
ROA	1350	0.0687	0.0652	-0.0028	0.1541	0.0752
PIFOR	1350	0.0633	0.0487	0.0020	0.1617	0.0760
CASHR	1350	0.1773	0.1225	0.0260	0.4294	0.1629

*This table provides summary statistics of the variables used in the regression analyses. $FCTC_{it}$ is the ratio of foreign cash as reported in the firm's 10-K report to total cash held by firm i in year t (CHE). $DFCNA_i$ is the change in foreign cash, scaled by net assets (AT-CHE). $Size_i$ is firm size measured by natural log of total assets (AT). MB_i is the ratio of the firm's market value of equity (CSHO*PRCC_F) to its book value of equity (CEQ). DA_i is calculated as the total debt (DLTT+DLC) to total asset (AT) ratio. ROA_i measures profitability as the ratio of net income (NI) to total assets (AT). $PIFOR_i$ is calculated as the ratio of foreign pretax income (PIFO) to total revenues (REVT). $CASHR_i$ is the ratio of total cash and equivalents (CHE) to total assets (AT). Compustat data item codes used in the data definitions are in parentheses.*

RESULTS AND DISCUSSION

In Figure 1, based on international transactions in primary income data produced by the U.S. Bureau of Economic Analysis (BEA) for the 1999 to 2019 period, and reported in Table 2 above, we observe the upward trend in foreign income of U.S. multinational corporations (MNCs). We similarly observe the rising reinvestment of foreign earnings (Reinvested earnings) in foreign jurisdictions. The rising pattern of foreign reinvestment is temporarily interrupted in 2005, following the 2004 passage of the American Job Creation Act (AJCA), which provided for a temporary reduction in taxation on repatriated earnings. According to Blouin and Krull (2009), the AJCA resulted in over $290 billion of foreign earnings being repatriated, reducing the propensity for value-decreasing acquisitions as discussed in Edwards, Kravet, and Wilson (2016). However, due to the temporary nature of AJCA, its success in encouraging repatriation was also temporary. We observe in Figure 1 that immediately after the AJCA tax holiday, the rising pattern of foreign reinvestment resumes.

Figure 1: Foreign Income, Dividends to Parent Company, and Foreign Reinvestment of Earnings of U.S. Multinational Corporations: 1999-2019.

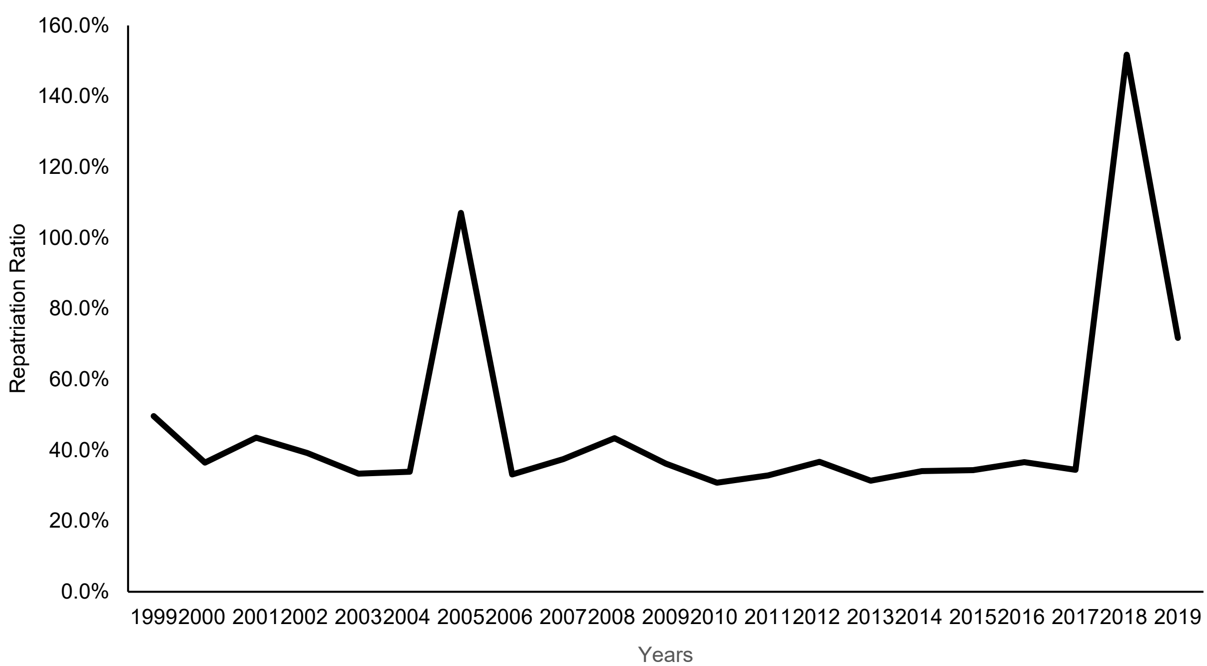


Source: Bureau of Economic Analysis (BEA) International transactions data, table 4.1 (U.S. International transactions in primary income). The BEA identifies the Foreign Income of multinational corporations, the Dividends and Withdrawals repatriated to the US parent companies, and the Reinvested Earnings, which are the amounts reinvested in foreign affiliates.

This is consistent with the argument of DeSimone, Piotroski, and Tomy (2019) that the temporary success of the AJCA fueled discussion of further similar legislation (introduced but not enacted beginning in 2008) which resulted in expectations of similar future legislation and created an incentive for MNCs to accumulate even more foreign cash in anticipation of future tax relief. The 2017 Tax Cuts and Jobs Act (TCJA) seems to have had a different impact, at least initially. We observe that following the sharp decline in foreign reinvestment of earnings to negative values in 2018, indicating a large wave of foreign earnings repatriation, foreign reinvestments in 2019 settled at a level substantially below prior year values. In Figure 2, we observe the repatriation rates of U.S. MNCs over time. In 2005, in response to the AJCA, the repatriation rate rises to 107%, indicating repatriation of previously reinvested earnings in addition to current year earnings. Also as expected, the rise in the repatriation ratio is temporary, dropping to its long-term range of 30-40% immediately following the short-term impact of the AJCA.

As would be expected, the impact of the TCJA seems to be substantially larger, and permanent. The repatriation rate of U.S. MNCs' foreign earnings spikes to 152% in 2018, due to the total repatriated funds in excess of $850 billion as seen in Table 2, reflecting a significant transfer of previously retained foreign earnings to U.S. parent companies. Also importantly, the repatriation ratio in 2019 remains much higher than past years, settling at over 70%. This observation gives an initial indication that the TCJA is likely to have created a permanent change in the repatriation policy of U.S. MNCs. The BEA data summarized in Table 2, which is the source for the analysis in Figures 1 and 2, is gleaned from U.S. MNCs' aggregate international transactions during each calendar year. We also provide additional direct evidence of U.S. MNCs foreign cash holdings and repatriation practices based on their financial statements, as reported in Table 3. Examination of U.S. MNCs 10-k statements provides a clear indication that many firms substantially increased their repatriation of foreign cash following the passage of the TCJA. For example, in its 2018 10-K report, Gilead Sciences states: "Of the total cash, cash equivalents and marketable securities at December 31, 2017, approximately $31.5 billion was generated from operations in foreign jurisdictions. In February 2018, we repatriated $28.0 billion of cash, cash equivalents and marketable securities to our parent company headquartered in the United States. Prior to the enactment of Tax Reform, these earnings were considered indefinitely reinvested and no U.S. taxes had been provided. In 2017, U.S. taxes have been provided on these earnings through the accrual of the Tax Reform transition tax. See Note 17, Income Taxes of the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K for additional details on Tax Reform."

Figure 2: Repatriation Ratio of U.S. Multinational Corporations' Foreign Earnings Over Time



Source: Bureau of Economic Analysis (BEA) International transactions data, table 4.1 (U.S. International transactions in primary income). The BEA identifies the Foreign Income of multinational corporations and the Dividends and Withdrawals repatriated to the US parent companies. We calculate the Repatriation Ratio as Dividends and Withdrawals divided by Foreign Income.

Similarly, Illinois Toolworks' 2018 10-K report states, "As a result of the one-time repatriation provisions of the Act, the Company provided for substantially all U.S. taxes on the undistributed earnings of its foreign subsidiaries as of December 31, 2017. During 2018, the Company repatriated approximately $3.0 billion of cash and equivalents held by its international subsidiaries, a portion of which was used to repay outstanding commercial paper and to fund additional share repurchases." However, the significant decline in reported foreign cash from 2016 to 2018 that we document in Table 3 cannot be fully attributed to repatriation. As documented by Kochkodin (2018), many companies stopped reporting their foreign cash holdings following the passage of the TCJA. In our sample, there were 63 firms that reported foreign cash holdings in 2016, but not in 2018, and 24 firms that had not reported foreign cash in 2016 which then reported in 2018, accounting for the difference of 39 observations. As we examine our list of reporting firms, we note that some of the largest holders of foreign cash in 2016 such as Apple Inc. ($216 billion), Microsoft Corp. ($108.9 billion), Oracle Corp. ($54.4 billion), Alphabet Inc. ($52.2 billion), Johnson & Johnson ($41.3 billion), Qualcomm Inc. ($29.6 billion), Gilead Sciences Inc. ($27.4 billion), Intel Corp. ($13.6 billion), Merck & Co. ($12.2 billion), Eli Lilly & Co ($9.8 billion), and others stopped reporting their foreign cash holdings in 2018. Collectively, the firms that stopped reporting make up $633.9 billion, or 68.8%, of the total foreign cash holdings reported in 2016. Kochkodin (2018) argues that this change in firm reporting will make it challenging to observe whether the TCJA spurred additional corporate investment in the United States.

In Table 5, we show the 25 firms with the largest dollar value of foreign cash holdings in 2016, along with their reported 2018 foreign cash holdings. As discussed in Yang (2015), reporting of foreign cash holdings was encouraged by the SEC as material information due to potential future tax liabilities resulting from repatriation of foreign cash holdings. The passage of the TCJA changes the tax impact, imposing an immediate liability in the form of the deemed repatriation tax and eliminating the future tax distinction between domestic and foreign cash. Once the immediate liability was realized and booked, a number of firms likely concluded that their foreign cash holdings are no longer material information and need not be reported.

An additional issue with the hand collected 10-k data is that the 2017 fiscal year can include dates from both the pre- and post-TCJA periods depending on the company's fiscal year end date. Therefore, in order to identify the impact of the TCJA on U.S. MNCs' foreign cash holdings we conduct additional statistical analysis using a subsample of 310 firms which report foreign cash holdings in both 2016 and 2018 fiscal years, and exclude fiscal year 2017 data from our analysis, providing a comparison of time periods which are clearly pre-and post-TCJA. These results are provided in Table 6. When we focus on the balanced panel of firms that report their foreign cash holdings in both 2016 and 2018, we are able to verify the decline in overall foreign cash holdings as shown in Table 3 above. The Mean Difference shows that the average amount of foreign cash held by sample firms declined by $123 million from pre-TCJA in 2016 to post-TCJA in 2018. While this number is not statistically significant given the extremely large variance in foreign cash holdings, it is economically meaningful compared to 2016 mean foreign cash of $877 million. The average of total cash and equivalents also declined over this period, though by a lesser amount (approximately $46 million), indicating that some of the reduction in foreign cash was accumulated as an increase in domestic cash.

Table 5: Top 25 U.S. Multinational Corporations by Foreign Cash Reported in 2016

Company Name	**2016 Foreign Cash**	**2018 Foreign Cash**	**Change in Foreign Cash (2018-2016)**	**Percent Change in Foreign Cash**
Apple Inc	216,000	Not reported		
Microsoft Corp	108,900	Not reported		
Oracle Corp	54,400	Not reported		
Alphabet Inc	52,200	Not reported		
Johnson & Johnson	41,300	Not reported		
Qualcomm Inc	29,600	Not reported		
Gilead Sciences Inc	27,400	Not reported		
Coca-Cola Co	20,200	14,400	-5,800.0	-28.71%
Pepsico Inc	15,200	5,700.0	-9,500.0	-62.50%
Intel Corp	13,600	Not reported		
Booking Holdings Inc	12,600	6,400.0	-6,200.0	-49.21%
Merck & Co	12,155	Not reported		
Procter & Gamble Co	11,000	11,400	400.00	3.64%
Lilly (Eli) & Co	9,770.0	Not reported		
Amazon.Com Inc	9,100.0	13,800	4,700.0	51.65%
Visa Inc	8,700.0	Not reported		
Bristol-Myers Squibb Co	8,000.0	1,400.0	-6,600.0	-82.50%
Vmware Inc -Cl A	6,921.0	Not reported		
Western Digital Corp	6,900.0	4,150.0	-2,750.0	-39.86%
Celgene Corp	6,113.0	2,800.0	-3,313.0	-54.20%
Franklin Resources Inc	5,937.9	Not reported		
Walmart Inc	5,900.0	7,700.0	1,800.0	30.51%
Nike Inc -Cl B	5,800.0	Not reported		
Biogen Inc	5,500.0	2,407.8	-3,092.0	-56.22%
Ebay Inc	5,329.0	4,458.0	-871.00	-16.34%

Foreign Cash is hand-collected from firms' annual 10-K filings, when reported. All dollar values are reported in millions of U.S. dollars.

Table 6: Changes in Foreign Cash Holdings Following Passage of the TCJA

	2018				**2016**				**Mean Difference**	**t-statistic**
	N	Mean	Median	SD	N	Mean	Median	Std Dev	(2018-2016)	
Total Cash	310	1,687.3	668.34	3,503.2	310	1,733.2	675.50	3,582.1	-45.87	-0.16
Foreign Cash	310	753.54	278.25	1,631.2	310	876.92	323.45	1,704.2	-123.38	-0.92
Foreign Cash/Net Assets	310	0.09	0.05	0.12	310	0.13	0.06	0.22	-0.05***	-3.42
Foreign Cash/Total Cash	310	0.54	0.55	0.29	310	0.59	0.64	0.30	-0.05***	-2.20

*Total Cash is total cash and equivalents (CHE). Foreign Cash is hand-collected from firms' annual 10-K filings, when reported. Net Assets is defined as total assets (AT) minus total cash (CHE). Compustat data items used in the data definitions are in parentheses. The Mean Difference is the difference in the 2018 mean value minus the 2016 mean value. T-statistic reports the significance of the Mean Difference. ***, ** and * indicate significance at the 1, 5, and 10 percent levels, respectively. All dollar values are reported in millions of U.S. dollars.*

When we look at foreign cash as a percentage of net assets, defined as total assets less total cash and equivalents, and as a percentage of total cash, the difference in the pre- and post-TCJA periods is stark. We observe that the sample firms substantially decreased their foreign cash holdings as a percentage of total cash and as a percentage of net assets. These results, which are statistically significant, further suggest that after the TCJA sample firms repatriated more cash than needed for immediate use (e.g., to pay taxes owed due to deemed repatriation or fund payouts to shareholders) and instead added that cash to their domestic cash stockpile. In untabulated results, we also examined a smaller subsample of 232 firms with December fiscal year endings that reported foreign cash holdings in both 2017 and 2018 and our results remained qualitatively the same. Finally, we examine the impact of the TCJA on U.S. MNCs' foreign cash holdings while controlling for various firm characteristics, using multivariate ordinary least squares analyses described in equations (3) and (4). In columns (1) and (2), the dependent variable FCTC is the ratio of foreign cash to total cash held by the firm. In columns (3) and (4), we use the dependent variable ΔFCNA as a proxy for repatriation activity by the firm, measured as the change in foreign cash from the prior fiscal year, scaled by net assets. Since the 2017 fiscal year can include dates from both the pre- and post-TCJA periods, we calculate the change in foreign cash as the annual change in foreign cash for each year, but exclude fiscal year 2017, and instead include the change in foreign cash from fiscal year 2016 to fiscal year 2018. TX is a dummy variable with a value of one for post-TCJA observations (fiscal year 2018), and zero for pre-TCJA observations (fiscal years 2014 through 2016). Size is firm size measured as the natural logarithm of total assets, MB is the firm's market-to-book ratio, DA measures leverage calculated as ratio of total debt to total assets, ROA measures profitability as the ratio of net income to total assets, PIFOR measures international exposure of the firm as the ratio of foreign pretax income to total revenues, and CASHR is a measure of the firm's liquidity calculated as the ratio of total cash to total assets.

Table 7 presents the results of this multivariate analysis. We observe that in all specifications of the model, the coefficient of TX is negative and significant, indicating a lower FCTC and a more negative change in FCNA, or greater repatriations, in the post-TCJA period after controlling for various firm characteristics. In untabulated results, we similarly find that TX is negatively and significantly related to the ratio of foreign cash to net assets. As expected, we also observe that the coefficient on PIFOR, the ratio of foreign income to total revenue, is positive and significant in explaining the FCTC ratio. This result confirms the importance of the intensity of foreign operations in determining foreign cash holdings. The negative coefficient of CASHR indicates that for our sample firms, an increase in total cash ratios is associated with foreign cash making up a smaller fraction of total cash. However, we find that CASHR is positively related to the change in foreign cash, indicating that an increase in total cash was associated with a greater increase in foreign cash. We also observe that depending on the model specification, sectors 35 (Health Care), 40 (Financials) and 50 (Communication Services) are associated with lower levels of FCTC and smaller changes in FCNA relative to other sectors. In untabulated results, we repeat the regression analysis in Table 7 when limiting the sample to firms with December fiscal year end dates to enable us to incorporate fiscal year 2017. We observe qualitatively similar results and reach similar conclusions.

Table 7: Multivariate Analysis of the Impact of Firm Characteristics and the TCJA on Foreign Cash Holdings of U.S. Multinational Corporations

	FCTC	**FCTC**	**ΔFCNA**	**ΔFCNA**
TX	-0.078***	-0.076***	-0.027***	-0.027***
	(0.016)	(0.016)	(0.006)	(0.006)
SIZE	-0.011	-0.003	0.005**	0.005**
	(0.013)	(0.013)	(0.002)	(0.002)
MB	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
DA	0.057	0.032	0.016	0.013
	(0.069)	(0.065)	(0.011)	(0.011)
ROA	0.144	0.170	0.040	0.050
	(0.156)	(0.165)	(0.036)	(0.039)
PIFOR	1.590***	1.587***	0.035	0.030
	(0.228)	(0.241)	(0.034)	(0.034)
CASHR	-0.688***	-0.644***	0.132***	0.134***
	(0.080)	(0.083)	(0.018)	(0.019)
D_{15}		-0.007		0.004
		(0.099)		(0.007)
D_{20}		-0.014		-0.001
		(0.089)		(0.007)
D_{25}		-0.098		-0.010
		(0.092)		(0.008)
D_{30}		-0.022		-0.005
		(0.097)		(0.008)
D_{35}		-0.065		-0.017*
		(0.092)		(0.009)
D_{40}		-0.256**		-0.009
		(0.109)		(0.008)
D_{45}		-0.023		0.002
		(0.091)		(0.008)
D_{50}		-0.182*		-0.017*
		(0.094)		(0.010)
D_{60}		-0.109		0.008
		(0.103)		(0.008)
Constant	0.684***	0.674***	-0.059***	-0.058***
	(0.118)	(0.159)	(0.020)	(0.023)
N	1,350	1,350	996	996
R2	0.211	0.251	0.145	0.156
Adjusted R2	0.207	0.242	0.139	0.142

This table presents the results from ordinary least squares regressions showing the impact of the TCJA on firms' foreign cash holdings and changes in foreign cash holdings. The first two columns show the regression estimates of the following equation: $FCTC_{it} = \beta_0 + \beta_1 TX_{it} + \beta_2\, Size_{it} + \beta_3 MB_{it} + \beta_4 DA_{it} + \beta_5 ROA_{it} + \beta_6 PIFOR_{it} + \beta_7 CASHR_{it} + \sum_{j=1}^{9} \gamma_j\, D_j$, *where the dependent variable* $FCTC_i$ *is the ratio of foreign cash as reported in the firm's 10_K report to total cash held by the firm in year i (CHE). The last two columns show the regression estimates of the following equation:* $\Delta FCNA_{it} = \beta_0 + \beta_1 TX_{it} + \beta_2\, Size_{it} + \beta_3 MB_{it} + \beta_4 DA_{it} + \beta_5 ROA_{it} + \beta_6 PIFOR_{it} + \beta_7 CASHR_{it} + \sum_{j=1}^{9} \gamma_j\, D_j$, *where the dependent variable* $\Delta FCNA_i$ *is the change in foreign cash for firm i, scaled by net assets (AT-CHE). We calculate the change in foreign cash for firm i as the annual change in foreign cash for each year, but skip fiscal year 2017, and include the change in foreign cash from fiscal year 2016 to fiscal year 2018. In both specifications,* TX_i *is a dummy variable with a value of one for post-TCJA observations (fiscal year 2018), and zero for pre-TCJA observations.* $Size_i$ *is firm size measured by natural log of total assets (AT).* MB_i *is the ratio of the firm's market value of equity (CSHO*PRCC_F) to its book value of equity (CEQ).* DA_i *is calculated as the total debt (DLTT+DLC) to total asset (AT) ratio.* ROA_i *measures profitability as the ratio of net income (NI) to total assets (AT).* $PIFOR_i$ *is calculated as the ratio of foreign pretax income (PIFO) to total revenues (REVT).* $CASHR_i$ *is the ratio of total cash and equivalents (CHE) to total assets (AT). Dj are dummy variables to control for industry fixed effects based on 10 industry groups where j denotes the two-digit GICS codes. All variables except Size are winsorized at the 1% level. Compustat data items used in the data definitions are in parentheses. Standard errors are clustered by firm and are presented in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.*

CONCLUDING COMMENTS

As a number of prior studies have documented, U.S. multinational corporations (MNCs) have for many years accumulated cash and permanently reinvested earnings in their foreign operations. Negative economic consequences of this phenomenon include the loss of U.S. tax revenue, as well as the inefficient allocation of capital resources driven by tax avoidance considerations. The Tax Cuts and Jobs Act (TCJA), which was signed into law by President Trump on December 22, 2017, reduced U.S. corporate tax rates, changed the corporate taxation of U.S. MNCs to a territorial system, and created an immediate tax liability for these MNCs' "deemed repatriation" of their past un-repatriated foreign earnings. A major policy goal of the TCJA was to eliminate the incentives for U.S. MNCs to retain excess funds in foreign jurisdictions, and to encourage higher rates of repatriation of foreign cash holdings and future foreign income.

In this study, we review the impact of the TCJA on U.S. MNCs' decisions on repatriation of foreign earnings and foreign cash holdings. We examine aggregate data on U.S. MNCs' foreign income, dividends paid to the U.S. parent corporations, and reinvestment of foreign earnings, and observe that significant amounts of foreign earnings were repatriated following the TCJA, and the repatriation rate of foreign earnings was increased following the TCJA. In addition, using firm-level data on foreign cash holdings, we observe that U.S. MNCs significantly reduced their foreign cash holdings as a percentage of total cash and as a percentage of net assets following the TCJA. We find that sample firms repatriated more cash than needed for immediate use and instead added some of the repatriated cash to their domestic cash stockpile. Multivariate results confirm both that firms repatriated a significant amount of their foreign cash holdings following the TCJA and that foreign cash declined as a fraction of total cash following the TCJA. Our results indicate that the policy goal of eliminating the incentives for U.S. MNCs to retain excess funds in foreign jurisdictions and encouraging higher rates of repatriation of foreign cash holdings and future foreign income, was indeed accomplished.

A limitation of this study is the reduction in the number of firms reporting their foreign cash holdings following the passage of the TCJA. Foreign cash holdings is not a standard required reporting item, and firms with large levels of foreign cash were specifically encouraged by the SEC through comment letters to report their foreign cash as material information due to potential future tax liabilities resulting from repatriation of foreign cash holdings. The passage of the TCJA changes the tax impact of foreign cash holdings, imposing an immediate liability in the form of the deemed repatriation tax. Once this liability was realized and booked, a number of firms likely concluded that their foreign cash holdings are no longer material information and need not be reported. The decision by many U.S. MNCs, including many of the largest holders of foreign cash prior to the TCJA, to quit reporting foreign cash holdings creates a difficulty in identifying the full impact of the TCJA on foreign cash holdings of these firms. Our findings have important implications for policymakers considering future tax and trade policy changes. Future research into the real effects of the TCJA is warranted, including its effect on the profitability of foreign acquisitions and the relative valuation assigned to foreign and domestic cash holdings by financial market participants. Studies of this nature will reveal if the implementation of the TCJA increased the efficiency of corporate decision-making and may shed light on the long-term valuation effects of the TCJA.

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THE ASSOCIATION BETWEEN TAX AGGRESSIVENESS AND ENVIRONMENTAL PROTECTION IN CHINESE PUBLIC FIRMS

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ABSTRACT

This study was motivated by a lack of understanding about whether firms trade off different components of corporate social responsibility (CSR) because CSR activities may compete with each other for investments. By investigating all public Chinese firms from 2010 to 2017, we found that firms exhibiting lower degrees of tax aggressiveness participated more in environmental protection activities. Our results suggest that good firms tend to perform well in different aspects of CSR. Additionally, we found that the relationship between tax aggressiveness and environmental protection activities is more pronounced in firms with politically connected management or board members, firms with a higher percentage of independent directors, and firms receiving fewer government bursaries.

JEL: M4, H2

KEYWORDS: Tax Aggressiveness, Environmental Protection, Corporate Social Responsibility, China

INTRODUCTION

Corporate social responsibility (CSR) has received increasing attention from the public, academia, and policymakers (Benson , Clarkson, Smith, & Tutticci, 2015 ; Christensen & Murphy, 2004; Li, Fetscherin, Alon, Lattemann, &Yeh 2010; Minor, & Morgan, 2011; Park, Chidlow, & Choi, 2014; Yang & Rivers, 2009). Many studies have focused on firms' motivations to engage in CSR activities, but research on the relationships among CSR components is limited. This study is therefore an attempt to fill this void in the literature by addressing whether firms trade off different CSR components because CSR activities may compete with each other for investments. In other words, when firms invest more in one component of CSR (e.g., being less aggressive in tax planning and paying more taxes), do they decrease investment in another component (e.g., environmental protection)? More specifically, this study examines the association between firms' environmental protection activities and tax aggressiveness.

To test this research question, we chose to study Chinese public firms. China's environmental protection policies have evolved significantly in the past 20 years. For instance, China has recently pledged to stop releasing carbon emissions by 2060 (Chemnick & Storrow, 2020). Studying firms' environmental behaviors during the transition from a weak to a strong institutional setting will be especially interesting, because the findings will be applicable to many developing countries facing severe environmental issues. By studying all public nonfinancial Chinese firms from 2007 to 2017, we found that firms engaging in environmental protection activities exhibit a lower level of tax aggressiveness, suggesting that firms do not trade off between these two components of CSR. Moreover, we found that the relationship between the degree of tax aggressiveness and environmental protection activities is more pronounced in firms with politically connected management or board members, firms with a higher percentage of independent directors, and firms receiving fewer government bursaries. The contributions of our findings are threefold. First, to the best of our knowledge, our study is among the first to investigate firms' choices among different components of CSR. Our empirical results show that good firms tend to perform well in different components of CSR, supporting corporate culture theories (Kreps, 1990). Second, we document a negative relationship between tax aggressiveness and environmental protection, which provides empirical evidence confirming the view of Lanis and Richardson (2012) that CSR is a core activity that can be used by a corporation to support its tax position. Third, our study contributes to the understanding of the CSR behaviors of Chinese public firms, which are becoming increasingly important participants in the world economy. Thus, a deeper understanding of these firms benefits global investors. The next section of the paper is a review of the relevant literature and an introduction to our hypotheses. The subsequent section is a description of our data and an introduction to our research methodology, which is followed by a section containing descriptive and regression results. In the last section of the paper, we present our conclusions.

LITERATURE REVIEW

Two views exist regarding firms' attitudes toward CSR. Friedman's (1962) stockholder view suggested that firms should focus on the benefits of shareholders only and maximize shareholders' wealth by maximizing firm profits. Firms endorsing this view are expected to have weaker concerns for CSR. In contrast, Freeman's (1984) stakeholder view argued that firms should work on the benefits of comprehensive stakeholders and balance the interests of different stakeholders, such as investors, the government, and the environment. Firms supporting this view are likely to embrace all components of CSR. However, Smith (2003) pointed out that the two views are not mutually exclusive. For instance, neglecting CSR may raise public concerns and adversely affect firm value (Hanlon & Slemrod, 2009; Wilson, 2009). To address these concerns, firms can choose a few costless CSR components in which to invest for window dressing purposes (Davis, Guenther, Krull, and Williams, 2016; Deegan, 2002; Yin & Zhang, 2012). Moreover, firms devoted to CSR face high costs from CSR activities, which may reduce shareholders' wealth. Because of financial constraints, firms may need to trade off among CSR components.

Both paying a fair amount of taxes and engaging in environmental protection activities are costly CSR activities and are probably the activities that most attract investors' attention. Restricting aggressive tax planning (paying a fair amount of taxes) is an important element of CSR for stakeholders because taxes can be used for the public good, including but not limited to health care, national defense, infrastructure construction, and poverty elimination (Hanlon & Heitzman, 2010; Lin, Cheng, & Zhang, 2017). Environmental protection is another important component of CSR because we have only one earth and economic development should not proceed at the cost of polluting the environment (Williamson, Lynch-Wood, & Ramsay, 2006). Although no prior studies have investigated the association between tax aggressiveness and environmental protection, many researchers have studied the relationship between CSR and tax aggressiveness and have reported mixed results. Hoi, Wu, and Zhang (2013) claimed that, in theory, CSR and tax aggressiveness may be positively and negatively correlated. They use corporate culture theories (e.g., Kreps, 1990) to explain the potential negative relationship. CSR as a shared belief within a corporation motivates firms to be consistent in their behaviors, and therefore, firms engaging in more CSR are less likely to be tax aggressive. The authors also argued that firms may treat CSR activities as risk management tools to enhance their public image (Minor & Morgan, 2011). In this case, firms engaging in more CSR activities may be more likely to aggressively save taxes to restrict their overall costs. By studying U.S. public firms from 2003 to 2009, Hoi et al. (2013) found that firms engaging in irresponsible CSR activities show higher levels of tax aggressiveness (bad firms always perform poorly).

Consistent with this finding, Lanis and Richardson (2012) reported that a higher level of CSR disclosure corresponds to a lower level of tax aggressiveness in Australian firms (good firms always perform well). In contrast to these two studies, Davis et al. (2016) showed a positive relationship between CSR and tax aggressiveness by examining U.S. firms. They found that firms with good CSR ratings pay less taxes because both CSR and tax payments can bolster firm reputation such that the two can be substituted for each other. Lin et al. (2017), whose empirical evidence is from China, reconciled the inconsistent results and found that firms in regions with lower institutional quality pay less taxes while claiming to be socially responsible, whereas firms in in regions with higher institutional quality pay more taxes when claiming to be socially responsible. To summarize, both theories and evidence are mixed regarding the relationship between tax aggressiveness and CSR. Similarly, we argue that the relationship between tax aggressiveness and environmental protection is inconclusive. Firms paying fair taxes may be more likely to participate in environmental protection because good firms with a corporate culture to believe in CSR will perform well in different components of CSR (Kreps, 1990). Firms with strong CSR are expected to both protect the environment and comply with tax regulations. However, both of the CSR components of paying a fair amount of taxes and engaging in environmental protection activities may each require a significant cash investment, forcing firms to trade off between them; therefore, firms may need to choose just one of them on which to focus. Based on these arguments, we predicted that the degree of tax aggressiveness measured by the cash effective tax rate (cash ETR) would be significantly associated with environmental protection activities. However, we did not predict the sign (positive or negative) because theories support both. Please note higher cash ETR indicates a lower degree of tax aggressiveness. A negative (positive) relationship between tax aggressiveness and environmental protection activity means a positive (negative) relationship between cash ETR and environmental protection activity. Formally, our first hypothesis is as follows:

H_1: The cash ETR is significantly associated with environmental protection activity.

We were also interested in the channels through which the relationship between the cash ETR and environmental protection was more pronounced. We first predicted political connections to be one of the channels. The Chinese government has advocated for environmental protection and released many strict regulations. Additionally, collecting taxes is always a government's key goal in supporting its operations (Zeng, 2010). Firms with political connections are likely to align government goals with their own targets (Fan, 2017; Fan & Song, 2019; Zeng, 2010). Therefore, we predicted that firms with political connections were less likely to engage in tax aggressiveness and more likely to engage in environmental protection activities than firms without political connections. Firms may obtain political connections via their management team or board members. Based on these observations, we developed the following two hypotheses:

H_2: The positive relationship between the cash ETR and environmental protection activity is more pronounced in firms with politically connected management than in firms without politically connected management.

H_3: The positive relationship between the cash ETR and environmental protection activity is more pronounced in firms with politically connected boards than in firms without politically connected boards.

Prior literature shows that firms with a higher percentage of independent directors performed better in CSR (Fan & Chen, 2017; Petra, 2005). Independent directors are more likely to require firms to comply with tax laws and environmental requirements. Therefore, we predicted that a positive relationship should exist between the cash ETR and environmental protection activities when firms have more independent directors. Formally, our fourth hypothesis is as follows:

H_4: The positive relationship between the cash ETR and environmental protection activity is more pronounced in firms with a higher percentage of independent directors.

Another channel that we predicted that will influence the impact of environmental protection on tax aggressiveness was government bursary. On the one hand, firms that receive more government bursary have more cash with which to pay taxes and invest in environmental protection, suggesting that a positive relationship between the cash ETR and environmental protection would be more pronounced in firms receiving more government bursaries. On the other hand, firms receiving fewer government bursaries may work harder to pay taxes and protect the environment to impress the government in order to receive more bursaries in the future, suggesting that a negative relationship between the cash ETR and environmental protection is more pronounced in firms receiving fewer government bursaries. Owing to the competing theories, our fifth hypothesis is nondirectional:

H_5: Government bursary moderates the relationship between the cash ETR and environmental protection activity.

DATA AND METHODOLOGY

Our sample construction started with all publicly traded firms listed on the Shanghai and Shenzhen stock exchanges for the period from 2007 to 2017. We excluded financial, government-regulated, and special-treatment firms, as well as non-profit organizations, from the sample because they are highly regulated and likely to behave differently compared to other firms. Our final sample included 4,451 firm-year observations from 868 individual firms. All variables were obtained from the China Stock Market & Accounting Research Database, except for background information regarding directors and executives, which was manually collected. We followed prior research (Peng, Sun and Markóczy 2015) and collected director and executive background information from the section "Profile of Directors and Senior Managers" in annual reports. Accordingly, we were able to distinguish politically and non-politically connected directors and executives. Politically connected directors or executives are those who worked in the government or military or are members of the National People's Congress or the Chinese People's Political Consultative Conference. Chinese public firms are required to disclose their environmental protection activities in their annual reports. We defined our variable of interest *Environment* as a dummy variable equal to 1 if a firm disclosed at least one environmental protection activity in year t and equal to 0 if a firm did not mention any environmental protection activity in its annual report in year t. Another variable of interest, *Cash_ETR*, was calculated as income taxes paid divided by pre-tax income. Following the extant tax literature (Gupta & Newberry, 1997; Higgins, Omer and Phillips, 2015), we set the range of the ETR to be between 0 and 1. If the ETR was larger than 1, we reset it to 1; if the ETR was smaller than 0, we reset it to 0. To test H_1, we used *Cash_ETR* as our dependent variable and included factors that prior researchers found to influence the ETR (Higgins et al., 2015; Zeng, 2010). Then, we introduced the *Environment* dummy variable to the regression model (Equation 1).

$$Cash\_ETR_{it} = \beta_0 + \beta_0 Environment_{it} + \beta_1 SIZE_{it} + \beta_2 ROA_{it} + \beta_3 Debt_{it} + \beta_4\, Intan_{it} + \beta_5 Inventory_{it} + \beta_6 Cash_{it} + Year\ effects + Industry\ effects + \varepsilon_{it} \qquad (equation\ 1)$$

Where:

$Cash\_ETR_{it}$ = income tax paid from the cashflow statement divided by the pre-tax income from the income statement;

$Environment_{it}$ = a dummy variable that equals to 1 if a firm disclosed in their annual report that it engaged in at least one environmental protection activity in year t, and equals to 0 otherwise;

$SIZE_{it}$ = natural log of total assets;

ROA_{it} = the net income for firm i in year t divided by total asset for firm i in year t;

$Debt_{it}$ = the long-term debt for firm i in year t divided by total assets for firm i in year t;

$Intan_{it}$ = the value of intangible assets at the end of year t scaled by the total book value of the firm at the beginning of year t;

$Inventory_{it}$ = the value of inventory at the end of year t scaled by the total book value of the firm at the beginning of year t;

$Cash_{it}$ = the total value of cash at the end of year t scaled by the total book value of the firm at the beginning of year t.

As stated in H_1, we predicted β_1 to be significant. However, we did not predict the sign because there are theories that support both positive and negative relationships. To test H_2–H_5, we divided the full sample into subgroups, such as politically connected and non-politically connected firms, and retested H_1 for each subsample. Details are introduced in the next section.

RESULTS

Table 1 shows the summary statistics of the sample. Columns 2–4 show the number of observations, the mean, and the standard deviation for firm-year observations that did not participate in environmental protection activities (*environment* = 0), respectively. Columns 5–7 show the same statistics for firm-year observations engaging in environmental protection activities (*environment* = 1). The last column reports the p-value from a t-test comparing the means of the two subgroups. We found that firms participating in environmental protection paid more taxes, were larger, and had more intangible assets but were less profitable and held less cash and inventory. The high costs of environmental protection activities may have been the reason for the low profitability and cash holding.

Table 1: Summary Statistics Descriptive Statistics

	Environment=0			Environment=1			T-test
Variables	**N**	**Mean**	**Std Dev**	**N**	**Mean**	**Std Dev**	**P-value**
Cash_ETR	1,386	0.623	0.344	3,065	0.651	0.351	0.010
Size	1,386	22.570	1.291	3,065	23.100	1.398	0.000
ROA	1,386	0.047	0.052	3,065	0.043	0.053	0.009
Debt	1,386	0.086	0.127	3,065	0.089	0.120	0.393
Intan	1,386	0.055	0.084	3,065	0.060	0.073	0.043
Inventory	1,386	0.277	0.278	3,065	0.187	0.187	0.000
Cash	1,386	0.233	0.291	3,065	0.190	0.219	0.000

This table presents statistics for the full sample of observations in the data. The data range from 2010 to 2017. Columns 2–4 show the number of observations, the mean, and the standard deviation for firm-year observations that did not participate in environmental protection activities (environment = 0), respectively. Columns 5–7 show the same statistics for firm-year observations engaging in environmental protection activities (environment = 1). The last column reports the p-value from a t-test comparing the means of the two subgroups.

Both Pearson and Spearman correlations are shown in Table 2. No correlation was higher than 50%, suggesting that multicollinearity was likely not a main issue.

Table 2: Pearson and Spearman Correlations Correlation Coefficient

	Cash_ETR	Size	ROA	Debt	Intan	Inventory	Cash	Environment
Cash_ETR	1	0.11*	-0.16*	0.08*	-0.04*	0.16*	-0.03*	0.05*
Size	0.13*	1	-0.18*	0.46*	-0.05*	-0.00	-0.21*	0.17*
ROA	0.04*	-0.13*	1	-0.33*	0.06*	-0.06*	0.37*	-0.04*
Debt	0.05*	0.35*	-0.20*	1	-0.02	0.01	-0.29*	0.06*
Intan	-0.05*	0.02	0.03*	0.13*	1	-0.19*	0.00	0.13*
Inventory	0.17*	0.10*	-0.06*	0.20*	-0.14*	1	0.09*	-0.11*
Cash	-0.06*	-0.17*	0.25*	-0.04*	0.13*	0.15*	1	-0.08*
Environment	0.04*	0.18*	-0.04*	0.01	0.03*	-0.19*	-0.08*	1

*This table presents correlation coefficients for the full sample data. The lower-triangular cells report Pearson's correlation coefficients, while the upper-triangular cells are Spearman's rank correlation. * indicates that the correlations are statistically significant equal to or greater than 5%.*

The following regression equation was estimated to identify determinants of *Cash_ETR* and to test our five hypotheses. Fixed-effect estimates were obtained. The variable definition can be found in Table 3.

$$Cash\_ETR_{it} = \beta_0 + \beta_0 Environment_{it} + \beta_1 SIZE_{it} + \beta_2 ROA_{it} + \beta_3 Debt_{it} + \beta_4\ Intan_{it} + \beta_5 Inventory_{it} + \beta_6 Cash_{it} + Year\ effects + Industry\ effects\ + \varepsilon_{it} \qquad (equation\ 1)$$

Table 3 presents the fixed effect model regression and Tobit model regression on the impact of *Environment* on *Cash ETR* (i.e., H_1). Column 1 presents the results for the regression model after controlling industry fixed effects. Columns 2 and 3 repeat the same model when controlling for year fixed effects and industry-year fixed effects, respectively. Column 4 presents the results of using the Tobit model. As we show in columns 1–3, *Environment* was positively and significantly associated with *Cash ETR* at the 10% level or lower, supporting H_1. The results suggest that firms do not need to focus on only one CSR component but, instead, can perform well in different aspects of CSR, which is consistent with corporate culture theories. Because the cash ETR was within the range of 0–1, we performed a robustness test using the Tobit model, and the results are shown in column 4. *Environment* was still positively and significantly associated with *Cash ETR* at the 10% level, again supporting H_1.

Tables 4–7 show the channels through which the relationship between firms' cash ETR and environmental protection activities was pronounced based on various firm characteristics, including the management's and board's politically connections, the percentage of independent directors, and the level of government bursary support. Table 4 presents the test results regarding whether management's political connections moderate the relationship between *Environment* and *Cash ETR* (i.e., H_2). We predicted in H_2 that the relationship between *Cash ETR* and *Environment* would be stronger in firms with politically connected management. Column 1 presents the results for the regression model when using the subsample of firms with politically connected management, whereas column 2 presents the results for the regression model when using the subsample of firms without politically connected management. Table 4 shows that H_1 was supported only in column 1 (i.e., firms with politically connected management), thus supporting H_2.

Table 3: Test of the Association between Cash ETR and Environmental Protection

	(1)	(2)	(3)	(4)
	Industry Fixed Effect Model	**Year Fixed Effect Model**	**Industry-year Fixed Effect Model**	**Tobit Model**
Environment	0.021*	0.021*	0.024**	0.021*
	(0.080)	(0.080)	(0.048)	(0.077)
Size	0.020***	0.020***	0.021***	0.020***
	(0.000)	(0.000)	(0.000)	(0.000)
ROA	0.377***	0.377***	0.249**	0.377***
	(0.000)	(0.000)	(0.030)	(0.000)
Debt	-0.031	-0.031	-0.080	-0.031
	(0.562)	(0.562)	(0.151)	(0.558)
Intan	0.024	0.024	0.018	0.024
	(0.762)	(0.762)	(0.831)	(0.760)
Inventory	0.263***	0.263***	0.276***	0.263***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash	-0.130***	-0.130***	-0.117***	-0.130***
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.174	-0.353***	0.105	-0.310**
	(0.127)	(0.005)	(0.332)	(0.019)
Industries	Fixed Effect	Included	Fixed Effect	Included
Years	Included	Fixed Effect	Fixed Effect	Included
Observations	4,451	4,451	4,451	4,451
R-squared	0.056	0.153	0.053	
Adjusted R^2	0.028	0.137	0.026	
Pseudo R^2				0.232

This table presents the fixed effect model regression and Tobit model regression on the impact of Environment on Cash ETR (i.e., H1). $Cash\_ETR_{it} = \beta_0 + \beta_0 Environment_{it} + \beta_1 SIZE_{it} + \beta_2 ROA_{it} + \beta_3 Debt_{it} + \beta_4\ Intan_{it} + \beta_5 Inventory_{it} + \beta_6 Cash_{it} + Year\ effects + Industry\ effects\ + \varepsilon_{it}$, where the dependent variable is the Cash ETR, calculated as income tax paid by firm i in year t divided by pre-tax income *in the same year; Environment is a dummy variable that equals to 1 if a firm disclosed in their annual report that it engaged in at least one environmental protection activity in year t, and equals to 0 otherwise; SIZE is the natural log of total assets; ROA is calculated as the net income for firm i in year t divided by total asset for firm i in year t; Debt is the long-term debt for firm i in year t divided by total assets for firm i in year t; Intan is calculated as the value of intangible assets at the end of year t scaled by the total book value of the firm at the beginning of year t; Inventory is the value of inventory at the end of year t scaled by the total book value of the firm at the beginning of year t; Cash is the total value of cash at the end of year t scaled by the total book value of the firm at the beginning of year t. Column 1 presents the results for the regression model after controlling industry fixed effects. Columns 2 and 3 repeat the same model when controlling for year fixed effects and industry-year fixed effects, respectively. Column 4 presents the results of using the Tobit model. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. P-values are in parentheses.*

Table 5 presents the test results regarding whether a board's political connections moderate the relationship between *Environment* and *Cash ETR* (i.e., H_3). Similar to H_2, we predicted in H_3 that the relationship between *Cash ETR* and *Environment* would be stronger in firms with politically connected boards. We focused on nonexecutive board members' political connections to exclude the moderating effect of executive board members, which was tested in H_2. Therefore, we define a politically connected board as a board with at least one politically connected nonexecutive board member. Column 1 presents the results for the regression model when using the subsample of firms with politically connected boards, whereas column 2 presents the results for the regression model when using the subsample of firms without politically connected boards. Table 5 shows that H_1 was supported only in column 1 (i.e., firms with politically connected boards), thus supporting H_3.

Table 4: Test of the Moderation Effect of Management's Political Connections

	(1)	(2)
	Subsample: Politically Connected Management	**Subsample: Non-politically Connected Management**
Environment	0.077**	0.014
	(0.020)	(0.283)
Size	-0.001	0.020***
	(0.956)	(0.000)
ROA	-0.442	0.582***
	(0.136)	(0.000)
Debt	0.090	-0.079
	(0.577)	(0.190)
Intan	-0.158	0.073
	(0.553)	(0.420)
Inventory	0.229**	0.313***
	(0.013)	(0.000)
Cash	-0.025	-0.153***
	(0.658)	(0.000)
Constant	0.539	0.137
	(0.107)	(0.250)
Industries	Fixed Effect	Fixed Effect
Years	Included	Included
Observations	518	3,571
R-squared	0.054	0.060
Adjusted R^2	0.051	0.035

This table presents the test results regarding whether the management's political connection moderates the relationship between environment and cash ETR (i.e., hypothesis 2). The full sample is divided into two subgroups: firms with politically connected management and firms without politically connected management. The same regression model below is estimated in each subsample. $Cash\_ETR_{it} = \beta_0 + \beta_0 Environment_{it} + \beta_1 SIZE_{it} + \beta_2 ROA_{it} + \beta_3 Debt_{it} + \beta_4 Intan_{it} + \beta_5 Inventory_{it} + \beta_6 Cash_{it} + Year\ effects + Industry\ effects\ + \varepsilon_{it}$. *The definitions of all variables are illustrated in Table 3. Column1 1 presents the results for the regression model when using the subsample of firms with politically connected management, whereas Column 2 presents the results for the regression model when using the subsample of firms without politically connected management. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. P-values are in parentheses.*

The third channel we tested was the percentage of independent directors. Table 6 presents the test results regarding whether the percentage of independent directors moderates the relationship between *Environment* and *Cash ETR* (i.e., H_4). In our sample, the average percentage of independent directors was 33.35%. Column 1 presents the results for the regression model when using the subsample of firms with above-average percentages of independent directors, whereas column 2 presents the results for the regression model when using the subsample of firms with below-average percentages of independent directors. Table 6 shows that *Cash ETR* was positively associated with *Environment* in firms with an above-average percentage of independent directors (column 1), whereas this relationship was nonsignificant in firms with a below-average percentage of independent directors (column 2), thus supporting H_4.

Table 5: Test of the Moderation Effect of Board's Political Connections

	(1)	(2)
	Subsample: Politically Connected Board	**Subsample: Non-politically Connected Board**
Environment	0.034*	0.009
	(0.068)	(0.606)
Size	0.030***	0.013*
	(0.000)	(0.055)
ROA	0.124	0.743***
	(0.466)	(0.000)
Debt	-0.135	0.020
	(0.100)	(0.798)
Intan	-0.047	0.091
	(0.700)	(0.442)
Inventory	0.243***	0.350***
	(0.000)	(0.000)
Cash	-0.085**	-0.162***
	(0.017)	(0.000)
Constant	-0.089	0.269*
	(0.590)	(0.082)
Industries	Fixed Effect	Fixed Effect
Years	Included	Included
Observations	1,906	2,183
R-squared	0.065	0.059
Adjusted R^2	0.031	0.040

This table presents the test results regarding whether the board's political connection moderates the relationship between environment and cash ETR (i.e., hypothesis 3). We focus on non-executive board members' political connection to exclude the moderation effect of executive board members, which has been tested in H2. The full sample is divided into two subgroups: firms with at least one politically connected independent board members and firms without politically connected independent board members. The same regression model below is estimated in each subsample
$Cash\_ETR_{it} = \beta_0 + \beta_0 Environment_{it} + \beta_1 SIZE_{it} + \beta_2 ROA_{it} + \beta_3 Debt_{it} + \beta_4\ Intan_{it} + \beta_5 Inventory_{it} + \beta_6 Cash_{it} + Year\ effects + Industry\ effects\ + \varepsilon_{it}$. The definitions of all variables are illustrated in Table 3. Column 1 presents the results for the regression *model when using the subsample of firms with politically connected board, whereas Column 2 presents the results for the regression model when using the subsample of firms without politically connected board. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. P-values are in parentheses.*

Finally, we tested how government bursary influences firms' choices of tax aggressiveness and environmental protection activities. Table 7 presents the test results regarding whether government bursary moderates the relationship between *Environment* and *Cash ETR* (i.e., H_5). The average value of government bursary as a percentage of total assets was 0.396% in our sample. Column 1 presents the results for the regression model when using the subsample of firms with above-average government bursary, whereas column 2 presents the results for the regression model when using the subsample of firms with below-average government bursary. Consistent with H_5, we found that government bursary influenced the relationship between the cash ETR and firms' environmental protection activities. When firms received a below-average government bursary as a percentage of total assets, the relationship between *Cash ETR* and *Environment* was positive and significant at the 10% level (column 2), probably because these firms tended to perform well in the hope of receiving more government bursary in the future. The relationship between *Cash ETR* and *Environment* was nonsignificant in column 1.

Table 6: Test of the Moderation Effect of Independent Directors

	(1)	(2)
	Subsample: Independent Directors % >Mean	**Subsample: Independent Directors % ≤ Mean**
Environment	0.027*	0.006
	(0.090)	(0.709)
Size	0.022***	0.015**
	(0.001)	(0.029)
ROA	0.227	0.566***
	(0.135)	(0.000)
Debt	-0.069	0.046
	(0.354)	(0.556)
Intan	0.123	-0.110
	(0.265)	(0.360)
Inventory	0.308***	0.187***
	(0.000)	(0.000)
Cash	-0.149***	-0.097***
	(0.000)	(0.003)
Constant	0.132	0.290*
	(0.463)	(0.077)
Industries	Fixed Effect	Fixed Effect
Years	Included	Included
Observations	2,263	2,188
R-squared	0.065	0.055
Adjusted R^2	0.037	0.027

This table presents the test results regarding whether the percentage of independent directors moderates the relationship between environment and cash ETR (i.e., hypothesis 4). The full sample is divided into two subgroups: firms with above-average percentage of independent directors and firms with below-average percentage of independent directors. The same regression model below is estimated in each subsample.
$Cash\_ETR_{it} = \beta_0 + \beta_0 Environment_{it} + \beta_1 SIZE_{it} + \beta_2 ROA_{it} + \beta_3 Debt_{it} + \beta_4\ Intan_{it} + \beta_5 Inventory_{it} + \beta_6 Cash_{it} + Year\ effects + Industry\ effects\ + \varepsilon_{it}$. *The definitions of all variables are illustrated in Table 3. Column 1 presents the results for the regression model when using the subsample of firms with above-average percentages of independent directors, whereas column 2 presents the results for the regression model when using the subsample of firms with below-average percentages of independent directors. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. P-values are in parentheses.*

Table 7: Test of the Moderation Effect of Government Bursary

	(1)	(2)
	Subsample: Gov Bursary ≥ Mean	**Subsample: Gov Bursary < Mean**
Environment	0.030	0.023*
	(0.173)	(0.089)
Size	0.019**	0.014**
	(0.027)	(0.013)
ROA	0.837***	0.244*
	(0.000)	(0.054)
Debt	-0.240**	0.050
	(0.020)	(0.416)
Intan	0.260	-0.022
	(0.183)	(0.801)
Inventory	0.239***	0.267***
	(0.001)	(0.000)
Cash	-0.120***	-0.123***
	(0.010)	(0.000)
Constant	0.149	0.291**
	(0.638)	(0.027)
Industries	Fixed Effect	Fixed Effect
Years	Included	Included
Observations	1,542	2,909
R-squared	0.048	0.071
Adjusted R^2	0.036	0.031

This table presents the test results regarding whether the government bursary moderates the relationship between environment and cash ETR (i.e., hypothesis 5). The full sample is divided into two subgroups: firms with above-average government bursary as a percentage of total assets and firms with below-average government bursary as a percentage of total assets. The same regression model below is estimated in each subsample.
$Cash\_ETR_{it} = \beta_0 + \beta_0 Environment_{it} + \beta_1 SIZE_{it} + \beta_2 ROA_{it} + \beta_3 Debt_{it} + \beta_4\ Intan_{it} + \beta_5 Inventory_{it} + \beta_6 Cash_{it} + Year\ effects + Industry\ effects\ + \varepsilon_{it}$. The definitions of all variables are illustrated in Table 3. Column1 1 presents the results for the regression model when *using the subsample of firms with above-average government bursary, while Column 2 presents the results for the regression model when using the subsample of firms with below-average government bursary. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. P-values are in parentheses.*

CONCLUDING COMMENTS

This study was motivated by a lack of understanding about whether and how firms weigh different aspects of CSR activities. We examined two research questions in this study: first, whether and how tax aggressive and environmental protection activities as two costly CSR components are correlated and, second, the channels through which environmental protection activities affect tax aggressiveness. By investigating all public Chinese firms from 2010 to 2017, we found that tax aggressiveness and environmental protection were negatively associated with each other, suggesting that firms that perform well do so among different CSR components. Our results are robust to fixed-effects estimation and Tobit estimation. Additionally, we found that the negative relationship between tax aggressiveness and environmental protection activities is more pronounced in firms with politically connected management or board members, firms with a higher percentage of independent directors, and firms receiving fewer government bursaries. This study makes theoretical and practical contributions to the tax literature. First, our finding adds to the growing literature on the determinants of tax aggressiveness by showing that CSR such as environmental protection plays an important role. Firms performing well in environmental protection tend to be less aggressiveness in tax planning. Second, by documenting the moderating effect of political connections, we provide further evidence demonstrating the key role of government in deterring firms' tax behaviors in China. Our findings will be interesting to policymakers because we suggest a potential means to detect tax-aggressive firms. The findings will also be interesting to investors because many investors want to avoid tax-aggressive firms, which are believed to be risky. Similar to other related studies, one limitation of this study is the imperfect measure of tax aggressiveness. Because of the confidentiality of tax data, researchers can only estimate the extent of tax aggressiveness by using reported financial data. The Chinese firms in our sample report less information than their counterparts in the United States; for example, they do not report foreign income, which further lowers researchers' ability to accurately estimate tax aggressiveness.

We call for future studies to improve the measures of tax aggressiveness for Chinese firms. Moreover, we hope more researchers will investigate firms' choices of tax savings and other CSR components more comprehensively.

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THE INTEREST, KNOWLEDGE, AND USAGE OF ARTIFICIAL INTELLIGENCE IN ACCOUNTING: EVIDENCE FROM ACCOUNTING PROFESSIONALS

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ABSTRACT

Artificial intelligence, along with other recent advancements in technology, has revolutionized business processes around the world. The purpose of this paper is to determine if artificial intelligence has become a popular tool utilized by corporations and/or accounting firms around the Southwest Florida region. Given that artificial intelligence will significantly impact the accounting world, it is important to understand how professionals perceive this rapidly emerging technology. To understand how artificial intelligence is utilized, we survey thirty-four professionals holding accounting positions ranging from staff accountants to partners. We find that a majority of accountants surveyed were at least somewhat interested and at least somewhat familiar with the use of artificial intelligence in accounting. However, the majority of accountants surveyed did not previously use artificial intelligence in their company and a limited number of accountants are currently using artificial intelligence to complete an accounting process and/or task. Regression analysis shows that professionals that have previously tried implementing artificial intelligence and that believe artificial intelligence will be used in accounting in the future are more likely to be interested in implementing artificial intelligence. Additionally, when analyzing the results from partners-only, we find very similar results as the average accountant, they also believe that artificial intelligence will be used in accounting in the future which provides a promising outlook for coming changes in the accounting profession.

JEL: M41, M49

KEYWORDS: Accounting, Artificial Intelligence

INTRODUCTION

Artificial intelligence (AI), along with other recent advancements in technology, has disrupted and revolutionized business processes around the world. AI's implementation in any business process also creates opportunities for accounting to be involved or at least affected by the implementation. It is also natural to assume that companies would look to utilize AI to create better processes within their accounting and/or auditing departments. The topic of AI has certainly caused some controversy in the business world today. Some believe it to be an exceptional addition to a company as it provides accuracy and efficiency in a way that humans are mostly incapable of. Meanwhile, others may view it as an expensive program void of emotion and moral character contributing to the unemployment rate. With a high level of prevalence for disputes, the presence of AI in the workplace is a topic longing to be analyzed. Additionally, in a survey of workers Baker (2017) found that 87% expect parts of their job to be automated in the next five years, ranging from 93% of millennials to 79% of baby boomers. Of those who expect automation, 80% anticipate more opportunities than challenges in how automation will impact their work experiences in the next five years. The purpose of this paper is to determine if artificial intelligence has become a popular tool utilized by corporations and/or accounting firms around the Southwest Florida region.

The earliest signs of AI dates back to the time of Hephaestus, a blacksmith, in Ancient Greek mythology. Hephaestus constructed systems such as wheelchairs and "manufactured mechanical servants" ("A Brief History of AI," 2017) with human-like qualities and their own purposes. In the mid-twentieth century, the term AI was officially created by John McCarthy (McCarthy, 2007). Between that era and today, intelligence systems have been programmed to successfully operate in industries such as auto and entertainment and are now considered AI. Robotic (bots) machinery has taken on innovative and original tasks perceived to be handled mainly by humans. Now we are on the verge of self-driving automobiles and airplanes becoming mainstream. As AI becomes more prevalent in business operations one would expect that accounting and audit departments would find ways to utilize this technology to increase their efficiency and effectiveness. As in the past, Big 4 accounting firms are typically at the forefront of early adopters when new disruptive innovations occur in accounting. Recent studies indicate that this is still true today with the Big4 accounting firms utilizing AI technology to help facilitate the completion of audits and also providing AI advice and tools to their accounting clients through their consulting services (Dowling and Leach 2014, KPMG 2017, 2020). Previous literature also finds that the research in the field of AI has been predominantly focused on industry use with some discussion of how it can be used in accounting. Grey et. al. (2014) finds that research in the use of AI in accounting has waned since the 1990's and specifically calls for much more research on the usability, and use, of artificial intelligence techniques in accounting domains. Sutton et. al. (2019) contradict this finding and state that AI applications continue to gain traction in both accounting research and accounting practice. Our research question adds to the literature as we are considering if the accounting field has taken the next step in the evolution of AI use. The remainder of the paper is organized as follows. The next section examines the related literature. We then describe our data and methodology and discuss the results of our empirical tests. Next we discuss a path forward and the final section concludes.

LITERATURE REVIEW

Accounting is considered to be an artificial science because of its human activity and AI is concerned with human activity (Gouws, 1997). Accounting can be looked at as a perception of reality, which is why it aligns symmetrically with the idea of AI being integrated with its process. AI, also referred to as an "expert system", has been making headlines in the field of accounting. Although much is of speculation, the capabilities of expert systems are rapidly growing as more companies see the potential benefits. The goal of AI is to closely recreate human activity and decision-making (Qureshi, Shim, & Siegel, 1998). With the ability to replicate human activity, over time an expert system can become more knowledgeable by learning different processes and more efficient methods of presenting information (Moudud-Ul-Huq, 2014). The result of this "expert system" or "learning machine", is the ability to provide more accurate decisions. The expert systems can also gain more knowledge about different problems that may occur and adjust the outcome based on historical situations. There are two types of expert systems that can be applied to accounting: Rule Based expert systems and Case Based expert systems. Rule Based expert systems commonly provide conclusions based on input data, similar to an "IF, THEN" scenario. Case Based expert systems more commonly use reasoning, a basic form of human reasoning, and make designs based upon historical outcomes (Qureshi, Shim, & Siegel, 1998).

Applications of expert systems within accounting can be found in auditing, accounting standards, taxation, and management and control. Additionally, the capabilities that expert systems have could potentially be used in nearly every part of the internal auditing process (Flesher, & Martin, 1987). For example, AI is being integrated in most of the Big4 accounting firms' services. KPMG has recently launched its KPMG Ignite program, a portfolio of AI aimed at increased efficiency and service quality. Ignite includes AI developments that are aimed towards speeding up internal processes such as IT implementation and analytics (KPMG 2017). KPMG, like most accounting firms, is still heavily involved in the prototype stage of AI. Even though KPMG is in the testing phase of AI implementation, they plan on practical implementation in the future. Additionally, Deloitte utilizes AI technology to comb through hundreds of thousands of legal documents to look for changes in control provisions during a client's sale of a business unit. A process that can take up to six months, can be completed within a month with the help of AI technology. Finally, Ernst & Young (EY) uses AI to review lease accounting standards, making the process more accurate and efficient (EY 2017). These large accounting firms are setting a standard for technology utilization, which is breaking ground for more accounting companies to do the same. With the efficiencies that AI provides it follows that it can also assist in areas where there are shortages of experienced individuals to accomplish the work. Jones (2016) identified a potential shortage in accounting professionals due to less people pursuing a degree in accounting. Implementing AI can fill this potential gap in demand for accountants. Expert systems can allow the accounting profession to keep pace with the ever-changing profession because they can grow together. The implementation of AI should not be discouraged by people in the profession.

DATA & METHODOLOGY

The data for this study is based on survey responses received from thirty-four professionals in the field of accounting. The surveys were administered during three professional meetings held by the Florida Institute of CPA's (1/17/18), the Accounting Advisory Council at Florida Gulf Coast University (1/19/18) and the Institute of Internal Auditors (2/6/18). Participation in this study was anonymous and voluntary; the participation rate was 48.6%. Professionals that participated in the study held positions ranging from staff accountants to Chief Audit Executive (CAE)/Partners. Further, participants represented varied areas of accounting including tax, internal/external audit, financial accounting, and education. Our survey (see Appendix A) first addresses individual and firm characteristics (see questions 1-9 on the survey). The remaining questions (see questions 10-21), are aimed at discovering the accounting professional's current interest, usage, and familiarity of AI. Participants chose their level of interest on a scale of *Very interested, Interested, Somewhat Interested,* and *Not Interested*. Their level of familiarity was measured on a scale of *Very Familiar, Familiar, Somewhat Familiar, and Unfamiliar*. Usage was measured using *yes* or *no* questions. Our informational analysis will help estimate the future implementation of AI in the accounting profession.

RESULTS

Full Sample - All Accounting Professionals Surveyed

We begin by analyzing the complete sample of accounting professionals that completed the survey questionnaire. Below we discuss descriptive results of interest (based on question #14 on the survey), familiarity (based on question #10 on the survey), and usage (based on question #16 on the survey) of AI. Analysis of the INTEREST_IV variable reveals that 85% of accountants from all fields are at least somewhat interested in the use of AI in accounting (see Table 1, Panel A). The number of accountants who are somewhat interested in AI suggests that AI is getting attention from all areas of accounting. Out of the professionals who are least somewhat interested, 15% of them are very interested (not tabulated). The larger accounting firms are also showing interest in AI through their recruitment of students and professionals who have a strong AI or data analytics background. AI also receives attention from online accounting websites such as Accounting Today, which states, "Accountants need to up their game when it comes to using technology…" (Hood, 2017). The word 'use' is important in this quote because the usage differs greatly from interest in AI. Interest alone will not implement new technology into accounting processes; professionals need to be familiar with technology to be able to use it in their business. With respect to the FAMILIAR_IV variable, our analysis shows that 91% of the accounting professionals surveyed were at least somewhat familiar with AI (see Table 1, Panel B). Our interpretation of the data suggests that most accounting professionals have heard of AI before and have a basic understanding of how it operates. Is this level of familiarity enough to implement the technology in the accounting process? Of the people who were somewhat familiar with AI, 12% are very familiar with AI (not tabulated). As accounting professionals become more familiar with AI, we can expect to see an increase in its usage. Thus far we have seen that the majority of accountants surveyed were at least somewhat interested and at least somewhat familiar with the use of AI in accounting. However, the majority of accountants surveyed have not previously used AI in their company. Out of the accountants we surveyed, only 24% (USED_IV variable) of them used AI in the past (see Table 1, Panel C). Furthermore, 32% (USING_IV variable) of accountants use AI in their current accounting process. This slight increase in use may be due to the current advancements in AI. The evidence here appears to demonstrate that the idea of implementing AI is more popular than the practical implementation of it.

Table 1: Percentage Results in Interest, Familiarity, and Usage in AI - All Accounting Professionals Surveyed (n=34)

Variable	**Value=1**	**Value=0**
Panel A: Interest in ai (Question #14)		
INTEREST_IV	85%	15%
Panel B: Familiar with ai (Question #10)		
FAMILIAR_IV	91%	9%
Panel C: Usage of ai (Question #16)		
USED_IV	24%	76%
USING_IV	32%	68%

*Notes: [a]*This table shows the percentage response of all accounting professionals surveyed with respect to their interest (Panel A), familiarity (Panel B) and usage (Panel C) of AI. [b]Variables are defined as follows: INTEREST_IV=an indicator variable equal to 1 if participants responded Somewhat Interested, Interested, or Very Interested to Question #14 on the survey, and 0 otherwise. FAMILIAR_IV= an indicator variable equal to 1 if participants responded Somewhat Familiar, Familiar, or Very Familiar to Question #10 on the survey, and 0 otherwise. USED_IV =an indicator variable equal to 1 if participants responded Yes to Question #17, and 0 otherwise. USING_IV =an indicator variable equal to 1 if participants responded Yes to Question #16, and 0 otherwise.*

We next examine what cross sectional attributes impact interest and familiarity with AI (see Table 2). We test to see if there are differences with respect to: years of experience in the field of accounting (Exp 0-10 yrs vs. Exp > 10 yrs), tax work professionals vs. nontax work professionals (Tax vs. Non-Tax), audit work professionals' vs non-audit work professionals (Audit vs. Non-Audit), and small firms with less than 100 employees' vs larger firms (Small vs. Non-Small). For this purpose, we define the variable INTEREST as a value ranging 0-3 corresponding to question #14 on the survey as follows: Not Interested=0, Somewhat Interested=1, Interested=2, and Very Interested=3. FAMILIAR is defined as a value ranging 0-3 (based on question #10 on the survey) where: Unfamiliar=0, Somewhat Familiar=1, Familiar=2, and Very Familiar=3. We find that the mean score for INTEREST is statistically higher for accounting professionals with experience of 10 years or less in industry (2.8) than the mean score of those with experience greater than 10 years (1.3) (see Table 2, Panel A). This finding may not be surprising given that new technologies are usually driven by younger professionals. Interestingly, the mean scores for both INTEREST (Panel A) and FAMILIAR (Panel B) under all other attributes examined did not show a statistically significant difference between groups. A potential explanation for this is that AI is at a very early stage in the field of accounting and any cross-sectional differences in interest and familiarity will possibly be seen once this technology is more readily implemented.

Table 2: Mean Scores in Interest and Familiarity in ai by Differing Attributes - All Accounting Professionals Surveyed (n=34)

Variable	Mean Score (A)	Mean Score (B)	Test of Difference p-Value
Panel A: INTEREST (Question #14)			
Exp 0-10 yrs Exp >10 yrs	2.8	1.3	0.001 ***
Tax Non-Tax	1.9	1.3	0.125
Audit Non-Audit	1.8	1.4	0.312
Small Non-Small	1.5	1.6	0.860
Panel B: FAMILIAR (Question #10)			
Exp 0-10 yrs Exp >10 yrs	1.4	1.2	0.598
Tax Non-Tax	1.1	1.3	0.459
Audit Non-Audit	1.1	1.3	0.441
Small Non-Small	1.4	1.1	0.264

*Notes: [a]This table shows the mean score of all accounting professionals surveyed with respect to their interest (Panel A) and familiarity (Panel B) with AI by the following attributes (experience level, tax professionals, audit professionals, and size of firm). [b]Variables are as defined as follows: INTEREST = a value ranging 0-3 corresponding to question #14 on the survey as follows: Not Interested=0, Somewhat Interested=1, Interested=2, and Very Interested=3. FAMILIAR = a value ranging 0-3 (based on question #10 on the survey) where: Unfamiliar=0, Somewhat Familiar=1, Familiar=2, and Very Familiar=3.[c] *** indicates statistical significance at the 1 percent level.*

The preceding results show that the majority of accounting professionals are at least somewhat interested in AI (85%) and at least somewhat familiar with AI (91%). Survey responses demonstrated that the interest in AI is higher for accounting professionals early in their career (those with work experience of 10 years or less). Additionally, it appears as if very few accounting professionals have actually used AI in the past (24%). A natural question that follows is: what factors make accounting professionals more interested in implementing AI in the future? For this purpose, we estimate the following regression:

$$INTEREST = \beta_0 + \beta_1 FAMILIAR + \beta_2 IMPLEMENT + \beta_3 USING + \beta_4 WILL\_USE + \beta_5 OTHER\_USE + \beta_6 SIZE \quad (1)$$

The variable INTEREST and FAMILIAR are as previously defined. IMPLEMENT (USING) [OTHER_USE] is an indicator variable equal to 1 if the response to question #17 (#16) [#18] is Yes, and 0 otherwise. WILL_USE is defined as a value ranging 0-3 (based on question #13) where: Unlikely=0, Somewhat Likely=1, Likely=2, and Very Likely=3. Finally, SIZE is defined as a value ranging from 1-3 corresponding to question #2 on the survey, where Small=1, Medium=2, and Large=3. Given that 3 surveys had some missing data needed to estimate the regression, the sample size is reduced to thirty-one observations for the regression estimates. Results from the regression analysis show that two main factors influence interest in implementing AI in the accounting profession (see Table 3). The significantly positive coefficient on IMPLEMENT (p-value 0.004) evidences that those professionals that have previously tried implementing AI in their business are more likely to be interested in implementing AI in the future. Further, a significant and positive relationship on WILL_USE (p-value 0.010) demonstrates that professionals that believe AI will be used in accounting in the future are also more interested in implementing such technology. No other factors appear statistically significant predictors of interest to implement AI.

$$INTEREST = \beta_0 + \beta_1 FAMILIAR + \beta_2 IMPLEMENT + \beta_3 USING + \beta_4 WILL\_USE + \beta_5 OTHER\_USE + \beta_6 SIZE \quad (2)$$

Table 3: Regression Estimates of Interest to Implement AI - All Accounting Professionals Surveyed (n=31)

Variable	Estimated Coefficient	p-Value
Intercept	-0.29	0.573
FAMILIAR	0.18	0.415
IMPLEMENT	1.76	0.004 ***
USING	-0.93	0.118
WILL_USE	0.51	0.010 **
OTHER_USE	-0.02	0.962
Size	0.05	0.756
R2	0.52	
adj R2	0.41	

*Notes: [a] This table shows the regression estimates of Interest to Implement AI on independent factors. [b] New variables are defined as follows (all other variables are as defined in previous tables): IMPLEMENT= an indicator variable equal to 1 if the response to question #17 is Yes, and 0 otherwise; USING= an indicator variable equal to 1 if the response to question #16 is Yes, and 0 otherwise; WILL_USE = a value ranging 0-3 (based on question #13) where: Unlikely=0, Somewhat Likely=1, Likely=2, and Very Likely=3; OTHER_USE = an indicator variable equal to 1 if the response to question #18 is Yes, and 0 otherwise; SIZE= a value ranging from 1-3 (based on question #2) where: Small=1, Medium=2, and Large=3.[c] ***, ** indicates statistical significance at the 1 and 5 percent level.*

<u>Partners-only Sample – Accounting Partners Surveyed</u>

The president of IFAC, Rachel Grimes, writes "Accountancy profession leaders are firmly focused on technology's opportunities and challenges, and understand that tomorrow's accountants must be fluent in data analytics, and able to pair AI's power and potential with human judgment, skills and our Code of Ethics" (Grimes, 2017). Partners have a direct influence not only on the direction of their company, but also on the decisions made by employees at lower levels. Their perceptions of AI alone may have an effect on strategies and policies implemented, as well as daily tasks in the workplace. So where exactly do these leaders stand on the topic? Our next analysis focuses on the subsample of firm partners based on interest, familiarity, and usage. We also investigate how prevalent they expect AI to be in the future. This subsample is comprised of 14 observations. Given the small sample size, we choose to analyze only descriptive statistics for this subsample. The low sample size compromises the validity of more rigorous statistical testing performed for this subsample. Our data indicates that 79% of partners (as evidenced by INTEREST_IV) are at least somewhat interested in implementing AI in one or more of their business processes, while 21% responded with no interest (See Table 4, Panel A**)**. Out of the leaders who are at least somewhat interested, only one partner stated that they are very interested. These percentages are very similar to the full sample results reported earlier. This suggests that partners are well aware of the rapid increase of technological advancements in the business world. Although the interest in AI appears strong, partners must be willing to familiarize themselves with the concept of AI. On the topic of familiarity, analysis of FAMILIAR_IV shows that 93% of partners are at least somewhat familiar with the concept of AI (See Table 4, Panel B). Of this group, only two partners identified themselves as being very familiar with AI. This information demonstrates that they are willing to or have already challenged themselves to shift their company from a manually-dominated workplace to an automated one. Even with just a basic understanding, leaders have the ability to adjust nicely to the reign of AI with the fresh knowledge of aspiring leaders of the future. An easier transition, however, may depend on whether or not one may have experience. Despite the previous results on interest and familiarity, most leaders do not have a great amount of experience. Only 50% (USING_IV) of partners are currently using AI in one or more of their business processes, while 57% (USED_IV) have not attempted to implement it in the past (See Table 4, Panel C). While it appears as if a limited number of partners have used or currently use AI, 100% (WILL_USE_IV) partners surveyed said it is at least somewhat likely to be used in accounting in the future (see Table 4, Panel D). According to our results, leaders do not appear to be barriers prohibiting accountants from AI usage as leaders have implemented or attempted to implement AI slightly more than the average accountant.

Table 4: Percentage Results in Interest, Familiarity, and Usage in AI - Accounting Partners Surveyed (n=14)

Variable	Value=1	Value=0
Panel A: Interest in AI (Question #14)		
INTEREST_IV	79%	21%
Panel B: Familiar with AI (Question #10)		
FAMILIAR_IV	93%	7%
Panel C: Usage of AI (Question #16)		
USED_IV	43%	57%
USING_IV	50%	50%
Panel C: Future Use of AI (Question #13)		
WILL_USE_IV	100%	0%

Notes: *[a]*This table shows the percentage response of all accounting partners surveyed with respect to their interest (Panel A), familiarity (Panel B), usage (Panel C), and likelihood of future use (Panel D) of AI. [b]New variables are defined as follows (all other variables are as defined in previous tables): WILL_USE_IV= an indicator variable equal to 1 if participants responded Somewhat Likely, Likely, or Very Likely to Question #13 on the survey, and 0 otherwise.*

A Path Forward

AI is the new disruptor for many industries so it is important to understand the entire scope of AI before becoming skeptical of its capabilities. It's palpable to fear a machine's ability to take away jobs from humans or to entirely replace the human race, but it is unlikely. While AI might take over certain processes in business, it will create new processes as a result. It is also important to recognize the skill shortage we are currently facing in the field of accounting that will need to be addressed through utilizing more efficient processes. At this point in time, AI is showing professionals a positive preview of the future. Although we find that many of the local accountants have not used AI in the past and some are utilizing it now to accomplish accounting processes, it is apparent based on other industries that this will change in future. Auditing processes are a prime example of where repetitive and mundane tasks are prevalent and the very nature of completing the audit is very rule-based, which both lend themselves to automation. The value of implementing AI is the potential improvement both in efficiency and effectiveness of the audit which ultimately will benefit the audit client through lower audit fees. This notion of automation of the audit processes is supported by a case study performed by Cohen et. al. (2019). Their research in the use of Robotic Process Automation (RPA) to streamline moving data from one software tool to another and performing the audit test indicates that automation improves efficiency and effectiveness to the audit process. As is usually the case, we expect that it will be the Big 4 accounting firms who will lead the way on how AI will be utilized in the accounting field. With this said, we are currently seeing an increased interest by the larger firms to implement AI in their audit processes. Our review of KPMG articles on AI indicates that they are not only utilizing AI in many different ways to facilitate the completion of client audits but they are also building tools that they can offer to their accounting clients to help make their jobs more efficient and effective (Gusher-Thomas 2020; KPMG 2020). At this time the biggest hurdle for the smaller accounting firms and companies is cost. Like with the implementation of the ERP systems in the 1990's, as the costs become more manageable others in the industry will adopt AI (Joshi 2017). The one caveat is where will government regulation intercede in the use of AI? At one end of the spectrum some feel that AI is the most important tool and it should be allowed to evolve to its ultimate potential. At the other end of the spectrum some may feel that AI will take over for all human activity and the world at large where humans will be working for machines so government intersession is inevitable. As pointed out by User Grasser (2017), when lawmakers and regulators start to tackle the tough questions about AI they need to look at AI not as a homogenous technology, but as a set of techniques and methods that will be deployed in specific and increasingly diversified applications. Grasser further states that at its core AI has potential legal and regulatory issues from questions around bias and discrimination of AI-based applications, security vulnerabilities, privacy implications of such highly interconnected systems, conceptions of ownership and intellectual property rights over AI creative works, and issues related to liability of AI systems, with intermediary liability perhaps at the forefront. These issues will need to be addressed in the future and may have implications for how AI is used in the accounting field.

CONCLUDING COMMENTS

The purpose of this paper is to determine if artificial intelligence has become a popular tool utilized by corporations and/or accounting firms around the Southwest Florida region. To understand how artificial intelligence is utilized, we survey thirty-four professionals holding accounting positions ranging from staff accountants to partners. Results for our overall sample show that the majority of accountants surveyed were at least somewhat interested and at least somewhat familiar with the use of AI in accounting. However, only a small portion of accountants surveyed have actually used AI in their company. We also find that interest in AI is higher for accounting professionals earlier in their careers. Our regression analysis reveals that professionals that have previously tried implementing AI and that believe AI will be used in accounting in the future in their business are more likely to be interested in implementing AI in the future. Our partners only analysis shows that similar to the overall sample, a large proportion of partners are also interested and familiar with AI. It appears as if most partners are aware of the capabilities of AI but show hesitation in its practical implementation, evidenced by the low percentage of partners that have actually used AI in the past. Lack of technical knowledge, fear of security risks, and large overhead expenses are some of the potential reasons partners have not implemented AI in their accounting processes.

We suspect that partners will increase usage of AI when more professionals acquire technical knowledge in AI and implementation costs decrease. One limitation of our paper is that we conducted the survey only in Southwest Florida, so the results may not be generalizable across the whole United States. Additionally, the respondents on our survey were from smaller regional accounting firms and corporations so the results are also not generalizable to the larger Big4 accounting firms or those that were previously considered tier II firms. Future research could address these issues with a larger more comprehensive survey population. Because of the current advancements in AI, accounting firms can use AI technology for analytics and other internal processes. This can be an alternative to outsourcing analytics if the present value of the implementation is less than that of outsourcing. As the development of AI continues, firms will have the option to have the expert system make decisions on their behalf. It is important to understand the entire scope of AI before becoming skeptical of its capabilities. It is tempting to fear a machine's ability to take away jobs from humans, but it is unlikely. While AI might take over certain processes in business, it will create new opportunities as a result. It is also important to recognize the skill shortage we are currently facing in the field of accounting and how AI can mitigate this issue. At this point in time, AI is showing professionals a positive preview of the future.

APPENDIX A: Survey Tool

Artificial Intelligence

1. What Industry/service sector is your company/firm in (select all that apply)?

- ☐ Taxation
- ☐ Auditing
- ☐ Management Consulting
- ☐ Financial Accounting
- ☐ Other (please specify)

2. What is the size of your company/firm?

- ○ Small (Less than 100 employees)
- ○ Medium (100-500 employees)
- ○ Large (More than 500 employees)

3. What is the range of your most recent level of yearly gross revenues for your company/firm?

- ○ Less than $500,000
- ○ $500,000- $5,000,000
- ○ $5,000,000 to $10,000,000
- ○ More than $10,000,000

4. What is your position in the company/firm?

- ○ Manager
- ○ Assistant Manager
- ○ Director
- ○ Other (please specify)
- ○ Partner
- ○ Staff/Assistant

5. How many years have you worked in this company/firm in the position referred to in the previous question?

- ○ Less than 1
- ○ 1-5
- ○ 5-10
- ○ More than 10

6. How many years have you worked in this company/firm for all positions held?

- ○ Less than 5
- ○ 5-10
- ○ 10-15
- ○ More than 15

7. How many years have you worked in the accounting industry (all positions held)?

- ○ Less than 5
- ○ 5-10
- ○ 10-15
- ○ More than 15

8. What certifications do you hold?

- ☐ CPA
- ☐ CFA
- ☐ CMA
- ☐ EA
- ☐ Other (please specify)

9. What is your gender?

- ○ Male
- ○ Female

10. How familiar are you with artificial intelligence (AI)?

Unfamiliar	Somewhat Familiar	Familiar	Very Familiar
○	○	○	○

11. On a scale of 1 to 10, how effective do you believe AI is in the field of accounting? (1-not effective, 10-very effective)

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

12. How likely are you to implement AI in your company's business or accounting process?

Unlikely	Somewhat Likely	Likely	Very Likely
○	○	○	○

13. How likely do you think AI will be used in accounting in the future?

Unlikely	Somewhat Likely	Likely	Very Likely
○	○	○	○

14. How intereted are you to implementing AI in your office

Not Interested	Somewhat interested	Interested	Very Interested
○	○	○	○

15. Do you think AI will have a future impact in your job position or other positions in your office?

○ Yes

○ No

16. Are you using AI in any of your business or accounting processes?

○ Yes

○ No

17. Have you previously tried implementing AI in your business or accounting processes?

○ Yes

○ No

18. Do you know of other companies that are using AI?

○ Yes

○ No

19. Do you think companies are implementing AI because of the projected shortage in labor in Accounting?

○ Yes

○ No

20 What is/are your reasons(s) for using AI (select all that apply)

☐ It's reliable/dependable

☐ No bias for analysis

☐ Implementation reduce expenses (i.e. wages, liability insurance)

☐ Other (please specify)

☐ It's contemporary/trendy

☐ It's an efficient use of resources

☐ Not applicable

21. What is/are your reasons(s) for not using AI? (select all that apply)

- [ ] High costs
- [ ] Difficult to implement
- [ ] Security risks
- [ ] Fear of job loss
- [ ] Lack of technical knowledge
- [ ] Other (please specify)

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IMPACT OF CULTURE ON INTERNATIONAL FINANCIAL REPORT STANDARDS ASSESSMENT OF FAIR VALUES MEASUREMENT

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ABSTRACT

The paper reviews the cultural impact on implementing the fair values measurement (IFRS 13) enacted by the International Accounting Standard Board. The paper used mixed-methods to analyze the post-implementation responses of 67 respondents to determine the cultural impact of accounting pronouncement implementation. The paper adopted the Globe Project's cultural attributes and categorized the responses under distinct regional groupings. The study identified the patterns from the answers to the eight open-ended questions and traced them to the cultural traits. The ranking of the cultural traits shows similarities among some regional groupings and differs among some groupings. Among the ten groupings ranked under the eight unique clusters, there was no single cluster with a consistent ranking among all the regional groupings. A one-sample t-test was employed to test the significant difference between the coded responses' overall mean and each unique cluster. The t-test shows no statistically significant difference between the individual clusters and the coded responses' overall mean. The t-test results suggest no evidence to support a cultural impact on implementing the fair values measurement based on the responses from the post-implementation survey from the responding countries.

JEL: M4

KEYWORDS: Culture, Fair Value Measurement, Exit Price, IFRS 13, Harmonization, Cultural Attributes, Power Distance, Uncertainty Avoidance, Humane Orientation, Institutional Collectivism, In-Group Collectivism, Assertiveness, Gender Egalitarianism, Future Orientation, Performance Orientation

INTRODUCTION

International Financial Reporting Standards (IFRS) anticipate ensuring uniformity of financial reporting across the globe. The pronouncements set forth by the International Accounting Standard Board (IASB) are principle-based, affording accountants to use their subjective judgment in the application of the various standards in a globalized business environment. The formulation of these standards is not country-specific; hence a particular country's culture may not influence the accounting pronouncement's enactment. IFRS is a principle-based approach that allows accountants to apply the various principles to situations that are not explicitly defined within those principles. Harrison and McKinnon (1986) explain that the essentials of culture affect the formulation of accounting policies in any country; contrary to this assertion, IFRS is a global standard and did not have any specific culture as a base in the formulation of the standards. Hence, the enactment of these accounting policies by IASB may be considered cultural free. However, a country's cultural environments may impact the application of the pronouncements and the financial disclosures by organizations within the said country.

The cultural dimensions of a country and the accounting sub-culture values on measurements and disclosure dimensions of accounting systems are different in different countries with different cultures (Jaggi, & Low, 2000). The cultural background of decision-makers within firms is significant in some countries due to the various traditions that are part and parcels of the individual's daily activities. Haniffa and Cooke (2005) emphasized that company executives' cultural backgrounds might help to explain organizations' specific practices in different countries. These traditions tend to influence how a firm operates; their financial reports are influenced by the relevant cultures' social values within which it exists (Haniffa, & Cooke, 2005).

IFRS 13 defines fair value measurement as an "exit price" concept and uses a "fair value hierarchy," intended to result in a market-based measurement rather than entity-specific measurement. It is a single IFRS framework for assessing the fair value measurement, and it requires disclosures of fair values by organizations in their financial statements. The established IFRS 13 framework does not address when an entity's asset, liabilities, or a firm's equity instrument is measured. However, it does apply when other International Accounting Standards (IAS) require or allow the use of fair value assessment. Friedman (1978) accentuated that a country's general economic conditions impact an exit price, and the country's cultural practices may influence its economic conditions.

IFRS 13 was issued on May 12, 2011, with an effective date of January 1, 2013. After four years of its implementation, the IFRS Board (the Board) invited the international community to respond to its application's effectiveness and if it meets its core objectives. 67 stakeholders responded to the eight open-ended questionnaires to attest to the effective implementation of IFRS 13. These stakeholders have experienced the implementation process with diverse cultural and business leadership backgrounds. This study employed an empirical phenomenology to analyze the stakeholders' responses to determine the universal consensus of the participants' core beliefs regarding fair value measurement application. This study analyzed the diverse background of the 67 stakeholders, and the impact of culture and traditions, as well as the country of origin of the participants, employing the Globe Societal Cultural Practices Variables (The Globe Project), to determine the impact of cultural practices on the implementation of the fair value assessment. The study answers the question, "Does cultural dimension impact the implementation of IFRS 13?" The next section of the study reviews studies that analyze the cultural impact on accounting pronouncement formulation and implementation. The third section discusses the data sources (post-implementation responses), the empirical phenomenology process used to analyze the responses. The fourth section of the paper provides the results, findings, and discussions of the findings. The final section related the countries' groupings into the various cultural clusters and traced the patterns from the discussions and analysis of the responses to verify or confirm the theories discussed in the literature review section and conclude whether cultural traits impact the implementation and application of IFRS 13.

LITERATURE REVIEW

Salter and Niswander (1995) explain that prior research supports the relationship between the development of national accounting pronouncements and the nation's environmental factors. However, there are controversies as to what patterns support the formulation and implementation of the pronouncements. They explained that accounting's international classification seems to have abandoned cultural values as other scholars such as Gray (1988) proposed relating accounting values to Hofstede's [1980, 1984a, 1991] societal values. Relying on Gray's 1988 model, Salter and Niswander (1995) explained that organizational structure within a society is empirically proven to be shaped by the societal culture. A cultural approach is a socially expressive form that exerts pressure on organizational structure (Gary & Woolsey, 1988). These researchers acknowledged the influence of culture in forming organizations and implementing policies within the organizational structures. Most established research tends to concentrate on the cultural impact on accounting formulation by examining instances of accounting pronouncements formulations compared to a change in accounting pronouncements and their implementation. (Harrison & McKinnon, 1986). Harrison and McKinnon (1986) explored the cultural impact of an accounting change and its implementation by organizations. They proved that various researchers have well established cultural influence on accounting policy formulation; however, the dissemination of the modernization model does not explicitly recognize the impact of culture on the process of accounting change. This assertion developed a framework to analyze corporate reporting regulation and accounting policy formulation at the nation-specific level. Their framework considers corporate reporting regulation as a social system, and societal changes are used to analyze or examine the system's differences in values and norms. They concluded there are interdependencies of social networks and accounting changes. During their proposed framework, IFRS was not a global accounting standard, and changes in accounting pronouncements, and its formulations, were based on individual nations (countries). This study utilizes the Harrison and McKinnon framework to analyze the cultural impact on implementing accounting pronouncements under IFRS.

The ethnicity and cultural background of decision-makers within a firm, such as the directors, the Board of directors, and shareholders, influence the accounting reporting process, especially the disclosure requirements of an accounting pronouncement (Haniffa & Cooke, 2005). Using Malaysia as a case study, Haniffa and Cooke (2005) assert that Malaysian managers' minds and thought processes are influenced by ethnicity, education, and the organization that employs them. Partially, ethnicity is an apposite supernumerary for culture. Haniffa and Cooke (2005) explained that culture is an influential element when deliberating corporate social disclosures, especially the decision-makers' values and ethnic background formulating the organization's policy. This assertion affirms their conclusion about the legitimacy theory; they explained that an organization's actions depend on the entity's desires (goals), which are established within a suitable social construct system of customs, morals, beliefs, norms, and definitions. Haniffa and Cooke's research supports the influence of culture on accounting policy formulation. However, they focused the study on the impact of culture on the formulation of accounting pronouncements and did not directly address the cultural impact on applying the pronouncements. They emphasized the influence of decision-makers during the formulation of the policies but not its application.

Harmonization of global accounting standards prior to IFRS was considered impossible due to the traditional research of cultural impact on accounting policy formulation; Zarzeski (1996) researched the accounting harmonization and found that culture impacts the accounting policy formulation. However, companies listed on the international stock market tend to yield to international regulations to tap into global economic resources. At the same time, the local culture of the organization influences local enterprises' financial disclosures. Zarzeski (1996) explained that market forces tend to affect accounting disclosures and cultural forces. Hence, there is the possibility of a global accounting policy influenced by market forces compared to culture. This study focuses on the implementation of IFRS 13. A specific cultural trait did not influence the formulation of IFRS 13 (it is a global pronouncement). However, the pronouncement's implementation may be prejudiced by country-specific culture due to an accountant's application of their subjective judgments and the country's economic impact.

Using Gray's 1988 framework, Tsakumis (2007) explained the impact of national culture on accounting pronouncements application and implementation by comparing the application of contingent liabilities and assets among US accountants and Greek Accountants. Adopting Gray's conservatism and secrecy framework, accountants in the US, were found to be more conservatives in applying contingent liabilities than Greece's. The coordination of financial statement comparability across countries such as the use of IFRS is not adequate to ensure the international comparability of financial statements; to ensure consistency among the implementation of these accounting pronouncements, the interpretation and application of the rules must be consistent across countries (Tsakumis, 2007). Tsakumis's (2007) findings suggested that culture does not influence the recognition of the rules. However, it impacts the accountants' disclosure judgments, an implication that a nation's culture does stimulate the implementation of accounting rules. Over the years, all these researchers have consistently established a strong cultural impact on the formulation of accounting rules by comparing the specific country to another or using a specific culture as a case study. Most of these studies are based on Gray's 1988 model of conservatism and secrecy.

This study focused on the cultural impact of the accounting pronouncement by analyzing different countries based on their responses to the assessment of the implementation of IFRS 13. The study extends the groupings above and beyond the two traits of cultural implications (conservatism and secrecy). The study adopts the Global Leadership and Organizational Behavior Effectiveness (the Globe Project) framework, expanded by Mensah and Chen (2013). The Globe Project used leadership attributes and cultural traits to cluster 62 societies into ten cultural groups based on the extended cultural dimensions of the Hofstede model. The Globe study focused not only on conservatism and secrecy but also on a broad cultural spectrum to classify these countries. This study adopts the expanded version of the Globe study to group the selected nations by their cultural attributes and, based on their responses, finds the cultural impact on the implementation of IFRS 13.

Theoretical Framework: Cultural Clustering

Hofstede (1980) started the unique method of grouping countries using four distinctive cultural attributes derived from factor analysis. Hofstede surveyed about 66 societies and nations and identified five cultural groupings: Anglo, Germanic, Nordic, Latin European, Latin American, Near East, And Far East. The Globe Study adopted the 1980 Hofstede cultural dimensions and expanded it to nine different dimensions to identify ten cultural groupings. The nine dimensions used by the Globe study are as follows:

Power distance is the scope to which individuals expect equality in power distribution within society.

Uncertainty avoidance: is the extent to which social norms, regulations, and procedures are relied on to reduce future uncertainties.

Humane orientation: focus on the extent to which society rewards individuals for fairness, altruism, and humane behavior towards others.

Institutional Collectivism: is the extent to which institutions encourage collective action and distribution of resources.

In-Group Collectivism: is the extent to which individuals are exclusively loyal to their institutions or families.

Assertiveness: is the extent to which individuals are aggressive in their relationships with other individuals and institutions.

Gender Egalitarianism is the degree to which society minimizes gender inequalities.

Future Orientation: is the extent to which individuals delay instant gratification activities and invest for the future.

Performance Orientation: This is the extent to which society encourages and rewards excellence in performance or the effort to achieve such excellence.

Hofstede (2006) disapproved of the validity of the five cultural dimensions' extension to the Globe Project's nine dimensions. Hofstede criticized the nine-cultural dimension for its data and how it differs from the original meaning. However, the Globe Project has gained enormous support from other researchers and earned much attention within the academic and practice communities. The Globe Project identified the following ten clusters: Anglo-Saxon, Confucian Asia, Eastern Europe, Germanic Europe, Latin America, Latin Europe, Middle East, Nordic Europe, Southern Asia, and Sub-Sahara Africa. Mensah and Chen (2013) adopted the Globe study and improved the clustering by quantitatively using five variables (ethnicity, religion, official languages, world region, and native languages). They realigned and reclassified some of the countries misclassified by the Globe Study, such as Azerbaijan and Bangladesh, which were initially classified as Germanic Europe by the Globe study. This study adopts the improved Globe Project by Mensah and Chen to group the responses of the IFRS 13 implementation responses by the various countries and identify whether nations within the same cultural clusters show similar patterns of responses to the open-ended questions while maintaining the cultural dimensions of the Globe Study. The next section organizes the selected countries' responses by the cultural clustering, and based on the responses, identifies the impact of culture on the implementation of IFRS 13.

DATA AND METHODOLOGY

Phenomenology describes the mutual connotation for numerous individuals of their lived experience of a concept. (Creswell & Poth, 2018). This study adopted the Creswell and Poth meaning of phenomenology and combined it with Aspers (2009). Aspers explained empirical phenomenology to the description of individual experiences of a group about a particular event that proceeds from the postulation that a scientific description must be grounded in the meaning structure of the study, allowing the actors' perception to be the focal point in the analysis, rather than the researcher's perspective. The study data were obtained from the IASB 2017 Post-implementation Review survey; the data is available on the IASB website and publicly accessible (IFRS, n.d., and appendix A).

Methodology

Empirical phenomenology recognizes the essential role of theory in research and the unplanned consequences of the analysis, making empirical phenomenology not just from the actors' perspective but a grounded theory from the actors' lived experiences. Creswell and Poth (2018) advised researchers to first explained their experience about the concept before proceeding with the actors' lived experience. The researcher for this paper has limited experience of implementing IFRS 13 through observation, and his perception will not impact the analysis of the lived experiences of the users, preparers, auditors, and regulators selected for analysis. The paper adopts empirical phenomenology to offer elucidations of cultural and societal traits' impacts on the implementation of IFRS 13.

Data and Documentation

The study retrieved all the 67 responses from the eight opened ended questions administered by the IASB in 2017. The survey focused on stakeholders of the implementation of IFRS 13. The IASB Request for Information (RFI) seeks both preparers' and users' opinions on IFRS 13 implementation. The open-ended questions focused on the practicality of fair value measurement disclosures, the challenges of applying fair value measurement of non-financial assets, and the subjective judgment of accountants in specific areas. The RFI further explored the need for additional guidance or technical interpretation, extra educational materials specifically on the fair value measurement on biological assets, and unquoted equity instruments. The study examined the 67 responses by tracking patterns of cultural impact based on the Globe Project framework. Adopting the Globe Project, this study's selected sample was based on the collective responses from organizations representing a country or a cultural group, not individual users, the preparer's opinion, or a firm's opinion. The study identified 27 responses from institutions and regulators, such as the Chartered Institute of Accountants, representing different countries and cultures out of the 67 responses. The identified organizations' responses were a collation of opinions from both preparers and users of IFRS 13 within the designated countries. Appendix A shows the country groupings, and Appendix B and C show the cultural traits and definitions used to group the countries. Out of the 27 selected responses, there was one Eastern Europe, five Nordic Europe, three Southern Asia, three Anglo-Saxon, eight Confucian Asia, one Germanic Europe, three Latin America, one Latin Europe, and two Sub-Sahara Africa representatives. The observed and practical experience of the researcher was used to align the open-ended questions to the cultural traits:

Performance Orientation (question 2), Power Distance (question 3), Humane Orientation (question 4), Future Orientation (question 5), In-Group Collectivism (question 6A), Institutional Collectivism (question 6B), Uncertainty Avoidance (Question 7), and Assertiveness (question 8). Each organization's response was analyzed based on the implementation of IFRS 13. The study identified patterns in the responses such as the problems encountered during the application, concerns, additional requirements for disclosures, the need for additional guidance, and consistency of presentation and classification. These patterns were traced to the cultural traits of the Globe Study. The cultural and societal traits patterns from the responses were universal among most of the selected samples. The study compared the organizational (countries) responses with the rankings of the cultural traits. The study examined the responses to the questions to identify similarities and differences in the responses to determine if a cultural trait may have played a role in implementing IFRS 13. The next section discusses the results and findings of the cultural analysis.

RESULTS AND DISCUSSION

The study coded the organizational responses into nine of the ten unique clusters, following the Low, medium, and high criteria by the Globe Project. A response with positive support with the implementation was awarded a "High" rank equivalent to six points. A response with identical positive and negative comments was awarded a "Medium" rank equivalent to four points, and responses with negative support, such as experiencing challenges in implementing IFRS 13, were ranked "Low" equivalent to two points. Table 1 below reveals the average ranking of the ten Unique Clusters (there was no organizational response from the Middle East). Except for the uncertainty avoidance, which yielded the same average results among all the unique clusters, each cultural trait had some variations depending on the unique cluster.

Table 1: Average Coded Responses

Unique Clusters	Performance Orientation	Power Distance	Humane Orientation	Future Orientation	In-Group Collectivism	Institutional Collectivism	Uncertainty Avoidance	Assertiveness
Anglo-Saxon	Low	Low	Low	Low	medium	Low	medium	Low
Confucian Asia	medium	Low	Low	Low	Low	Low	medium	Low
Eastern Europe	High	Low	High	High	High	Low	medium	High
Germanic Europe	medium	medium	medium	Low	Low	High	medium	medium
Latin America	Low	medium	Low	Low	Low	Low	medium	medium
Latin Europe	High	Low	Low	medium	medium	High	medium	Low
Nordic Europe	Low	Low	Low	Low	medium	medium	medium	medium
Southern Asia	medium	Low	Low	Low	medium	medium	medium	medium
Africa	Low	Low	Low	Low	Low	medium	medium	Low

Each cultural trait except for uncertainty avoidance had some variations among all the unique clusters. However, most of the clusters depending on the cultural trait, seem to share the same average responses. For instance, question three requested information about the shared experiences of implementing and assessing quoted investment in subsidiaries, joint ventures, and associates. It seeks the difference between fair value measurements by quoted price for an individual instrument multiply by the number of financial instruments held and the fair value measurements using other valuation methods. Question 3 was used to measure the "Power Distance" Cultural trait. Except for Germanic Europe and Latin America, all the other clusters' average response was low.

The study compared each group to the overall mean to determine if each group response significantly differs from the overall mean. A one-sample t-test was employed to analyze the results further. Table 2 shows the summary statistics for the coded cultural traits.

The study employed a one-sample t-test to compare each unique cluster to the overall average of the coded results to determine if a unique cluster means significantly differ (greater or less) from the overall mean of 3.667. The t-test tested the hypothesis that a unique cluster mean is not statistically significant from the overall mean, indicating no evidence to support that unique clusters' cultural practices impacted the implementation of IFRS based on the post-implementation responses. Alternatively, if the means are statistically significant from the overall mean of 3.667, then there is evidence to support that the cultural practices of unique clusters impacted the implementation of IFRS based on the post-implementation responses. A one-sample t-test was analyzed to determine the cultural impact of the implementation of IFRS 13 by coding the responses from the eight opened ended questions survey conducted by "the Board." The study used the overall mean score of 3.667 to determine whether each unique cluster mean significantly differs from the overall mean. The results indicate that none of the unique clusters "Mean Test" was statistically significant from the overall mean score.

Table 2: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Anglo-Saxon-IFRS	27	3.2500	0.8309	2.0000	4.6667
Confucian Asia-IFRS	27	3.2344	0.8568	2.2500	4.6250
Eastern Europe-IFRS	27	4.8750	1.8077	2.0000	6.0000
Germanic Europe-IFRS	27	3.8750	1.3562	2.0000	6.0000
Latin America-IFRS	27	3.7083	1.1743	2.0000	5.3333
Latin Europe-IFRS	27	3.8750	1.7269	2.0000	6.0000
Nordic Europe-IFRS	27	3.6000	1.1314	2.0000	4.8000
Southern Asia-IFRS	27	3.7083	0.9990	2.0000	5.0000
Sub-Saharan Africa	27	2.8750	1.1260	2.0000	5.0000

The number of observations represents the eight unique cultural traits; an overall mean of 3.667 was obtained to compare each unique cluster group to the overall mean to determine if the responses differed and analyze the cultural impact on the implementation of IFRS 13.

Anglo-Saxon score (3.25, 95% CI 2.55 to 3.95) was lower than the overall mean of 3.667; however, it was not statistically significant t(7) = -1.4194, p = 0.1987. Confucian Asia score (3.23, 95% CI 2.52 to 3.95) was lower than the overall mean of 3.667; however, it was not statistically significant t(7) = -1.4282, p = 0.1963. Eastern Europe score (4.875, 95% CI 3.36 to 6.39) was higher than the overall mean of 3.667; however, it was not statistically significant t(7) = 1.8901, p = 0.1007. Germanic Europe score (3.875, 95% CI 2.74 to 5.30) was higher than the mean of 3.667; however, it was not statistically significant t(7) = 0.4338, p = 0.6775. Latin America score (3.708, 95% CI 2.73 to 4.69) was higher than the overall mean of 3.667; it was not statistically significant t(7) = 0.0996, p = 0.7433. Latin Europe score (3.875, 95% CI 2.43 to 5.32) was higher than the overall mean of 3.667, and it was not statistically significant t(7) = 0.3407, p = 0.7433. Nordic Europe score (3.6, 95% CI 2.65 to 4.55) was lower than the overall mean of 3.667, and it was not statistically significant t(7) = 0.1675, p = 0.8717. Southern Asia score (3.7, 95% CI 2.87 to 4.54) was higher than the overall mean of 3.667, and it was not statistically significant t(7) = 0.1170, p = 0.9101. African test score (2.875, 95% CI 1.93 to 3.82) was lower than the overall mean of 3.667, and it was not statistically significant t(7) =-1.9895, p = 0.0870. Table 3 shows the results of the one-sample t-test for the selected unique clusters.

Table 3: One-Sample T-Test For Unique Clusters

Ho: Mean = 3.667	**Ha: Mean> 3.667**		**Obs**		**27**		
Ha: mean! = 3.667	**Ha: mean< 3.667**		**Sample mean**		**3.6670**		
Variable	**Mean**	**Std. Err.**	**Std. Dev.**	**t-value**	**Pr(|T|> |t|)**	**[95% Conf. Interval]**	
Anglo-Saxon	3.2500	0.2938	0.8309	-1.4194	0.1987	2.5553	3.9447
Confucian Asia	3.2340	0.3030	0.8570	-1.4282	0.1963	2.5180	3.9510
Eastern Europe	4.8750	0.6391	1.8077	1.8901	0.1007	3.3637	6.3863
Germanic Europe	3.8750	0.4795	1.3562	0.4338	0.6775	2.7412	5.0088
Latin America	3.7083	0.4152	1.1743	0.3407	0.7433	2.7266	4.6901
Latin Europe	3.8750	0.6105	1.7269	0.3407	0.7433	2.4313	5.3187
Nordic Europe	3.6000	0.4000	1.1314	-0.1675	0.8717	2.6542	4.5459
Southern Asia	3.7083	0.3532	0.9990	0.1170	0.9101	2.8731	4.5435
African	2.875	0.3981	1.126	-1.9895	0.087	1.9336	3.8164

The number of observations represents the Globe Project's unique clusters, the mean is for each unique cluster, and the t-test was analyzed at a 95% confidence interval. The Pr(|T|> |t|), two tail p-value, was used to analyze the results. None of the nine unique clusters' mean were statistically significant from the overall mean on the coded responses.

Discussion of Results

The study used empirical phenomenology to code the responses from the IFRS 13 post-implementation survey to determine if the various countries' cultural traits impacted the implementation of IFRS 13. The coded results were further analyzed using a one-sample t-test employing the overall average of the coded results. The eight-question survey by the Board were open-ended questions seeking the experiences of the respondents on the implementation of IFRS 13. Question one of the questionnaires requested the background information of the respondents. Overall, all the selected respondents represented a wide range of users comprising auditors, reporting organizations, investment analysts, regulators, consultants, academicians, etc. The study coded the responses from the IFRS 13 post-implementation survey to determine if the various countries' cultural traits impacted the implementation of IFRS 13. The coded results were further analyzed using a one-sample t-test employing the overall average of the coded results. The Board's eight-question survey was open-ended questions seeking the respondents' experiences on implementing IFRS 13. Question one of the questionnaires requested the background information of the respondents. Overall, all the selected respondents represented a wide range of users comprising auditors, reporting organizations, investment analysts, regulators, consultants, academicians, etc.

Question two seeks answers about Level 3 fair value measurement inputs. Level 3 inputs are unobservable inputs due to no active markets for asset evaluation. Hence, the organization assesses the asset value based on the best available information under the circumstances. Lack of active market requires professional judgment on the part of the evaluator. Question two was coded to assess Performance Orientation. Question three requested information about the shared experiences of implementing and assessing quoted investment in subsidiaries, joint ventures, and associates. The question seeks the difference between fair value measurements by quoted price for an individual instrument multiply by the number of financial instruments held and the fair value measurements using other valuation methods. Question three was used to analyze Power Distance. Question four addressed the application of the highest and best use of non-financial assets measurements; the question was aligned to assess Humane Orientation's cultural trait. Question five considered the subjective judgments of applicators of IFRS 13, their experience, and challenges related to the implementation of IFRS 13 and the prospects of the pronouncement. The question was used to analyze the Future Orientation cultural trait.

Question six obtained the experience and knowledge of measuring the fair value of biological assets, as well as unquoted equity instruments. It requested information about the need to provide more educational material while identifying if practitioners are using the existing educational material. Question six had "A and B" sections, question 6A was used to assess In-Group Collectivism, and question 6B was used to evaluate Institutional Collectivism. Question seven requested information about the impact and the significance of converging IFRS with the US Generally Accepted Accounting Principles (GAAP). Question seven was used to assess the Uncertainty Avoidance cultural trait. Question eight was about any other matters relevant to IFRS 13 implementation that are important but have not been addressed by the RFI. Question eight was used to code the Assertiveness, cultural trait. 27 of the responses represented nine unique clusters; the study identifies common patterns among the selected group and compared them to the eight cultural dimensions selected (Performance Orientation, Power Distance, Humane Orientation, Future Orientation, In-Group Collectivism, Institutional Collectivism, Uncertainty Avoidance, and Assertiveness). The Globe Project scale of Low, Medium, and High were used to code the patterns. A respondent with positive feedback was rated high, negative feedback was rated low, and balanced feedback (positive and negative) was rated medium. The existing literature reviewed focused on individual countries' formulation of accounting pronouncements, while IFRS is a global standard not based on a particular culture or societal trait. The selected 27 institutions' responses represented various countries clustered into nine groups.

Performance Orientation measures the extent to which society encourages and rewards effort and excellence in performance. There were only two unique clusters (Eastern Europe & Latin Europe) that consistently expressed a positive experience. Three unique clusters (Confucian Asia, Germanic Europe, & Southern Asia) had a medium ranking, while the rest of the four were ranked low. Power Distance measures the expectation of the degree of acceptability by the society in power differential and endorses authority, as well as status privileges. Except for Germanic Europe and Latin America clusters that ranked medium, all the seven remaining clusters were ranked low. A visual assessment of this cultural trait does not expect this dimension to influence the implementation of IFRS 13. If the existing literature holds its validity of culture-proven to impact the formulation and implementation of accounting pronouncements, then the Power Distance dimension may not have strong evidence to impact the implementation of IFRS 13 culturally.

Humane Orientation assesses the rewards and encouragement received by individuals in their quest to be fair, unselfish, generous, thoughtful, and kind to others. Eastern Europe's unique cluster was coded high, and Germanic Europe ranked medium. The rest of the unique clusters, regardless of their differences in the Globe Project ranking, responses were low. A detailed analysis review fairness in the presentation of their responses and the application of IFRS 13. However, seven out of the nine clusters experienced challenges in applying the highest and best use of non-financial assets measurements. The pattern seems very much alike, making it difficult to determine this dimension's impact on implementing IFRS 13 using the Humane Orientation cultural trait. Future Orientation identifies individual group behaviors towards their future planning, delaying indulgence to offer an investment into their future. Eastern Europe was ranked high, Latin Europe ranked medium, and the rest of the unique clusters experience various challenges implementing IFRS 13; hence they were ranked low. Based on existing literature, if culture and societal traits impact the implementation of IFRS, there should be a clear distinction between the unique clusters. Considering question four, seeking information about the application of the "highest and best" use for non-financial assets, and further requested the experience of diversity in the application of the concept, one will assume that culture will influence the diversity application, as well as the future orientation of the concept. Except for Eastern Europe and Latin Europe, the rest of the unique clusters revealed a familiar pattern, agreeing the Board should consider revising the application for the highest and best use for non-financial assets concept to be consistent with an entity's business model. The study did not identify any substantial differences between these groups in applying IFRS 13, highest, and best use concept.

In-Group Collectivism measures the pride, loyalty, and cohesiveness of individual members in their families or organizations. Four clusters ranked medium, one ranked high, and the remaining four clusters ranked low. The two groups of clusters that were ranked medium and low exhibited loyalty in their responses by referring to specific parts of the pronouncement that was not working and offered recommendations to fix it. The study identified a familiar pattern by both clusters being loyal to their organizations. Institutional Collectivism measures the degree to which organizational or societal institutional practices inspire and reward collective distribution of resources and collective action. Germanic Europe and Latin Europe were rated high, three unique clusters (Nordic Europe, Southern Asia, & Sub-Saharan Africa/African) were rated medium, and the others ranked low. Question 6B measured education on biological assets at fair value and unquoted equity instruments. The Board had an initiative that has provided published unquoted equity instruments within the scope of IFRS 9 Financial Instruments. The low-ranked clusters (Anglo-Saxon, Confucian Asia, Eastern Europe, & Latin America) recognized that there is no good source of information to observe the market, and besides, some respondents were not aware of the availability of the educational material. This dimension did not distinguish clearly between the nine clusters; however, a visual or qualitative interpretation of the Institutional Collectivism cultural trait assessment may seem to have impacted the implementation of IFRS 13. The availability of the educational materials by the Board should be discovered, promoted, and shared among the respondents. Both low and medium cluster respondents did not recognize the availability of the educational materials. One may conclude that organizational or societal institutional practices did not inspire the members to distribute the resources openly available to the public. The study believes that if any dimension directly impacts the selected clusters, it is the Institutional Collectivism.

Uncertainty Avoidance is the reliance on social norms, rules, and procedures by organizations, societies to lessen the volatility of future events. All the unique clusters were ranked medium. Contrary to the Globe Project ratings, there is a familiar pattern in the responses that put all the organizations supporting the US GAAP convergence. Question seven requested information about the impact of IFRS 13 on the convergence process with the US GAAP and the impact on implementation costs of IFRS 13. The primary concern for almost all the respondents was the compliance cost of IFRS 13 implementation. They all encouraged the convergence with the US GAAP to be completed. The study finds this dimension to impact the implementation of IFRS 13; however, there was no evidence to affirm the cultural impact on the implementation of IFRS 13. Assertiveness measures individuals' self-confidence, aggressiveness, and hostility in their relationships with others. There were four low ratings, four mediums, and only Eastern Europe was ranked high. Most of the mediums had no further contribution, neither negative nor positive comments. The high offered positive support for the IFRS 13 implementation, while the lows were very aggressive in the final comments, offering negative responses towards the areas that require improvement. Most of the responses did not directly address the implementation aggressiveness; however, the tone of the responses to question eight seeking additional information was directed towards the ineffective parts of the pronouncements that require improvement to assist the respondents and their users. The study qualitatively infers that the assertiveness cultural trait somehow impacts the implementation of IFRS 13. but not a direct impact. The inconclusiveness of the individual cultural traits on the implementation of IFRS 13 led to empirical testing of the ranking results. The study employed the single-sample t-test to statistically assess the significant differences of the respondents among unique clusters. An overall average of all the selected 27 responses was used and individually compared each unique cluster to the average to determine if there are significant differences among the various unique clusters. The t-test yielded differences in the absolute means; however, at the 95% confidence intervals, none of the unique clusters was statistically significant. Hence, the t-test failed to reject the hypothesis that there is a cultural difference in the unique clusters impacting the implementation of IFRS 13. The study did not reveal enough evidence to support the cultural impact of the implementation of IFRS 13.

CONCLUSION

The study used an empirical phenomenological approach to analyze responses from nine unique clusters grouped by the Globe Project employing cultural and societal dimensions. This grouping is an extension of the Hofstede cultural dimension and improved by Mensah and Chen (2013). The study selected 27 responses out of the 67 RFI responses, representing organizations serving various countries. These responses were surveyed and polled opinions from various users of IFRS 13 within the represented countries. The study focused on addressing the question, "does cultural trait impact the implementation of accounting pronouncements by the IFRS, specifically IFRS 13?" The study aligned the eight open-ended questions to the cultural traits of the Globe Project. Following Creswell and Poth (2018), the study reviewed the responses several times to identify common themes and patterns. The research further applied the eight cultural trait dimensions of the Globe Project out of the nine to assess the responses' cultural impact. Existing literature affirms that cultural and societal traits impact the formulation and implementation of accounting pronouncements enacted by a particular culture (country).

However, IFRS standards are global pronouncements without a specific country culture impacting the formulations of the pronouncements, a development to promote the global economy impacted by creating a standardized reporting among firms operating in different cultures. The study concludes no evidence to support a direct cultural impact on the implementation of IFRS 13. Özcan (2016) emphasized that adopting IFRS significantly impacts the adopted cultures or countries' economic growth. The selected eight dimensions did not have a direct cultural or societal impact on the implementation of IFRS 13, an indication of removing cultural barriers to enhance the global economic expansion. There were a few instances that seem to have affected the implementation process, assessing it qualitatively. However, a thorough analysis of the responses employing the t-test reveals no statistically significant cultural evidence to support a direct influence by the unique clusters' cultural traits. Empirical phenomenology dwells on the researcher's lived experience; one of the significant limitations of the study centers on the researcher's lack of lived experience in implementing IFRS 13. Another limitation that may lead to further study is applying the unique clusters' economic conditions (the respondents) to determine the economic impact of adopting IFRS. This study did not investigate the economic condition of the selected clusters. Therefore, future analysis of the selected 27 clusters' economic conditions, grouped under emerging markets, developed economies, and developing economies, should be investigated further. The recommended economic impact on the implementation of IFRS 13 or other IASB pronouncements will add a new dimension to the existing academic literature and also contribute to practicing literature, as this study has contributed to the existing academic literature that the IFRS 13 has no evidence to support cultural traits impact of the implementation of IFRS 13 by member countries.

Appendix A: Countries Clustering

Submitter	URL	Unique Regional Ten Distinct Groups Clusters
European Financial Reporting Advisory Group	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20334_AlbertSteynEuropeanFinancialReportingAdvisoryGroupEFRAG_0_EFRAGSummaryofcommentsreceivedfromEuropeanconstituentsPIRIFRS13.pdf	Eastern Europe
CPA Australia	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_19646_RamSubramanianCPAAustralia_0_IASBPostimplementationReview_IFRS13FairValueMeasurementCPAAustraliasubmission180817.pdf	Nordic Europe
Business Europe	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20296_MandyBernardiniBusinessEurope_0_0920_BELetterPostimplementationReviewIFRS13FairValueMeasurement.pdf	Nordic Europe
Norsk Regnskaps Stiftelse [Norwegian (NASB)]	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20307_KarinaVasstveitHestNorskRegnskapsStiftelseNorwegianAccountingStandardsBoardNASB_0_20170922PIRIFRS13.pdf	Nordic Europe
Confederation of Swedish Enterprise [Svenskt Näringsliv]	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20314_SofiaBildsteinHagbergConfederationofSwedishEnterpriseSvensktNringsliv_0_SEAGCommentLetterPIRIFRS13.pdf	Nordic Europe
Federation of Industrial and Service Groups in Switzerland]	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20556_DeniseLauferSwissHoldingsFederationofIndustrialandServiceGroupsinSwitzerland_0_CL63SwissHoldings.pdf	Nordic Europe
Malaysian Accounting Standards Board (MASB)	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20291_TanBeeLengMalaysianAccountingStandardsBoardMASBLembagaPiawaianPerakaunanMalaysia_0_MASBCommentletterRFIPIRIFRS1318Sept2017.pdf	Southern Asia

Federation of Accounting Professions [Thailand]	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20488_FederationofAccountingProfessionsThailand.zip	Southern Asia
The Institute of Chartered Accountants of India	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20311_CAShiwajiBhikajiZawareTheInstituteofCharteredAccountantsofIndia_0_CommentsonPostImplementationReview_IFRS13.pdf	Southern Asia
HoTARAC [Australia]	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_19713_lyngriggHeadsofTreasuriesAccountingandReportingAdvisoryCommitteeHoTARACAustralia_0_HoTARACcommentIASBPIRonIFRS13fairvalue.pdf	ANGLO-SAXON
Accounting Standards Board (AcSB) [Canada]	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20325_LindaFMezonAccountingStandardsBoardAcSBCanada_0_AcSBStaffResponsetoPostImplementationReviewIFRS13FairValueMeasurement.pdf	ANGLO-SAXON
Lynessa Dias	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20342_LynessaDiasIndividual_0_LDiasRIFPIRIFRS13FairValueMeasurement.pdf	ANGLO-SAXON
Accounting Research and Development Foundation (ARDF)	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20297_ChiChunLiuAccountingResearchandDevelopmentFoundationARDFTaiwan_0_ARDFTaiwanResponsesPIRofIFRS13.pdf	Confucian Asia.
Singapore Accounting Standards Council	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20308_SuatChengGohSingaporeAccountingStandardsCouncil_0_ASCCommentLetter_RfI_PIR_IFRS13FairValueMeasurement.pdf	Confucian Asia.
Accounting Standards Board of Japan (ASBJ)	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20309_YukioOnoAccountingStandardsBoardofJapanASBJ_0_CommentonRequestforInformationPostimplementationReviewIFRS13.pdf	Confucian Asia.
Korea Accounting Standards Board (KASB)	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20310_eungjookimKoreaAccountingStandardsBoardKASB_0_KASBResponsetoIASB_RFI_IFRS13FVM_Final.pdf	Confucian Asia.
The Japanese Institute of Certified Public Accountants	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20313_TomohikoSakaguchiTheJapaneseInstituteofCertifiedPublicAccountantsJICPA_0_JICPAPostimplementationReviewIFRS13FairValueMeasurement.pdf	Confucian Asia.
China Accounting Standards Committee (CASC)	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20969_LinZhuChinaAccountingStandardsCommitteeCASC_0_CommentsfromChina.pdf	Confucian Asia.
Hong Kong Institute of Certified Public Accountants (HKICPA)	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20489_AnthonyWongHongKongInstituteofCertifiedPublicAccountantsHKICPA_0_CommentletterPIRIFRS13.pdf	Confucian Asia.
Keidanren [Japan Business Federation]	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20312_AkiraSuzukiKeidanrenJapanBusinessFederation_0_20170922CommentsonPiRIFRS13KeidanrenJapanBusinessFederation.pdf	Confucian Asia.
Austrian Raiffeisen Banking Group	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_19670_ThomasSchmatzbergerAustrianRaiffeisenBankingGroup_0_CommentsonPostimplementationReviewIFRS13.pdf	Germanic Europe
Group of Latin American Accounting Standard Setters (GLASS)	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20306_FelipePrezCervantesGroupofLatinAmericanAccountingStandardSettersGLASSGrupoLatinoamericanodeEmisoresdeNormasdeInformacinFinancieraGLENIF_0_GLASSCommentLetteronIFRS13PIR.pdf	Latin America
Mexican Financial Reporting Standards Board (CINIF)	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20472_FelipePrezCervantesConsejoMexicanodeNormasdeInformacinFinancieraCINIFMexicanFinancialReportingStandardsBoard_0_CINIFcommentsonMay2017PIRIFRS13.pdf	Latin America
Brazilian Committee for Accounting Pronouncements (CPC)	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20482_ComitdePronunciamentosContbeisCPCBrazilianCommitteeforAccountingPronouncements.zip	Latin America
French accounting standards authority (ANC)	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20318_PatrickdeCambourgAutoritdesNormesComptablesANC_0_ANCCommentLetter_PIRIFRS13_IASB_09222017.pdf	Latin Europe
Financial Reporting Standards Council (FRSC) [South Africa]	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20332_MahdiyyahMoolaFinancialReportingStandardsCouncilFRSCSouthAfrica_0_CommentLetterFRSCPostimplementationReviewIFRS13FairValueMeasurementFinal.pdf	Sub-Saharan Africa/African
The South African Institute of Chartered Accountants (SAICA)	http://eifrs.ifrs.org/eifrs/comment_letters/314/314_20968_BongekaNodadaTheSouthAfricanInstituteofCharteredAccountantsSAICA_0_SAICAPIRIFRS13FairValueMeasurement.pdf	Sub-Saharan Africa/African

APPENDIX B: Cultural and Societal Traits definition

Trait	Definition
Performance Orientation	The extent to which the society (organization or cooperative) rewards and assists group members for achievement, growth, and excellence
Assertiveness	The level of individuals aggressiveness, confrontational, confidence in their associations with others
Future Orientation	The engagement of individuals in future-oriented behaviors such as deferring gratification, regalement, planning, and investing in the future
Humane Orientation	The extent to which society supports and compensates individuals for being fair, honest, altruistic, generous, and caring to others
Institutional Collectivism	The extent to which organizational and societal institutional practices encourage and reward collective distribution of resources and collective action
In-group Collectivism	The extent to which individuals express pride, loyalty, and cohesiveness in their organizations or families
Power Distance	The extent to which the society admits and endorses authority, power asymmetries, and status privileges
Uncertainty Avoidance	The degree to which the community, organization, society, or group depends on cultural norms, practices, rules, and procedures to relieve the unpredictability of future events

Retrieved from: https://globeproject.com/results/clusters/southern-asia?menu=list

Appendix C: Cultural Characteristics Table

Clusters	Cultural Traits
ANGLO-SAXON	They desire high-Performance Orientation and promote high Humane Orientation as well as high Future Orientation. They desire more gender equality (Gender Egalitarianism) and In-Group Collectivism. They averaged on the desires for Institutional Collectivism (i.e., collective efforts and distribution of resources) is on par with what presently exists. However, they desire less Uncertainty Avoidance promoting fewer rules and procedures to reduce uncertainty in events.
Nordic Europe	Desires high societal, cultural practices on the dimensions of Institutional Collectivism and Uncertainty Avoidance Performance Orientation, In-Group Collectivism, and Gender Egalitarianism. high ranking cluster on Gender Egalitarian practices and values, more gender equality and are among the highest of the clusters
Eastern Europe	Performance Orientation and Future Orientation. In-Group Collectivism (high) and Institutional Collectivism (low to medium) increase their level of Humane Orientation (being generous, caring, and kind), Uncertainty Avoidance (use of rules and procedures to reduce unpredictability)
Middle East	They desire a higher Future and Performance-Orientation. They desire to have more Uncertainty Avoidance (i.e., relying on social norms, rules, and procedures to alleviate unpredictability). Desires lower levels of Power Distance, lowest in Gender Egalitarianism.
Southern Asia	They desire and promote much higher levels of Performance Orientation and Future Orientation, as well as maintaining higher respect for In-Group Collectivism. However, they promote a much lower level of Power Distance but encourages more rules, regulations, and procedures to decrease the uncertainty of future events (i.e., they desire higher Uncertainty Avoidance and wish to preserve the same high level of In-Group Collectivism, and in addition to increasing the level of Institutional Collectivism (encouraging and rewarding collective distribution of resources). They prefer to be more assertive and future and performance-oriented
Latin Europe	They Rank high on Performance Orientation, In-Group Collectivism, Future Orientation, and Humane Orientation. They desire and promote significant increases in performance and future orientation. They prefer to be more humane and promote gender equality. However, they score very low on Power Distance values. They desire and promote modest growth in In-Group and Institutional Collectivism. They desire increases in both In-Group and Institutional Collectivism promotes more loyalty and cohesiveness in their families and organizations. They desire more practices that reward and offer support to the collective distribution of resources and collective action
Germanic Europe	They score relatively Low on Gender Egalitarianism, recognizing male dominance and gender inequality within the society. They score relatively low in Humane Orientation and both In-Group and Institutional forms of Collectivism. They reward performance and value competitiveness. They score very high on Uncertainty Avoidance, an indication of a robust endorsement of rules, regulations, and procedures to lower future uncertainty of events. High Assertiveness designates more self-confident and conceivably confrontational relationships with others. They score very high on Future Orientation, signifying progressive planning, and investing for the future. They score low on the cultural dimension of In-Group Collectivism and Institutional Collectivism, implying limited cohesiveness within organizations and families and limited collective distribution of resources. Low scores on Humane Orientation indicate limited compassion, altruism, and kindness to others.

Latin America	Societal and cultural practices dimensions of In-Group Collectivism and Power Distance are rated very high among them. They preserve very close family ties, and individuals express self-esteem and loyalty in organizations and families. They do not envisage power to be equally distributed among citizens. They accept and welcome power and authority differentials. They accept status privileges and social inequality. Relatively low on several other dimensions, including Future Orientation, Institutional Collectivism, and Uncertainty Avoidance Humane Orientation and Gender Egalitarianism, are about average. Performance Orientation is among the lowest scores. High In-Group collectivism scores suggest that they express pride and cohesiveness in their families and organizations. They, however, do not actively endorse societal, institutional practices with the goals of collective distribution of resources or rewards
Sub-Saharan Africa/African	Desires high Performance and Future-Oriented, desire to be more Humane-Oriented and much less Power Distance. Aspires high Uncertainty Avoidance (i.e., relying on social norms, rules, and procedures to alleviate unpredictability). Gender Egalitarianism is a little bit higher and very close to the level of Assertiveness. Group collectivism is maintained at a high level. They promote solid attachment to family members and other in-groups (e.g., community, village, and school friends). There is an unequal distribution of authority (power) embedded in their Societal practices. They exhibit considerable gender stereotypes, emphasizing gender role differences and comparatively significant male domination in societal practices; however, they desire higher gender equality.
Confucian Asia.	Desires high-Performance Orientation, Future Orientation, and Humane Orientation. Desires low Power Distance, desire high Gender Egalitarianism, high level of In-Group Collectivism but a bit less Institutional Collectivism. Desires to decrease their level of power differentiation from that which presently exists but which is still higher, desire more reward and encouragement for performance excellence and prefer to be more future-oriented, more kind, fair, friendly, and caring to each other. Desires a lower level of male domination and gender role differences. To avoid uncertainty in future events, they desire slightly higher levels of established norms, rituals, and bureaucratic practices.

Retrieved from: http://globeproject.com/results/clusters/anglo?menu=cluster

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STRATEGIES AND EVIDENCE FOR DEDUCTION OF BUSINESS EXPENSES UNDER INTERNAL REVENUE CODE SECTION 168(K), 179, AND 274

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ABSTRACT

The Tax Cuts and Jobs Act (TCJA) of 2017 amended the Internal Revenue Code of 1986. TCJA (2017) increased the annual maximum amount of immediate expense of Section 179 to one million dollars, and the phase-out threshold to two and a half million dollars. TCJA (2017) amended Section 168(k) to allow 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. The Coronavirus Aid, Relief, and Economic Security (CARES) Act of 2020, now allows taxpayers to also elect additional first-year depreciation deduction for qualified improvement property. Through statistical analyzes of "IRS Corporation Depreciation Data" from 2010 to 2016, this paper adds value to the literature by informing readers the popularity of Section 179 and 168(k) in which sectors of businesses. The tax code change itself has implications on actual tax liabilities for businesses. Businesses can change their practices, for example avoiding newly disallowed entertainment expenses, to account for the change in the tax code. This paper further contributes to the literature by (1) providing a summary of the latest details of Section 168(k), 179 and 274, (2) suggesting proactive tax strategies in terms of business expenses deduction to mitigate a taxpayer's potential Federal corporation income tax liabilities, (3) demonstrating the application of Section 168(k), 179 and 274 through real-life numerical case examples.

JEL: M4

KEYWORDS: Depreciation, Entertainment, Internal Revenue Code, Section 168(k), Section 179, Section 274, The Tax Cuts and Jobs Act

INTRODUCTION

Congress and the president enacted the landmark Tax Cuts and Jobs Act (TCJA) on December 22, 2017. TCJA (2017) made changes to the tax laws that have a major impact on how business is conducted in the United States. This study does not attempt a comprehensive analysis of the changes in the U.S. tax code, but instead focuses on some key areas that affect most business operations. Specifically, this study examines how the Internal Revenue Code (IRC) Section 179 immediate expenses deductions and Section 168(k) special depreciation allowances helps business owners to reduce their corporation tax liabilities. Depreciation is one of the most common business expense deductions. To encourage capital expenditures, legislators increased the allowable depreciation deductions under Section 179 and 168(k). The overall effect of TCJA (2017) still needs to be empirically researched. Based on the Data Book for 2018 published by the Internal Revenue Service (IRS) (IRS, 2019c), corporations only paid 7.60 percent of the total \$3.5 trillion of federal taxes collected by the IRS in 2018 (IRS, 2019c, 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, 2019c, Table 1, p. 3). According to the data of Collections and Refunds by Type of Tax published by the IRS (IRS, 2020e), the percentage of corporation income tax 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 individual income taxes in terms of the total annual amount of gross federal taxed collected increased from 53.60 percent in 2014 to 56.90 percent in 2018.

To encourage business capital expenditures, TCJA (2017) not only increased the annual maximum amount of Section 179 immediate expense to one million dollars but also increased the phase-out threshold to two and a half million dollars. Further, TCJA (2017) also amended section 168(k) and related provisions to allow 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. The Coronavirus Aid, Relief, and Economic Security (CARES) Act, became law on March 27, 2020. The CARES Act now allows taxpayers to elect additional first-year depreciation for qualified improvement property. Though Section 168(k) and 179 allow taxpayers to accelerate deductions for qualifying purchases of property, plant, and equipment, whether taxpayers have utilized allowable deductions under each Section to their best advantage still needs to be empirically researched. Prior literature suggests that firms with similar characteristics will practice similar tax avoidances strategies. To date no empirical research study has explored whether firms electing Section 179 and/or Section 168(k) are distinct groups with unique characteristics.

The lack of empirical research regarding the characteristics of the firms electing Section 179 and 168(k) motivates this paper to examine (1) how widespread is the use of Sections 179 and 168(k) in terms of the percentage share of annual total amount of depreciation claimed on Form 4562; (2) what are the characteristics of the firms that elect Section 179 and 168(k). Through statistical analyzes of "IRS Corporation Depreciation Data" from 2010 to 2016, this paper adds value to the literature by informing readers of the prevalence of Sections 179 and/or 168(k) among different sectors of businesses. The tax code change itself has implications not only on actual tax liabilities for businesses but also on how businesses operate. Many firms, especially in the manufacturing sector and hospitality sector, benefited from the provisions of TCJA (2017) that expanded the additional first-year depreciation of Section 168(k) as well as the annual maximum amount of immediate expense deduction of Section 179. These two tax breaks are valuable for capital-intensive manufacturers and hotel operators, who can benefit from the tax-saving opportunities due to the time value of money.

After interviewing business owners, the authors developed ten strategies for maximizing the amount of business expenses deductions as permitted under Section 168(k), 179 and 274 respectively. The authors developed the ten strategies from a business owner's perspective. This authors also provide three actual cases examples to explain this paper's ten suggested strategies. Each of the three cases is based on real-world scenarios albeit embedded with fictitious numbers. The authors also provide explanations as to why manufacturers favor Section 168(k) additional first-year depreciation, while hotel operators favor immediate expense of qualified improvement to nonresidential real property and property used predominantly for furnishing under Section 179. As a result, this paper contributes to literature through the ten strategies as well as case examples demonstrating how business owners plan strategically to maximize deductions of business expenses under Section 168(k), 179 and 274. This paper assumes and defines the following: (1) all the property, other than qualified improvement, described is personal property, (2) all the property described is of 100 percent business use, (2) all the property is acquired and placed in service in the same tax year or in 2019, (3) the term taxpayer described signifies an individual operating a C corporation (due to the fact that tax laws apply differently in S Corporations and Partnerships), and (4) the taxpayer would like to maximize business expense deductions as permitted under Section 168(k), 179 and 274 in the current tax year. The authors present the remainder of this paper in the following order. The next section provides a literature review and some background. The third section describes ten tax strategies for maximizing the amount of business expenses deduction as permitted under Section 168(k), 179 and 274. The fourth section presents data and methodology. The fifth section provides results. The sixth section presents three real-life cases to illustrate the calculation of the business expenses deductions. The final section provides a conclusion.

LITERATURE REVIEW AND BACKGROUND

Prior literature examines numerous aspects of the IRC and its implications for businesses. Hanlon and Heitzman (2010) present a review of tax research in four main areas of the literature: (1) the informational role of income tax expense reported for financial accounting, (2) corporate tax avoidance, (3) corporate decision making, and (4) taxes and asset pricing. Within the domain of corporate tax avoidance and tax shelters, Wide and Wilson (2018) provide a broad review of corporate tax planning literature of the last decade. There are ample publications describing how public firms learn from each other regarding the corporate practice of tax avoidance. Prior studies (for example see Davis and Greve 1997; Gulati and Westphal 1999; Reagans and McEvily 2003; Brown 2011; Chiu et al. 2013; Larcker et al. 2013; Cai et al. 2014; Brown and Drake 2014) support the notion that public firms in similar industries, especially those having interlocking board of directors and sharing the same industry specified auditors, practiced similar corporate policies such as financial disclosures and tax avoidance.

Davis and Greve (1997) investigate two popular corporate practices of the 1980s and find that the corporate practice of poison pills spread through a board-to-board process; while the corporate practice of golden parachutes spreads more slowly through geographic proximity. Gulati and Westphal (1999) suggest that firms having a common auditor will imitate each other's corporate practices more quickly. However, Reagans and McEvily (2003) find the speed in which corporate practices spread among firms depends on the characteristics of both the firm's connection to other firms and the type of knowledge being shared across the connections. In regard to the type of knowledge being shared across firms, Brown (2011) finds that connections via board interlocks increase the chance of adopting tax shelters such as employing corporate-owned life insurance shelters as vehicles of tax avoidance. Chiu et al. (2013) find that a firm is more likely to manage earnings when the firm has common directors with another firm that had previously practiced earnings management. Larcker et al. (2013) document that firms with stronger connections to other firms, through interlocking boards of director have higher risk-adjusted returns and higher profitability than firms with weaker connections. Further, Cai et al. (2014) propose that connections between firms through director interlocks can hasten the process of imitating another firm's cessation of providing earnings guidance. Brown and Drake (2014) highlight the important fact that implementation of common corporate practices such as tax-saving strategies are more pronounced in board connections between firms with similar characteristics. This paper also expects that firms with similar characteristics will behave in similar pattern, in terms of business operational changes, in their responses towards amendment of the IRC enacted by TCJA (2017).

Most of the changes introduced by the TCJA (2017) went into effect on January 1, 2018, and hence did not affect the 2017 tax year. Prior literature has a large array of empirical studies regarding the deductibility of business expenses deductibility prior to the enactment of TCJA 2017. Bank (2014) explains why taxpayers cannot deduct all the business interest expenses incurred in a tax year. Bank (2014) hypothesizes that legislators in 1909 were worried that without a cap on the business interest expenses deduction, corporations would become over-leveraged. This would lead to wider economic swings and weaker economic growth. Following the same logic, TCJA (2017) further restricts taxpayers' ability to deduct business interest expenses incurred in a tax year. 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 (1) the taxpayer's business interest income for the year; (2) 30 percent of the taxpayer's adjusted taxable income for the year; and (3) the taxpayer's floor plan financing interest expense for the year (IRS, 2018c). The most notable modifications to the tax law enacted by the TCJA (2017), for tax years beginning after 2017, is the cap of the corporation tax rate at 21 percent and the repeal of alternative minimum tax on business. While many individual tax provisions under the TCJA (2017) will expire on 2025, most of the business tax provisions under the TCJA (2017) will not automatically expire. TCJA (2017) provides additional tax incentives to businesses, for example Section 179 immediate expense deductions and 168(k) special depreciation allowances. Changes in tax laws often have consequences on the economy as well as society. For example, Binner and Day (2015) find that tax policy changes in mortgage interest deduction can significantly influence taxpayers' behavior regarding homeownership. Changes to the business tax provisions not only affect public firms, as discussed in preceding paragraphs, but also influence private business owners ranging from sole proprietors, partnerships to S corporations. Unfortunately, most of the prior literature in tax research focuses on public firms. A lack of studies exists on the tax behavior of private businesses. This paper discusses the effect of changes to business tax provisions from the perspective of business owners that include both private and public.

Depreciation and entertainment business expenses are two common business expense deductions. This paper discusses new business expenses deductions opportunities under Section 168(k) and Section 179 from the perspective of all business owners (i.e. sole proprietors, partnerships, C corporations, S corporations). TCJA (2017) introduces new limitations on some business expenses deductions. Entertainment business expenses deduction, under Section 274, is an example of limitation newly introduced by TCJA (2017). In fact, TCJA (2017) disallows all entertainment business expenses deduction (IRS, 2018b) but still allows a 50 percent deduction of business meals. This paper discusses this new limitation on deductions of business meals under Section 274 from the perspective of business owners. A recent experimental study by Austin et al. (2020) Finds that (1) individuals tend to evade taxes more during episodes of tax increases, (2) an individual who knows that a tax decrease is only temporary (compared to another individual who does not know about the temporary tax decrease), will be less likely to evade taxes and will not evade taxes more after the period of tax decrease, and (3) when there is uncertainty regarding whether a tax decrease is temporary, all individuals' tax behavior is roughly equivalent.

This paper predicts firms will also adapt quickly to a "gain state" by taking advantage of the additional business deductions, offered by TCJA (2017), to reduce their tax liabilities. TCJA (2017) is a multifaceted and still relatively new. Tax strategies to mitigate tax liabilities, in regard to the changes of the tax law as amended by TCJA (2017), still need to be empirically researched. Decker and Ray (2017) provide an example of how researchers contribute to the practical world by suggesting tax strategies to help farmers to mitigate their tax liabilities. This paper also discusses comprehensive and holistic tax strategies, to maximize the deductibility of numerous business expenditures in an effort to reduce a business taxpayer's potential Federal corporation income tax liability under Section 179, 168(k) and 274. Due to the complexity of TCJA (2017), both the Department of Treasury and the IRS have been proactively issuing guidance to the public in regard to the implementation of the new tax law changes. The next few paragraphs provide a brief summary of the latest guidance regarding Sections 179, 168(k) and 274.

<u>Internal Revenue Code Section 179</u>

In lieu of just taking Modified Accelerated Cost Recovery System (MACRS) depreciation deductions, a taxpayer can elect Section 179 to deduct the cost of qualifying property purchased and placed in service during a tax year. TCJA (2017) increased the annual maximum amount (or called the ceiling amount) that a taxpayer can immediately expense under Section 179, in tax years beginning after 2017, from $500,000 to $1,000,000 and also increased the phase out amount of Section 179 from $2,000,000 to $2,500,000. On March 23, 2020, the Treasury Department and the IRS issued Publication 946 titled "How to Depreciate Property" for use in preparing 2019 Returns (IRS, 2020d). In 2019 tax year, the total amount a taxpayer can elect to deduct under Section 179 is $,1020,000 and the phase out amount of Section 179 is $2,550,000. To qualify for the Section 179 deduction, the property that a taxpayer elects to deduct must meet all the following requirements: (1) the property must be an eligible property, (2) the property must be acquired for business use, (3) the property must be acquired by purchase, and (4) the property is not an excepted property that does not qualify under Section 179. If a taxpayer places qualifying property in service for only a part of a 12-month tax year, the taxpayer can still elect to deduct full amount of that property under Section 179 (IRS, 2020d, p. 18). Section 179 allows taxpayers to pick and choose which assets to expense immediately. Table 1 helps readers to appreciate the types of property that qualifies for the Section 179 deduction.

The definition of Section 179 property now includes tangible personal property used in connection with furnishing lodging. For example, beds and furniture for use in hotels and apartment buildings (IRS, 2020d, p. 16). Tangible personal property of Section 179 also includes cellular telephones, telecommunications equipment, portable air conditioners, and portable heaters. Taxpayers may also elect to include improvements to nonresidential real property placed in service after the date the property was first placed in service such as roofs, heating, ventilation and air-conditioning property, fire protection and alarm systems, security systems. Under Section 179, a taxpayer can immediately expense up to $25,500 of the cost of any heavy sport utility vehicle (SUV) and certain other vehicles placed in service for business use in tax years beginning in 2019 (IRS, 2020d, p. 18).

After utilizing the full amount of $25,500 under Section 179, a taxpayer can use Section 168(k) bonus depreciation to recover the remaining cost of the SUV placed in service for business use in 2019. Readers should take notice that the above-mentioned SUV must have a manufacturer's gross vehicle weight rating (GVWR) above 6,000 pounds and not more than 14,000 pounds. In 2019, the phase out amount for Section 179 is $2,550,000. The Section 179 deduction ceiling amount of $1,020,000 is reduced dollar for dollar, when Section 179 property placed in service during 2019 exceeds $2,550,000. For example, if a taxpayer placed in service machinery costing $2,600,000 in 2019, then the phase out amount is $50,000 ($2,600,000 - $2,550,000). Therefore, the total amount the taxpayer can elect to deduct under Section 179 is only $970,000 ($1,020,000 - $50,000) as reduced by the phase out amount (IRS, 2020d, p. 18). Furthermore, Section 179 deduction is also subject to the business income limitation. The total amount of the elected Section 179 deduction cannot exceed the taxable income from the active conduct of trade or business during the year. The amount of Section 179 deduction is generally the cost of the qualifying property. But the total amount a taxpayer can elect to deduct under section 179 is subject to a dollar limit (equal or less than $2,550,000 in 2019) and a business income limit. Both the above-mentioned dollar limits and business income limits apply to each taxpayer or each tax return (except for married filing joint or separate returns) but not to each business (IRS, 2020d, p. 17). A taxpayer can carry over, for an unlimited number of years, the cost of any qualified Section 179 property placed in service (in tax years beginning after 2015) that exceeded the business income limitation (IRS, 2020d, p. 20). A firm cannot use Section 179 deductions in a tax year to create or increase tax losses. Table 1 highlights definitions of key terms, mentioned in the IRS Publication 946, about section 179.

Table 1: Section 179 Key Terms and Definitions

Key Terms	Definition of Key Terms	Sources
1. Eligible Property	One of the following types of depreciable property: (1) tangible personal property; (2) other tangible property (except buildings and structural components) used as an integral part of manufacturing or of furnishing transportation, communications, electricity, gas, water, or sewage disposal services; (3) single-purpose agricultural (livestock) or horticultural structures; (4) storage facilities (except buildings and structural components) of petroleum; (5) off-the-shelf computer software; and (6) qualified Section 179 real property.	IRS (2020d, p. 16)
2. Tangible Personal Property	Tangible property is any tangible property that is not real property which includes (1) machinery and equipment; (2) property contained in or attached to a building (other than structural components) such as refrigerator, counters, office equipment; (3) gasoline storage tanks and pumps at retail service stations; (4) livestock; (5) portable air conditioners or heaters; (6) certain property used predominately to furnish lodging except as provided in Section 50(b)(2).	IRS (2020d, p. 16)
3. Off-the-shelf Computer Software	Off-the shelf computer software is computer software that is readily available for purchase by the public. The software is subject to nonexclusive license and has not been substantially modified.	IRS (2020d, p. 16)
4. Qualified Section 179 Real Property	Any qualified real property that is (1) qualified improvement property as described in Section 168(e)(6); (2) improvements to nonresidential real property placed in service (after the date the nonresidential real property was first placed in service) such as roofs, heating, ventilation, and air-conditioning property, fire protection and alarm systems, and security systems.	IRS (2020d, p. 16)
5. Qualified Improvement	Any improvement to an interior portion of a building that is nonresidential real property if the improvement is placed in service after the date the building was first placed in service. But, qualified improvement does not include enlargement of the building, elevator, escalator, internal structural framework of the building.	IRS (2020d, p. 16)
6. Excepted Property	A taxpayer cannot elect the Section 179 deduction for the following property: (1) leased property (except corporate lessor), (2) property used predominately outside the United States, (3) property used by certain tax-exempted organizations, (4) property used by governmental units or foreign persons.	IRS (2020d, p. 17)

Table 1 provides summary of key terms of Section 179 as defined in the IRS Publication 946.

Internal Revenue Code Section 168(k)

A taxpayer can take a special depreciation allowance to recover part of the cost of qualified property placed in service during the tax year. The special depreciation allowance applies only for the first year a taxpayer places the property in service. This special depreciation allowance is an additional deduction that a taxpayer can take after any Section 179 deduction and before regular depreciation under the Modified Accelerated Cost Recovery System (MACRS) (IRS, 2020d, p. 23). Section 168(k) allows an additional first year ("bonus") depreciation deduction in the placed-in-service year of qualified property. TCJA (2017) increased the Section 168(k) additional first-year depreciation from 50 percent to 100 percent. Bonus depreciation is mandatory for all taxpayers that qualify. Taxpayers can elect out of bonus depreciation annually on a property class basis, for example for all of their five-year class property, but still claim bonus depreciation for all of their seven-year property acquisition. Under Section 168(k), a taxpayer can take an additional first-year depreciation deduction of 100 percent of the cost of qualified property placed in service during 2019, 2020, 2021 and 2022. Eligible assets include those with a depreciable life of 20 years or less which encompasses personal property such as automobiles, machinery, office furniture and fixtures. The percent of Section 168(k) additional first-year depreciation deduction will begin to wind down from 80 percent in 2023 to zero percent in 2027 and thereafter (2019a). Land and buildings are not eligible for additional first-year depreciation. Further, any property used in trades or businesses that is not subject to the limitation of net business interest expenses under Section 163(j) is also not eligible for additional first-year depreciation. Table 2 summaries the latest rules of Section 168(k).

Table 2: Latest Rules of Section 168(k)

Key Areas	Detail Rules	Sources
1. Eligibility Requirements	To elect Section 168(k) additional first-year depreciation, the property must meet four requirements: (1) the depreciable property must be of a specified type; (2) the original use of the property must commence with the taxpayer or used depreciable property must meet the requirements of Section 168(k)(2)(E)(ii); (3) the depreciable property must be placed in service by the taxpayer within a specified time period or must be planted or grafted by the taxpayer before a specified date; and (4) the depreciable property must be acquired by the taxpayer after September 27, 2017.	IRS (2019a, p. 50122)
2. Acquisition of Used Property	A taxpayer can elect Section 168(k) additional first-year depreciation if used property acquired by the taxpayer meets the following five requirements: (1) the used property was not used by the taxpayer or a predecessor at any time prior to such acquisition; (2) the used property was not acquired from a related party or component member of a controlled group; (3) the taxpayer's basis in the used property is not determined in whole or in part by the seller's adjusted basis in the property; (4) the taxpayer's basis in the used property is not related to property acquired from a decedent; and (5) the cost of the used property does not include the basis of property determined by the reference to the basis of other property held at any time by the taxpayer.	IRS (2019a, p. 50112)
3. Qualified Property	Qualified property must be one of the following (1) MACRS property that has a recovery period of 20 years or less; (2) computer software as defined in Section 167(f)(1); (3) water utility property as defined in Section 168(e)(5); (4) a qualified film or television production as defined in Section 181(d); (5) a qualified live theatrical production as defined in Section 181(e); (6) a specified plant as defined in Section 168(k)(5)(B).	IRS (2019a, p. 50109)
4. Percent of Additional First-Year Depreciation	100 percent for qualified property placed in service during 2019, 2020, 2021, 2022 80 percent for qualified property placed in service during 2023 60 percent for qualified property placed in service during 2024 40 percent for qualified property placed in service during 2025 20 percent for qualified property placed in service during 2026 zero percent for qualified property placed in service during 2027 and thereafter	IRS (2019a, p. 50120)
5. Excepted Property	Qualified property acquired after September 27, 2017 does not include any of the following: (1) property placed in service, or planted or grafted, and disposed of in the same year; (2) property converted from business use to personal use in the same tax year acquired; (3) property required to be depreciated under the Alternative Depreciation System (ADS); (4) property for which a taxpayer elected not to claim any special depreciation allowance.	IRS (2020d, p. 25)

Table 2 provides summary of Section 168(k) as mentioned in the IRS Proposed Rule "Additional First-Year Depreciation Deduction"

The Coronavirus Aid, Relief, and Economic Security (CARES) Act, became law on March 27, 2020. The CARES Act classifies qualified improvement property (certain improvements to the interior of nonresidential real property) as 15-year property for depreciation purposes. The changes apply retroactively to property placed in service in 2018. As a result, taxpayers now can claim additional first-year additional depreciation for qualified improvement property. Qualified improvement property means any improvement to an interior portion of a building which is nonresidential real property if such improvement is placed in service after the date such building was first placed in service.

<u>Internal Revenue Code Section 274</u>

Under prior law, before December 22, 2017, a taxpayer could deduct fifty percent of entertainment, amusement, or recreation expenses incurred for the activities that were directly related to the active conduct of the taxpayer's trade or business. TCJA (2017) amended Section 274 to disallow deduction of expenditures for entertainment effective for amounts paid or incurred after 2017. Section 1.274-2(b)(1)(i) of the Income Tax Regulations provides that the term "entertainment" means any activity which is of a type generally considered to constitute entertainment, amusement, or recreation (IRS, 2018b, p. 3). TCJA (2017) does not specifically address the deductibility of expenses for business meals (IRS, 2018). McBride (2018) suggests that when the Tax Cuts and Jobs Act eliminated the deduction for entertainment, the Act also eliminated the deduction for business meals. McBride (2018) therefore calls for a statutory fix of the deductibility of expenses for business meals. On October 15, 2018, the Treasury Department and the IRS published Notice 2018-76 providing transitional guidance on the deductibility of expenses for certain business meal expenses under Section 274 (IRS, 2018b). On January 20, 2020, the Treasury Department and the IRS issued Publication 463 titled "Travel, Gift, and Car Expenses" for use in preparing 2019 Returns (IRS, 2020a). Taxpayers can refer to Publication 463, issued by the IRS, for guidance on business meals.

On February 20, 2020, the Treasury and the IRS issued a proposed rule titled "Meals and Entertainment Expenses Under Section 274" for public comments (IRS, 2020b). The proposed regulations substantially incorporate the temporary guidance in Notice 2018-76 (IRS, 2018b) addressing business meals provided during or at an entertainment activity. On March 4, 2020, IRS issued Publication 535 titled "Business Expenses" for use in preparing 2019 Returns (IRS, 2020c). Taxpayers can refer to Publication 535, issued by the IRS, for guidance on food and beverages *de minimis* fringe benefit. Table 3 presents key points of IRS Publication 463 and 535 in regard to the deduction of business entertainment and meal expenses.

Table 3: Effective Jan. 1, 2018 Deduction of Business Entertainment and Meal Expenses

Entertainment and Meal Expenses	Deducting Business Expenses	Sources
1. Club Dues Membership Fees	No deduction	IRS (2020a, p. 10)
2. Sporting Event Tickets	No deduction	IRS (2020a, p. 10)
3. Hunting, Fishing, Vacation Trips	No deduction	IRS (2020a, p. 10)
4. Entertainment Facility Expenses	No deduction	IRS (2020a, p. 10)
5. Business Meals Purchased Separately	Deduct 50% of the costs of business meals if taxpayer or an employee is present and the food or beverages are not considered lavish or extravagant	IRS (2020a, p. 10)
6. Costs of Furnishing Meals to Employees	Deduct 50% of the costs (nondeductible after 2025)	IRS (2020c, p. 9)
7. Office Holiday Parties or Annual Picnics	Deduct 100% of the cost	IRS (2020c, p .9)
8. Food and Beverages *De Minimis* Fringe Benefit	Deduct 50% of the cost (if expenses excludable from Employee income as fringe benefit)	IRS (2020c, p. 9)

Table 3 shows taxpayers can no longer deduct any business expenses related to activities considered entertainment, and can only deduct 50 percent of the cost of qualified business meals or meals for the convenience of employer.

Table 3 highlights that taxpayers can no longer deduct entertainment facility expenses. An entertainment facility is any property a taxpayer owns, rents, or uses for entertainment. Examples of entertainment facility include a yacht, car, swimming pool, suite in a vacation resort (IRS, 2020a, p. 10). After 2017, taxpayers can still deduct 50 percent of an allowable business meal expense if (1) the expense is an ordinary and necessary expense under Section 162(a) paid or incurred during the taxable year in carrying on any trade or business; (2) the expense is not lavish or extravagant under the circumstances; (3) the taxpayer, or an employee of the taxpayer, is present at the furnishing of the food or beverages; (4) the food and beverages are provided to a current or potential business customer, client, consultant, or similar business contact; and (5) when food and beverages are provided during or at an entertainment activity, the food and beverages must be purchased separately from the entertainment (IRS, 2018b, p. 6). Table 3 also shows that a taxpayer can deduct 50 percent of the costs of furnishing food and beverages *de minimis* fringe benefit to employees. According to Section 132(e)(2), operation of eating facility for employees qualifies as a *de minimis* fringe if (1) the facility is located on or near the business premises of the employer, and (2) revenue derived from the facility normally equals or exceeds the direct operating costs of the facility (IRS, 2020c, p. 9).

Strategies

Tax Strategy #1 - Elect Section 179 and Section 168(k) for Qualified Improvement Property

As shown in Table 1, a taxpayer can immediately deduct the cost of any improvement to an interior portion of a building which is nonresidential real property if such improvement is placed in service after the date such building was first placed in service. Improvements do not qualify if they are attributable to the enlargement of the building, any elevator or escalator or the internal structure framework of the building (IRS, 2020d, p. 16). As previously discussed, CARES Act (2020) allows taxpayers to elect for additional first-year depreciation of qualified improvement property under Section 168(k). Section 179 allows for the immediate expensing of qualified improvement property in the long run (assuming the absence of tax law changes), but Section 168(k) additional first-year depreciation will no longer be available after 2026.

Tax Strategy #2 - Elect Section 179 Immediate Expenses of Improvement to Nonresidential Real Property: Roofs, Heating, Ventilation, Fire System

As highlighted in Table 1, Section 179 specifically allows a taxpayer to immediately expense the cost of improvements made to nonresidential real property placed in service (after the date of the nonresidential property was first placed in service). This includes the cost of roofs, heating, ventilation, air conditioning, fire protections and alarm systems, and security systems. Thus, a taxpayer should consider making these necessary improvements sooner rather than later to take advantage of the immediate tax write-off. Of course, taxpayers need to plan for the timing of when to acquire the mentioned above property because the amount of Section 179 immediate expense is capped at $1,020,000 in 2019. Note that Section 179 only applies to improvements as opposed to initial acquisitions of roofs, heating, ventilation, air conditioning, fire protections and alarm systems, and security systems.

Tax Strategy #3 - Elect Section 179 Immediate Expenses of Property to Furnish Lodging

As presented in Table 1, Section 179 now allows taxpayers to immediately expense the cost of property used predominately to furnish lodging. Beds and furniture for use in hotels and apartment rentals, as per the definition of Section 179 property, are eligible for immediate expense (IRS, 2020d, p. 16). Business operators in the hospitality industry should take advantage of the expanded definition of Section 179 property which now includes property used predominately to furnish lodging. Business operators in the hospitality industry should refer to the latest "Cost Segregation Guide" for hospitality industry, published by the IRS, to determine whether an asset is a depreciable personal property.

Tax Strategy #4 - Elect 100 Percent Section 168(k) Bonus Depreciation in 2019, 2020, 2021 and 2022

As delineated in Table 2, taxpayers can elect additional first-year depreciation, under Section 168(k), to recover 100 percent of the cost of qualified property during the tax years of 2019, 2020, 2021, and 2020. Unfortunately, the additional first-year depreciation starts to decrease at a rate of 20 percent from 80 percent in 2023 to zero percent in 2027 and thereafter. Consequently, taxpayers should utilize the generous 100 percent additional first-year depreciation by acquiring and placing in service qualified property of Section 168(k) during the tax years of 2019, 2020, 2021, and 2022. Section 168(k) additional first-year depreciation is no longer available after December 2026. Taxpayers should plan accordingly before the deletion of Section 168(k) additional first-year depreciation.

Tax Strategy #5 - Elect Section 168(k) Bonus Depreciation of MACRS Property of 20 Years or Less

As shown in Table 2, property required to be depreciated under the ADS is not eligible for the additional first-year depreciation deduction of Section 168(k). Instead, qualified property under Section 168(k) includes MACRS property that has a recovery period of 20 years or less. Business owners, especially those in the manufacturing sector, benefit significantly from Section 168(k) because assets used in production are mostly MACRS property of 20 years or less (IRS, 2020d, p. 100-102). A manufacturer, after acquiring and placing in service assets used in production during 2019, must first elect Section 179 immediate expenses and then Section 168(k) additional first-year depreciation deduction to recover full amount of the acquisition cost. Unlike Section 179 which has a cap of $1,020,000 in 2019, Section 168(k) does not have a deduction limitation. In other words, a manufacturer can recover the total cost of a purchased asset, used in production, by electing both Section 179 Section 168(k) simultaneously. Please see this paper's case two for numerical explanation.

Tax Strategy #6 - Elect Section 168(k) Bonus Depreciation of Acquired Used Property

TCJA (2017) expanded the definition of qualified property for bonus depreciation under Section 168(k) to include used property acquired by purchase (from an unrelated party) as long as the acquiring taxpayer had never previously used the acquired property (IRS, 2019a, p. 50112). Table 2 shows the five requirements that a taxpayer must meet to elect Section 168(k) additional first-year depreciation for used property acquired and placed in service during a tax year. If there is a substantial difference in an asset's price between new and used condition, for tax reasons, a taxpayer should consider acquiring the used asset considering the more generous definition of qualified property under Section 168(k).

Tax Strategy #7 - Elect Section 168(k) Bonus Depreciation of Sport Utility Vehicle

In 2019, under Section 179, a taxpayer can expense immediately up to $25,500 of the cost of any heavy sport utility vehicle (SUV) and certain other vehicles (between GVWR 6,000 pounds and 14,000 pounds) placed in service for business use (IRS, 2020d, p. 18). A taxpayer can also use the bonus depreciation of Section 168(k) to recover the remaining cost of the mentioned above SUV. For example, a taxpayer plans to buy a new Lincoln 2019 Navigator, which has more than 6,000 pounds of GVWR, at a cost of $76,185. The taxpayer can recover the full cost of purchase in 2019 by electing both Section 179 immediate expense and Section 168(k) bonus depreciation. = [$25,500 § 179 expense and ($76,185 - $25,500) $50,685 § 168(k) bonus depreciation]

Tax Strategy #8 - Replace Entertainment with 50 Percent Deductible Business Meals and $25 Gift

TCJA (2017) disallowed entertainment expenses effective for amounts paid or incurred after 2017. A taxpayer still can deduct 50 percent of business meals, if the business meals meet the five requirements stipulated by the IRS (IRS, 2018b, p. 6). The Taxpayer or an employee must attend the non-lavish business meal with a current or potential business customer. In addition, the taxpayer must purchase the above-mentioned business meal separately from the entertainment by having different receipts. A taxpayer can also deduct 100 percent of the cost of a gift of not more than twenty-five dollars to each person during a tax year (IRS, 2020a, p. 12). Incidental costs such as packaging and mailing are not included in determining the cost of a gift for the purpose of the twenty-five dollars limit. Since entertainment expenses are no longer deductible, taxpayers should consider giving gifts of not more than twenty-five dollars to each customer during a tax year to enhance business relationship.

Tax Strategy #9 - Raise Employees' Pay to Compensate 50 Percent Deduction of Meals for Employees

As presented in Table 3, a taxpayer is only permitted to deduct 50 percent of the costs of furnishing meals or food and beverages *de minimis* fringe benefit to employees (IRS, 2020c, p. 9). TCJA (2017) also disallowed the deduction of expenses incurred or paid after 2017 for providing any transportation, or reimbursement to employee, in connection with travel between employee's residence and place of employment (IRS, 2019b, p. 21). Employers can still deduct 100 percent of transportation expense for ensuring the safety of employees or for qualified bicycle commuting reimbursements. As a result, of these changes in the tax law, employees have reduced benefits in terms of (1) subsidiarized meals, (2) food and beverages in the work area, (3) reimbursement for transportation from residences to place of employment. Given the importance of retaining skilled employees who are hard to replace, taxpayers should consider increasing employees' base pay to compensate for discontinuation of (1) subsidized meals, food, and beverages in work area; and (2) reimbursement of transportation between place of residence and work.

Tax Strategy #10 - Organize 100 Percent Deductible Annual Party or Picnic

As highlighted in Table 3, a taxpayer is allowed a deduction for 100 percent of the cost of holiday parties and picnics for company employees. Thus, in order to boost the esprit de corps, a taxpayer should consider sponsoring office holiday parties and picnics. However, neither the holiday party nor the picnic should neither be lavish and extravagant.

DATA AND METHODOLOGY

Depreciation is one of the most common types of business deductions. To encourage capital expenditures, legislators enacted Sections 179 and 168(k) to allow business owners to recover the full cost of capital expenditure in the year of purchase. In general taxpayers first utilize the annual amount of Section 179 immediate expenses, then section 168(k) special depreciation allowance for qualified property, and depreciate any other amount under the MACRS system. In order to take advantage of Section 179, a taxpayer is required to elect Section 179 by completing the proper forms. It is not automatic. On the other hand, Section 168(k) special depreciation allowance for qualified property is automatic and a taxpayer needs to elect out of this bonus depreciation for one or more full classes of MACRS property, by informing the IRS. Dyreng, Hanlon & Maydew (2010) suggest that individual executives have substantial economic magnitude effects on their public firms' tax avoidance practices that cannot be explained by the characteristics of the firm. Similar to executives of public firms, due to time value of money concept, private business owners will also play a significant role in tax planning by electing the maximum deductible amount allowed under Section 179 and Section 168(k).

Edwards, Schwab & Schevlin (2016) find that when firms are experiencing increased financial constraints, e.g., there is an increase in both the cost and the difficulty in obtaining external sources of funding, most firms will engage in more tax planning activities to generate internal funding through cash tax savings. Findings of Edwards, Schwab & Schevlin (2016) suggest that business owners would also take advantage of Section 179 and Section 168(k) to reduce cash outflows for taxes paid. Prior literature (for example see Reagans and McEvily 2003; Brown and Drake 2014) demonstrates that the spread of corporate tax practices is more pronounced among firms with similar characteristics. This paper predicts that the publications of the IRS regarding (1) Section 179 expense deductions and (2) Section 168(k) special depreciation allowance for qualified property can be classified into different groups with statistical monetary differences. However, whether or not business owners actually elect Section 179 immediate expenses and/or Section 168(k) special depreciation allowances still needs to be empirically researched.

Further, to the authors' best knowledge, no study has explored the research question of the characteristics of firms electing Section 179 and/or Section 168(k). Unfortunately, as of writing this paper, the IRS has only published "IRS Corporation Depreciation Data" up to 2016, which includes both private and public corporations. Further, data about the depreciation expenses of sole proprietorships, partnerships and S corporations is not available on the IRS Web site or in IRS publications. It is beyond of the scope of this paper to propose reasons of why firms behave in a particular pattern of depreciation expenses. Instead this paper focuses on fact findings which add value to the literature by informing readers regarding (1) how widespread is Section 179 and or Section 168(k) in terms of the total depreciation claims by C corporation in each of the seven tax years between 2010 to 2016 (7 years is the normal time frame of tax records keeping), (2) what groups of firms are electing Section 179 and Section 168 (k) respectively. Readers can then use this paper's results to compare the firms' depreciation behavior in the post TCJA (2017) era after IRS has published data of 2017, 2018 and 2019 in the near future. This paper research question (RQ) is as follow:

> *RQ1a: C corporations claiming Section 179 expenses deductions comprise of different groups with statistical monetary differences.*

RQ1b: C corporations claiming Section 168 special depreciation expenses comprise of different groups with statistical monetary differences.

Table 4 shows amounts (in thousands of dollars) of C Corporation Section 179 expense deduction and total depreciation claimed on Form 4562 from "IRS Corporation Depreciation Data." Panel B of Table 4 shows the calculated percent of all sectors' Section 179 expense deduction to the total depreciation in each year. Table 5 presents amounts (in thousands of dollars) of C Corporation special depreciation allowance for qualified property and total depreciation claimed on Form 4562 from "IRS Corporation Depreciation Data." Similarly, panel B of Table 5 shows the calculated percent of all sectors' Section 168(k) special depreciation allowance to the total depreciation in each year. According to the IRS, total depreciation in a year includes Section 179 expense deduction; special depreciation allowance for qualified property; property subject to section 168(f)(1) election; ACRS deduction; and MACRS deduction.

Table 4: Section 179 Expense Election Use

Panel A: C-Corporation Section 179 Expense Deductions

Sectors	2010	2011	2012	2013	2014	2015	2016
(1)	$ 1,248,823	$ 1,453,441	$ 2,073,735	$ 2,230,690	$ 1,877,930	$ 1,226,843	$ 1,007,725
(2)	$ 86,993	$ 111,608	$ 266,532	$ 240,559	$ 239,245	$ 163,169	$ 67,021
(3)	$ 26,342	$ 20,218	$ 21,412	$ 27,992	$ 29,377	$ 24,104	$ 30,096
(4)	$ 1,045,299	$ 969,543	$ 1,253,585	$ 1,600,477	$ 1,701,232	$ 2,079,875	$ 2,052,651
(5)	$ 1,545,133	$ 1,383,355	$ 1,966,816	$ 2,122,368	$ 2,090,954	$ 2,153,911	$ 2,132,334
(6)	$ 1,710,386	$ 1,460,378	$ 2,039,308	$ 2,309,178	$ 2,358,361	$ 2,161,262	$ 2,116,097
(7)	$ 457,922	$ 550,299	$ 622,664	$ 760,100	$ 682,727	$ 738,535	$ 700,798
(8)	$ 208,921	$ 130,131	$ 216,107	$ 219,785	$ 256,146	$ 243,206	$ 255,134
(9)	$ 283,469	$ 189,326	$ 311,322	$ 305,653	$ 318,269	$ 292,872	$ 287,896
(10)	$ 304,608	$ 206,308	$ 301,213	$ 368,897	$ 332,222	$ 407,576	$ 352,979
(11)	$ 1,006,827	$ 633,059	$ 901,536	$ 923,910	$ 901,685	$ 886,844	$ 897,775
(12)	$ 200,578	$ 110,479	$ 256,682	$ 268,311	$ 285,852	$ 283,004	$ 288,029
(13)	$ 281,891	$ 252,284	$ 315,741	$ 382,483	$ 476,225	$ 478,192	$ 468,209
(14)	$ 40,078	$ 24,263	$ 53,691	$ 32,950	$ 41,425	$ 45,823	$ 42,976
(15)	$ 708,175	$ 493,923	$ 561,578	$ 717,159	$ 536,247	$ 475,340	$ 404,006
(16)	$ 71,020	$ 57,052	$ 84,376	$ 96,896	$ 139,826	$ 163,687	$ 133,405
(17)	$ 192,799	$ 155,080	$ 258,449	$ 210,510	$ 315,667	$ 290,994	$ 321,326
(18)	$ 253,393	$ 201,474	$ 350,202	$ 334,231	$ 300,775	$ 276,390	$ 248,246
Subtotal	$ 9,672,657	$ 8,402,221	$ 11,854,949	$ 13,152,149	$ 12,884,165	$ 12,391,627	$ 11,806,703
Total Dep	$625,751,102	$752,425,942	$613,804,813	$621,038,571	$658,884,773	$696,386,021	$720,580,588

Panel B: Ratio of Section 179 Expense Deductions to Total Depreciation by Year

	2010	2011	2012	2013	2014	2015	2016
Ratio	1.55%	1.12%	1.93%	2.12%	1.96%	1.78%	1.64%

Table 4 Panel A reprints amounts (in thousands of dollars) of C Corporation Section 179 Expense Deduction and Total Depreciation claimed on Form 4562 from "IRS Corporation Depreciation Data" (https://www.irs.gov/statistics/soi-tax-stats-corporation-depreciation-data). The following definitions apply to both Table 4 and 5. Sectors include: (1) Agriculture, Forestry, Fishing and Hunting; (2) Mining; (3) Utilities; (4) Construction; (5) Manufacturing; (6) Wholesale and Retail Trade; (7) Transportation and Warehousing; (8) Information; (9) Finance and Insurance; (10) Real Estate and Rental and Leasing;(11) Professional, Scientific, and Technical Services; (12) Management of Companies (Holding Companies); (13) Administrative and Support and Waste Management and Remediation Services; (14) Educational Services; (15) Health Care and Social Assistance; (16) Arts, Entertainment, and Recreation; (17) Accommodation and Food Services; (18) Other Services. Total Dep means total depreciation of all sectors in a year which includes section 179 expense deduction; special depreciation allowance for qualified property; property subject to section 168(f)(1) election; ACRS deduction; and MACRS deduction.

Table 5: Section 168(k) Special Depreciation Allowance Use

Panel A: C-Corporation Section 168(k) Special Depreciation Allowance							
Sectors	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
(1)	$ 739,422	$ 1,539,454	$ 665,958	$ 714,335	$ 663,687	$ 822,963	$ 848,242
(2)	$ 8,724,270	$ 24,384,580	$ 16,786,030	$ 14,124,610	$ 15,802,074	$ 8,864,778	$ 2,676,542
(3)	$ 30,823,600	$ 49,197,945	$ 44,026,438	$ 32,263,663	$ 34,876,913	$ 36,733,307	$ 40,546,807
(4)	$ 1,447,634	$ 2,846,870	$ 1,700,967	$ 1,600,928	$ 1,693,866	$ 1,640,983	$ 1,747,844
(5)	$ 47,498,714	$ 92,727,048	$ 62,394,371	$ 61,555,462	$ 56,539,569	$ 59,083,015	$ 66,510,637
(6)	$ 33,513,551	$ 56,383,101	$ 35,364,820	$ 34,682,114	$ 40,038,674	$ 43,146,937	$ 45,219,536
(7)	$ 8,615,322	$ 20,375,819	$ 12,129,435	$ 10,417,464	$ 12,955,526	$ 19,207,786	$ 16,469,145
(8)	$ 26,101,894	$ 42,363,830	$ 23,338,921	$ 21,945,227	$ 19,571,368	$ 22,306,772	$ 22,017,671
(9)	$ 10,266,284	$ 9,789,362	$ 7,289,005	$ 9,428,726	$ 11,542,770	$ 6,763,489	$ 9,139,918
(10)	$ 12,143,539	$ 23,177,068	$ 13,708,916	$ 11,802,095	$ 13,718,439	$ 14,310,995	$ 15,042,459
(11)	$ 3,311,589	$ 6,965,968	$ 3,602,557	$ 3,640,469	$ 3,159,246	$ 3,352,000	$ 4,483,743
(12)	$ 6,944,337	$ 12,103,458	$ 7,918,396	$ 7,176,536	$ 7,209,007	$ 9,095,921	$ 11,871,592
(13)	$ 1,448,747	$ 2,797,218	$ 1,711,527	$ 1,581,403	$ 1,679,221	$ 1,856,952	$ 1,603,058
(14)	$ 833,761	$ 974,187	$ 463,151	$ 311,043	$ 310,280	$ 200,719	$ 201,824
(15)	$ 2,507,335	$ 4,161,782	$ 2,273,915	$ 2,315,091	$ 2,454,591	$ 2,351,877	$ 2,537,938
(16)	$ 692,605	$ 1,112,366	$ 638,601	$ 566,213	$ 715,523	$ 743,056	$ 792,840
(17)	$ 2,283,192	$ 4,082,208	$ 2,569,146	$ 2,590,501	$ 2,561,146	$ 2,785,707	$ 2,965,427
(18)	$ 520,718	$ 765,040	$ 457,501	$ 414,083	$ 412,208	$ 520,923	$ 575,253
Subtotal	$198,416,514	$355,747,304	$237,039,655	$217,129,963	$225,904,108	$233,788,180	$245,250,476
Total Dep	$625,751,102	$752,425,942	$613,804,813	$621,038,571	$658,884,773	$696,386,021	$720,580,588
Panel B: Ratio of Section 168(k) Special Depreciation Allowance to Total Depreciation by Year							
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Ratio	31.71%	47.28%	38.62%	34.96%	34.29%	33.57%	34.04%

Table 5 Panel A reprints amounts (in thousands of dollars) of C Corporation Special Depreciation Allowance for Qualified Property and Total Depreciation claimed on Form 4562 from "IRS Corporation Depreciation Data" (https://www.irs.gov/statistics/soi-tax-stats-corporation-depreciation-data). See notes to Table 4 for definition of Sectors and Total Dep.

Calculating the subtotal of each sector's Section 179 immediate expenses from 2010 to 2016, the authors first rank the 18 sectors from the smallest subtotal amount to the largest subtotal amount and then divide them into three groups (smallest amount, medium amount, and largest amount). A similar procedure is performed on firms for section 168(k) data. Table 6 shows the details of the groups for Section 179 and Section 168(k) separately.

Table 6: Groups of C Corporations: Section 173 and Section 168(k)

Section 173 Sectors Ranking	2010 to 2016
Group 1	
(3) Utilities	$ 179,541
(14) Educational Services	$ 281,206
(16) Arts, Entertainment, and Recreation	$ 746,262
(2) Mining	$ 1,175,127
(8) Information	$ 1,529,430
(12) Management of Companies (Holding Companies)	$ 1,692,935
Group 2	
(17) Accommodation and Food Services	$ 1,744,825
(18) Other Services	$ 1,964,711
(9) Finance and Insurance	$ 1,988,807
(10) Real Estate and Rental and Leasing;	$ 2,273,803
(13) Administrative and Support and Waste Management and Remediation Services	$ 2,655,025
(15) Health Care and Social Assistance	$ 3,896,428
Group 3	
(7) Transportation and Warehousing	$ 4,513,045
(11) Professional, Scientific, and Technical Services	$ 6,151,636
(4) Construction	$10,702,662
(1) Agriculture, Forestry, Fishing and Hunting	$11,119,187
(5) Manufacturing	$13,394,871
(6) Wholesale and Retail Trade	$14,154,970
Section 168(k) Sectors Ranking	
Group 1	
(14) Educational Services	$ 3,294,965
(18) Other Services	$ 3,665,726
(16) Arts, Entertainment, and Recreation	$ 5,261,204
(1) Agriculture, Forestry, Fishing and Hunting	$ 5,994,061
(13) Administrative and Support and Waste Management and Remediation Services	$12,678,126
(4) Construction	$12,679,092
Group 2	
(15) Health Care and Social Assistance	$18,602,529
(17) Accommodation and Food Services	$19,837,327
(11) Professional, Scientific, and Technical Services	$28,515,572
(12) Management of Companies (Holding Companies)	$62,319,247
(9) Finance and Insurance	$64,219,554
(2) Mining	$91,362,884
Group 3	
(7) Transportation and Warehousing	$100,170,497
(10) Real Estate and Rental and Leasing	$103,903,511
(8) Information	$177,645,683
(3) Utilities	$268,468,673
(6) Wholesale and Retail Trade	$288,348,733
(5) Manufacturing	$446,308,816

Table 6 shows the three groups of sectors according to their ranking of monetary subtotal of either Section 179 or Section 168(k) for the period of 2010 to 2016.

RESULTS

The authors performed ANOVA one factor analysis on the three groups to test whether the means of the three groups are not all equal. If the statistical results of the ANOVA show at least one of the means is different, then the authors performed F-Test Two-Sample for Variances analysis to determine if variance between two groups are equal. Finally, the authors performed t-Tests to determine whether the means between two groups of corporations are statistically equal. Due to the length of this paper, the authors only show the t-Test results to address RQ1 a and RQ1 b. From table 6, three groups of sectors are ranked according to their monetary subtotal of Section 179 expense deductions during the period from 2010 to 2016. Table 7 shows the statistical test of differences in monetary amount between groups of C Corporation Section 179 expense deductions (2010 to 2016).

Table 7: Statistical Test of Differences of Groups of C Corporation Section 179 Expense Deductions (2010-2016)

From Table 6	Section 179 Expense Deductions (2010-2016)	t-Value	p-Value	Significance (2-tailed)
Group 1 vs. Group 2	Group 1 (n=42) vs. Group 2 (n=42)	-8.6574	0.0000	***
Group 1 vs. Group 3	Group 1 (n=42) vs. Group 3 (n=42)	-13.8347	0.0000	***
Group 2 vs. Group 3	Group 2 (n=42) vs. Group 3 (n=42)	-11.4061	0.0000	***

*Table 7 reports the t-test analysis of statistically significant differences in monetary amount of Section 179 expenses deductions (2010-2016) between groups of C corporations as shown in Table 6. *** Statistical significance at the 0.01 level.*

From Table 6, three groups of sectors are ranked according to their monetary subtotal of Section 168(k) special depreciation allowance during the period from 2010 to 2016. Table 8 shows the statistical test of differences in monetary amount between groups of C Corporation Section 168(k) special depreciation allowance (2010 to 2016).

Table 8: Statistical Test of Differences of Groups of C Corporation Section 168(k) Special Depreciation Allowance (2010-2016)

From Table 6	Section 168(k) Special Depreciation Allowance (2010-2016)	t-Value	p-Value	Significance (2-tailed)
Group 1 vs. Group 2	Group 1 (n=42) vs. Group 2 (n=42)	-7.5367	0.0000	***
Group 1 vs. Group 3	Group 1 (n=42) vs. Group 3 (n=42)	-10.8638	0.0000	***
Group 2 vs. Group 3	Group 2 (n=42) vs. Group 3 (n=42)	-8.6336	0.0000	***

*Table 8 reports the t-test analysis of statistically significant differences in the monetary amount of Section 168(k) special depreciation allowance (2010-2016) between groups of C corporations as shown in Table 6. *** Statistical significance at the 0.01 level.*

Results of Research Question 1 a

The authors use the data in Table 4 and the groups in Table 6 to conduct independent-sample t-tests and report the following results. An independent-sample t-test was conducted to compare the amount of Section 179 immediate expenses deductions of group one and group two from 2010 to 2016. Results of Independent-samples t-tests (2 tailed) is [$t(42) = -8.6574$ $p = 0.0000$]. A significant difference exists in the amount of Section 179 immediate expenses deductions between group one and group two from 2010 to 2016. Another independent-sample t-test was conducted to compare the amount of Section 179 immediate expenses deductions of group one and group three from 2010 to 2016. Results of the Independent-samples t-tests (2 tailed) is [$t(42) = -13.8347$ $p = 0.0000$]. A significant difference exists in the amount of Section 179 immediate expenses deductions between group one and group three from 2010 to 2016. Finally, an independent-sample t-test was conducted to compare the amount of Section 179 immediate expenses deductions of group two and group three from 2010 to 2016. Results of Independent-samples t-tests (2 tailed) is [$t(42) = -11.4061$ $p = 0.0000$]. A significant difference exists in the amount of Section 179 immediate expenses deductions between group two and group three from 2010 to 2016.

Results of Research Question 1 b

The authors use the data in Table 5 and the groups in Table 6 to conduct independent-sample t-tests and report the following results. An independent-sample t-test was conducted to compare the amount of Section 168(k) special depreciation allowances of group one and group two from 2010 to 2016. Results of Independent-samples t-tests (2 tailed) is [$t(42) = -7.5367$ $p = 0.0000$]. A significant difference exists in the amount of Section 168(k) special depreciation allowances between group one and group two from 2010 to 2016. Another independent-sample t-test was conducted to compare the amount of Section 168(k) special depreciation allowances deductions of group one and group three from 2010 to 2016. Results of Independent-samples t-tests (2 tailed) is [$t(42) = -10.8638$ $p = 0.0000$]. A significant difference exists in the amount of Section 168(k) special depreciation allowances between group one and group three from 2010 to 2016. Finally, an independent-sample t-test was conducted to compare the amount of 168(k) special depreciation allowances of group two and group three from 2010 to 2016. Results of Independent-samples t-tests (2 tailed) is [$t(42) = -8.6336$ $p = 0.0000$]. A significant difference exists in the amount of Section 168(k) special depreciation allowances between group two and group three from 2010 to 2016.

Overall Results

Table 4 B shows that the subtotal of Section 179 immediate expenses is roughly between 1 percent to 2 percent of the total depreciation claimed by all C corporations in tax years from 2010 to 2106. Readers should note that between 2010 to 2016, taxpayers were only allowed to immediate expense up to a maximum of $500,000 in each tax year under Section 179. Table 5 B shows that the subtotal of section 168 special depreciation allowance is roughly between 31 percent to 47 percent of the total depreciation claimed by all C corporations in tax years from 2010 to 2106. Readers should note that between 2010 to 2016, taxpayers were only allowed to claim special depreciation allowance of up to 50 percent of the cost of qualified property in each tax year under section 168(k). Cumulatively, between 2010 to 2016, C corporations claimed between 32 percent to 49 percent of the total depreciation in each tax year from Section 179 and/or Section 168. Results shows that Section 179 and Section 168(k) are quite widespread among C corporations. Statistical analysis, as well as independent-sample t-tests, show that there is a significant difference in the monetary amount among the three groups in Table 6 for both situations of Section 179 and 168(k). The groups of sectors in Table 6 shows some interesting phenomenon. The six sectors in group one of Section 179 are not the same sectors in group one of section 168(k). For example, the utilities sector in group one of Section 179 becomes one of the sectors in group three of section 168(k).

Readers should note that tax laws before TCJA (2017), between 2010 to 2016, only a C corporation could immediately expense up to $500,000 under section 179 and deduct the 50% special depreciation allowances of the qualified properties under section 168(k) in each tax year. The utilities sector has regular large annual capital investments, which means utilities corporations can immediately expense $500,000 of capital investment and deduct 50 percent of the remaining costs of investments annually. But, not too many utilities C corporations exist which explains why the subtotal of Section 179 immediate expenses of the utilities sector is small. On the other hand, many wholesale and retail trade C corporation exist. As a result, the sector of the wholesale and retail trade rank within group three in both categories of Section 179 and 168(k).

Illustrative Case Examples of Suggested Tax Strategies

Unfortunately, the IRS has yet to published "IRS Corporation Depreciation Data" of 2017, 2018, and 2019. As a result, the authors cannot analysis how tax laws changes affect the pattern of depreciation expenses between pre and post TCJA (2017). Nevertheless, the authors have discussed this issue with multiple business owners and based on these interviews the following real-life numerical case examples were developed to illustrate tax strategies responding to the unique requirements for deductions under Section 168(k), 179 and 274. Of course, each business has its own unique tax situation, and it is difficult to suggest a one-size fits all tax strategy for all business tax situations. For discussion purposes, this paper's case examples make the following simplifying assumptions: (1) the taxpayer in each of the cases is a C corporation entity called Challah, (2) the C corporation is not an enterprise zone business, (3) the C corporation is not subject to Section 163(j) interest deduction limitation only because of its small size of gross receipts (4) the C corporation has a large enough business income to absorb all the amount of Section 179 immediate expense deduction, (5) the C corporation does not have any carryover qualified Section 179 real property deductions from prior years, (6) the C corporation does not have any carryover net operating losses, and (7) the C corporation would like to reduce its potential Federal corporation tax labilities by deducting the maximum amount under Section 168(k), 179 and 274 simultaneously. Readers should check with local State tax authority in regards to adoption of Section 179 deductions. For example, in the State of California, the California's maximum dollar limitation for the Section 179 deduction is $25,000 and the threshold amount for property placed in service in the current year is $200,000. The State of California does not conform to the new Section 168 rules. California provides its own set of depreciation rules and requires modification for bonus depreciation deducted at the Federal level under Section 168.

<u>Case #1 – Entertainment, Business Meals, Food and Beverages for Employees (Strategies #8, 9, And 10)</u>

During 2019, Challah Corporation paid (1) a $5,000 sport club membership fee, (2) a $800 skybox rental, (3) $2,000 for sporting event tickets, (4) $12,000 for a suite rental in a vacation resort, (5) $56,000 in business meals purchased separately, (6) $2,500 in gifts of $25 to one hundred business associates, (7) $48,000 for the cost of operating an eating facility for employees, (8) $10,800 for food and beverages *de minimis* fringe benefit, (9) $1,450 for office holiday parties, and (10) $680 for annual picnics. Challah had met all the conditions required to deduct the allowable amount under Section 274. Table 9 shows the tax-deductible amount for the mentioned above business expenses as per Section 274.

Table 9: Case #1 Deductible Amount of Entertainment, Business Meals, and Food and Beverages

Entertainment and Meal Expenses	Deducting Business Expenses	Tax Deductible
1. $ 5,000 Club Dues Membership Fees	No deduction	$0
2. $ 800 Skybox Rental	No deduction	$0
3. $ 2,000 Sporting Event Tickets	No deduction	$0
4. $12,000 Suite Rental in Vacation Resort	No deduction	$0
5. $56,000 Business Meals Purchased Separately	Deduct 50% of the costs of business meals if taxpayer or an employee is present and the food or beverages are not considered lavish or extravagant	$28,000
6. $ 2,500 Gift of $25 each to 100 associates	Deduct 100%	$ 2,500
7. $48,000 Costs of Furnishing Employees' Meals	Deduct 50% of the costs (nondeductible after 2025)	$24,000
8. $10,800 Food and Beverages *De Minimis* Fringe Benefit	Deduct 50% of the cost (if expenses excludable from Employee income as fringe benefit)	$ 5,400
9. $ 1,450 Office Holiday Parties	Deduct 100% of the cost	$1,450
10. $ 680 Annual Picnics	Deduct 100% of the cost	$ 680

Table 9 shows the amount Challah can deduct in 2019 for business meals, gift, employee's meals, fringe benefit, office parties, and picnics.

<u>Case #2 – Manufacturer Placed in Service MACRS Property of 20 Years or Less (Strategies #4, 5, and 6)</u>

Challah Corporation is a manufacturer of electric motors. Challah Corporation has a factory building which does not require frequent qualified property improvement. But, Challah Corporation needs regular replacement of machineries to keep up with changes in the production of advanced models of electric motors. During 2019, Challah Corporation acquired and placed into service $3,000,000 of Section 179 property for use in its manufacturing business (all assets are 7-year MACRS assets). Challah Corporation wants to recover the entire $3,000,000 by electing Section 179 immediate expense first then Section 168(k) additional first-year depreciation. The $3,000,000 tangible personal property, placed in service during 2019, exceeds the phase out amount of $2,550,000 stipulated under Section 179 in 2019. The maximum amount that Challah can immediately expense, under Section 179 in 2019, is only $570,000 due to the phase out deduction of $450,000. But Challah Corporation can elect Section 168(k) additional first-year depreciation to recover the remaining cost $2,430,000 of the 7-year MACRS assets acquired and placed in service during 2019. Table 10 illustrates full recovery of $3,000,000 in 2019.

Table 10: Case #2 Cost Recovery of $3,000,000 (7-Year MACRS Assets) Under Section 179 and 168(k)

Description	Amount	Calculation
7-Year MACRS Assets Placed in Service	$3,000,000	
2019 Section 179 Phase Out Amount	$2,550,000	
Amount exceeded Phase Out Amount	$ 450,000	($3,000,000 - $2,550,000) = $450,000
Maximum Section 179 Deduction	$ 570,000	($1,020,000 - $ 450,000) = $ 570,000
Electing Both Section 179 and 168(k)		
Section 179 Expense	$ 570,000	
Additional first-year depreciation	$2,430,000	($3,000,000 - $ 570,000) = $2,430,000
Total Cost Recovery Deduction	$3,000,000	($2,430,000 +$ 570,000) = $3,000,000

Table 10 shows how recovery of $3,000,000 cost of 7-year MACRS assets placed in service during 2019 under Section 179 and 168(k).

Case #3 Hotel Qualified Improvement Property, Property Furnishing Lodging (Strategies #1, 2, 3, and 7)

Challah Corporation operates a hotel near a metropolitan international airport. Challah Hotel, located in a single building, has 279 air-conditioned rooms featuring flat-screen televisions. Customers enjoy a complimentary continental breakfast and 24 hours roundtrip complimentary airport shuttle. Challah Hotel has a roof-top swimming pool, a fitness center, an indoor parking lot, and a small restaurant. Section 179 which allows immediate expense of qualified property improvement and property used predominately to furnish lodging, is potentially very beneficial to Challah Hotel. Due to heavy customer traffic, Challah Hotel requires frequent qualified property improvement to the interior of the building. Beds and furniture for use in the hotel's room also need constant upgrade. Challah Hotel also needs an enhanced computer system to prevent hacking and to coordinate the management, marketing, and occupancy rates of the hotel.

In order to evaluate the tax impact of alternative strategies and fully utilize the maximum amount of $1,020,000 (that a taxpayer can expense immediately under Section 179 in 2019), Challah Hotel proactively plans its tax strategy. Challah Hotel's tax strategies are to ensure that: (1) the total amount of qualified property placed during 2019 does not exceed $2,550,000 which is the maximum amount allowed under Section 179 in 2019, (2) Challah Hotel can expense immediately $1,020,000 by avoiding any phase out deduction, (3) Challah Hotel can recover all the cost of qualified improvement property placed in service during 2019 in the same year, and (4) Challah Hotel can also recover all the cost of MACRS property under 20 years or less placed in service during 2019 in the same year by electing both Section 179 and 168(k). During 2019, Challah Corporation acquired and placed in service (1) $178,000 qualified improvement property of the interior of the hotel's building; (2) $125,000 improvement cost of the hotel's roof, (3) $83,000 improvement cost of the hotel's heating, ventilation, and air-conditioning property; (4) $46,000 improvement cost of the hotel's fire protection and alarm systems; (5) $27,000 improvement cost of hotel's security systems; (6) $76,185 Lincoln 2019 Navigator SUV; (7) $480,000 cost of property used predominately to furnish eighty hotel rooms; (8) $18,600 hotel's office equipment (7-Year MACRS assets); (9) $250,000 information systems including computers, peripheral equipment and data handling equipment (5-Year MACRS assets). Challah Hotel has met all the requirements for deduction as stipulated in Section 179 and 168(k) for all mentioned above costs. By electing Section 179 immediate expense first and the additional first-year depreciation of Section 168(k), Challah can recover all the mentioned above costs in 2019 as shown in Table 11.

Table 11: Case #3 Cost Recovery of Property Placed in Service Under Section 179 and 168(k)

Description	Amount	Calculation
Section 179 Expense		
1. Qualified Improvement Property (Interior of Hotel Building)	$ 178,000	
2. Improvement Cost of Hotel's Roof	$ 125,000	
3. Improvement Cost of Hotel's Heating, Ventilation and Air Conditioning	$ 83,000	
4. Improvement Cost of Hotel's Fire Protection and Alarm Systems	$ 46,000	
5. Improvement Cost of Hotel's Security Systems	$ 27,000	
6. Cost of Lincoln 2019 Navigator SUV $76,185	$ 25,500	2019 Section 179 SUV $25,500
7. Property Used Predominately to Furnish Hotel's Rooms	$ 480,000	
8. Hotel's Office Equipment (7-Year MACRS assets)	$ 18,600	
9. Hotel's Information Systems (5-Year MACRS assets)	$ 36,900	
Total Section 179 Expense	$1,020,000	2019 Ceiling of Section 179
Additional First-Year Depreciation		
Lincoln 2019 Navigator SUV	$ 50,685	($ 76,185 - $25,500) = $50,685
Hotel's Information Systems (5-Year MACRS assets)	$ 213,100	($250,000 -$36,900) = $213,100
Total Cost Recovery Deduction	$1,283,785	

Table 11 shows how Challah Hotel recovers $1,283,785 of various business expenses.

Several reasons exist which explain why Challah Hotel would like to recover, in the same year, all the costs of qualified improvement property placed in service during a tax year. First, Challah Hotel is generating taxable income in 2019 and in the imminent future years. However, hotel industry undergoes boom and bust. Challah Hotel will like to renovate during booming years since Section 179 immediate expense deduction is subject to business income limitation. Secondly, there is always a need of Challah Hotel to renovate the interior of the hotel building and to refurnish some hotel's rooms annually. Section 179 has been generously allowing $1,020,000 in 2019 and in the future tax years for Challah Hotel to expense immediately for property placed in service such as: qualified improvement property; costs of improvement to roofs, ventilation systems; and costs of property used predominately for furbishing lodging. Thirdly, Section 168(k) additional first-year depreciation is temporary and will no longer be available after 2026. Therefore, Challah Hotel has to plan strategically in compliance of Section 179 deduction; while maximizing the usage of Section 168(k) additional first-year depreciation simultaneously.

CONCLUDING COMMENTS

Tax laws such as Section 179 and 168(k) have stringent requirements for taxpayers to comply with before taxpayers can elect for immediate expenses or additional first-year depreciation. This paper contributes to the literature by providing readers with the latest update of the changes to Sections 179, 168(k) and 274. For example, The Coronavirus Aid, Relief, and Economic Security (CARES) Act of 2020, now allows taxpayers to also elect additional first-year depreciation deduction for qualified improvement property. Through statistical analysis of "IRS Corporation Depreciation Data" from 2010 to 2016*,* this paper reports the following findings: (1) cumulatively, between 2010 to 2016, C corporations claimed between 32 percent to 49 percent of the total depreciation in each tax year from Section 179 and/or Section 168, (2) the above mentioned results suggest that Section 179 and Section 168(k) are quite popular among C corporations, (3) results of independent-sample t-test shows that there is a significant difference in the monetary amount between the three groups of business sectors in both Section 179 and 168(k) scenarios, (4) groups in the data sets of Section 179 and 168(k) comprise of different business sectors depending on the nature of business operations and the ease of entry into the business sector.

This paper contributes to the literature by suggesting ten strategies to readers for maximizing deductible business expenses under Sections 168(k), 179 and 274. To operationalize the ten strategies discussed in this paper, the authors provide three real-world cases embedded with fictitious numbers for illustration purposes. These cases illustrate that Section 179 and 168(k) have different incentives to encourage taxpayers to incur capital expenditures. For example, capital intensive manufacturers favor Section 168(k) while hotel operators favor Section 179. The authors admit several limitations of the paper. Each taxpayer or business has different unique situations. The ten strategies and the three cases mentioned in this paper may not be applicable to every tax situation. Further, when a taxpayer prepares a tax return the taxpayer must comply with a myriad of IRC sections not just Section 168(k), 179 and 274 as discussed in this paper. Many future research opportunities exist. The authors are in the process of providing strategies to readers on other tax topics introduced by the TCJA 92017) such as qualified business income deduction.

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IMPACT OF SOFTWARE EXPENSES ON FINANCIAL STATEMENTS AND CAPITAL RATIOS IN THE FINANCIAL SECTOR EMPIRICAL: EVIDENCE FROM GERMANY AND AUSTRIA

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ABSTRACT

In a world of digital technologies, software solutions become increasingly important for financial institutions and the amount of expenses for intangible assets are increasing. However, expenses for digital financial technologies are capitalized only if the requirements of the International Financial Reporting Standards (IFRS) are met. Even if the expenses for digital financial technologies are capitalized, for calculating Key Performance Indicators (KPIs) under the Capital Requirements Regulation (575/2013) (CRR), the capitalized intangible assets must be deducted from Common Equity Tier 1 (CET1) capital as a prudential filter. This deduction leads to a reduction of capital ratios and therefore to a disadvantage for financial institutions with investments in software solutions. In June 2019, the European Parliament amended regulations of CRR so that in the future capitalized software as intangible assets will not be deducted from the CET1 capital. This paper examines the impact of this amendment on the capital ratios of German and Austrian firms classified as other-systemically important institutions (O-SIIs). The paper shows the growing relevance of software capitalization in the financial sector. However, based on the 2018 data, the impact of the amendment on capital ratios is not material for German and Austrian financial institutions.

JEL: G21, G38, M41, M48

KEYWORDS: Intangible Assets, Software, Digitalization, Capital Ratio, CRR, IFRS

INTRODUCTION

Financial institutions are dependent on digital financial technology and software solutions to deliver value to their customers, reach higher performance levels (Cuesta et al., 2015; Lu et al., 2010; AFME, 2018; Hassani et al., 2018) and to compete with FinTech companies. FinTech companies offer financial services providing customer-oriented solutions in the most efficient way, with the lowest cost possible. FinTech firms focus on payment-related services, wealth management, peer-to-peer lending and ensuring this via innovation and technologies. These innovations and technologies change the behavior of customers and the understanding of financial services (Vasiljeva & Lukanova, 2016). Changing habits of customers are forcing financial institutions to use digital technologies to compete with FinTech companies (Cuesta et al., 2015). Digitalization will not only change the nature of interaction with the client, it will also facilitate implementation and embedding of regulatory requirements in the fight against fraud (Sharma & Panigrahi, 2013) and cybercrime.

For financial institutions, investment in intangible assets, such as software, are indispensable to compete and to increase returns. However, the IFRS and the CRR (European Parliament 26/06/2013) do not reflect returns of digital technologies and software solutions. This is especially the case with internally generated intangible assets, where the recognition requirements under IAS 38 are strict. Because of these stricter regulations under the IFRS, financial institutions with internally generated software do not report the value of these intangible assets on their balance sheets. These accounting regulations reduce the book value of the equity.

Even if internally generated software solutions fulfill the requirements for recognition as an intangible asset under IAS 38, for the calculation of the KPIs such as capital ratios, capitalized intangible assets are deducted from the numerator CET1, which leads to decreasing KPIs. The calculation of capital ratios is based on CRR. Consequently, the recent CRR amendment changes the treatment of intangible assets, such as software, for the calculation of the capital ratios (European Parliament 20/05/2019). The intention of the new CRR regulation for these KPIs is to treat tangible and selected intangible assets, such as software, equally in future. The non-deduction of capitalized software in the balance sheet, will lead, in the future, to increased capital ratios of the financial institutions. At the same time, tangible assets and intangible asset 'software', are treated equally within calculation of the KPIs 'capital ratios'.

The aim of this paper is to examine the impact of capitalized intangible assets, especially capitalized software, in the IFRS financial statements. We further examine the development of investments in intangible assets, especially software, over time. Our paper also describes the impact of the CRR amendment on capital ratios of German and Austrian O-SIIs. Thus, this paper supports European companies as well as users of the IFRS financial statements and CRR Pillar III reports, auditors, financial analysts, and investors, the first evidence of these expected effects. It also supports and improves the discussion about existing accounting and prudential regulations in the field of financial institutions.

The remainder of this paper is organized as follows. The next section describes the accounting regulations of IAS 38 concerning the recognition of intangible assets in the IFRS financial statement, we discuss current CRR regulations as well as the amendments of CRR regarding software as a prudential filter and the calculation of capital ratios. We then describe our data and methodology and discuss the results of our findings. The final section concludes.

LITERATURE REVIEW

Intangible Assets Under the IFRS

According to IAS 38.8 an intangible asset is defined as an identifiable non-monetary asset without physical substance (IASB, 2019). With reference to the same paragraph, an asset is a resource that is controlled by the entity because of past events, and it is expected that future economic benefits will flow to the entity. These benefits may lead to revenue from the sale of products or services, cost savings or other benefits, because of the use of the asset (KPMG IFRG Limited, 2018).

To report expenditures as an intangible asset on the balance sheet, the company must prove that the expenditures meet the definition of an asset and further requirements. In this context, IAS 38.21 requires that such items can show the probability that future economic benefits will flow to the entity and that the costs of the assets can be measured reliably. For the recognition of intangible assets on the balance sheet, IAS 38 distinguishes between separate acquisitions, acquisitions as part of a business combination and internally generated intangible assets.

For internally generated intangible assets, strict requirements prohibit in many cases the capitalization of intangible assets. IAS 38.51 sets out additional recognition requirements because of problems in identifying whether and when, there is an identifiable asset that will generate expected future economic benefits and in determining the cost of the asset reliably. For the recognition of internally generated intangible assets, the entity must classify the generation of the asset into a research and development phase. According to IAS 38.8, research is defined as an 'original and planned investigation undertaken with the prospect of gaining new scientific or technical knowledge and understanding'. Development is defined as 'the application of research findings or other knowledge to a plan or design to produce new or substantially improved materials, devices, products, processes, systems or services before the start of commercial production or use'. Whilst expenditures in the research phase shall not be recognized, those in the development phase must be recognized when an entity can demonstrate all of IAS 38.57 (a—f).

For tangible assets such as property, plant and equipment (PPE), IFRS does not differentiate between acquired and internally generated assets. According to IAS 16.22, the cost of an internally generated tangible asset is determined using the same principles as for acquired tangible assets. To recognize internally generated tangible assets under IAS 16 (PPE), only the probability of a future economic benefit concerning the expectation of an inflow and reliable measurement is necessary. This corresponds with the requirements of recognizing acquired intangible assets under IAS 38. However, under IAS 16, no further requirements must be fulfilled for internally tangible assets such as PPE. The requirements for recognition of internally generated tangible assets are therefore considerably lower than for intangible assets, such as software.

The objective of the IFRS is to provide information that is useful for decision-making. One major question should be, does the capitalization of internally generated intangible assets under the rules of IAS 38, meet the criteria of decision usefulness? If intangible assets are not reported on the balance sheet, investors and analysts have to devote relatively more time to measure the value of intangible assets (Barth et al., 1997) and therefore it drives a wedge between the market value and the book value of the equity (Brynjolfsson et al., 2002). Penman (2009) points out that the omission on the balance sheet is not necessarily a deficiency and the value of intangible assets can be ascertained from the income statement. However, the recent study of Barth et al. (2018) proves the value relevance of capitalized intangible assets on the balance sheet. In this study, Barth et al. (2018) concluded, that by improving the accounting for intangible assets, the financial statements would include key inputs to the assessment of growth opportunities of investors, which could increase the relevance of accounting information. In summary, the literature points towards an economic impact and the decision usefulness of capitalized expenses of internally generated intangible assets, such as software.

Intangible Assets Under CRR

The rules for calculating the KPIs 'capital ratios' are laid down in the CRR, which represents the transposition into European law of the Basel III standard. The capital standards and capital buffers under CRR, require banks to hold more and higher quality capital, to ensure that adequate funding is maintained in the case of a crisis. Therefore, capital ratios have been a valuable regulatory tool for the assessment of stability for a long time. For example, Chiaramonte & Casu (2017) found empirical evidence that capital ratios play a complementary role in fostering bank stability for the larger financial institutions.

Article 92 CRR defines own funds requirements for financial institutions and includes definitions of Common Equity Tier 1, Additional Tier 1, Total Capital as well as Risk-weighted Assets. Common Equity Tier 1 (CET1) capital includes paid-up capital and its associated share premium accounts, retained earnings, accumulated other comprehensive income, other reserves as well as funds for general banking risk. CET1 capital must be available to the institution for unrestricted and immediate use, to cover risks or losses as soon as they occur. Additional Tier 1 (AT1) capital consists of paid-up capital instruments and their associated share premium accounts and are issued as hybrid debt instruments (contingent convertibles), which are able to be written down or converted to CET1 instruments, upon the occurrence of a trigger event. T1 capital is the sum of CET1 and AT1 capital. Tier 2 (T2) capital consists of capital instruments and subordinated loans and associated premium accounts. The claim on the instrument or loan must be wholly subordinated to the claims of all non-subordinated creditors and should not be secured or subject to a guarantee that enhances the seniority of its claim. Total capital for an institution is the sum of its T1 and T2 capital. Additionally, CET1, AT1 and T2 capital is reduced by prudential filters. For more details, see Articles 26 et seq. of the CRR. Risk-weighted Assets are the accounting value of the financial institution's assets and credit exposures, according to an assessment of the potential to suffer loss of each exposure. Financial institutions can calculate risk-weighted exposures using either the Standardized Approach or the Internal Ratings-Based (IRB) approach. For more details, see chapter 2 and 3 of the CRR. For these financial institutions, the minimum CET1 capital ratio, Tier 1(T1) capital ratio and Total Capital (TC) capital ratios are defined.

Article 92 (2) CRR defines the capital ratios as follows:

> The CET1 capital ratio is the CET1 capital of the institution expressed as a percentage of the total risk exposure amount.
>
> The T1 capital ratio is the T1 capital of the financial institution expressed as a percentage of the total risk exposure amount.
>
> The TC capital ratio is the TC capital of the financial institution expressed as a percentage of the total risk exposure amount.

Currently, capital ratios do not reflect the profitability associated with the competitive factor 'digitalization' (Cuesta et al., 2015). According to current regulations of Article 36 (1b) of the CRR, intangible assets capitalized on the balance sheet must be deducted from the CET1 capital. The regulation ensures that software expenses that do not meet the criteria under IAS 38 and are therefore recognized on the income statement are treated equally to software expenses that are capitalized on the balance sheet. In both cases, the CET1 capital is reduced. When recorded on the income statement, retained earnings are reduced as part of equity and therefore also the CET1 capital. Even in this case, where the criteria to capitalize intangible assets according to IAS 38 are fulfilled, financial institutions must deduct the amount of capitalized intangible assets from the CET1 capital. Consequently, financial institutions investing in software solutions show lower capital ratios than financial institutions that do not make such investments in digitalization. As shown above, investments in software are essential for financial institutions, but the regulations lead to a disadvantage for financial institutions investing in software (AFME, 2018).

However, Article 36 (1b) CRR was amended in 2019, so that software assets capitalized on the balance sheet, shall not be deducted from the CET1 capital as a prudential filter any longer and are treated equally to tangible assets. The amendment considers the evolution of the financial sector in the era of digitalization. Furthermore, in other jurisdictions such as the USA, investments in software are not deducted from the CET1 capital. However, software expenses that do not fulfil the criteria of capitalization on the balance sheet, still reduce retained earnings and therefore the CET1 capital. In addition, even if the amount of capitalized software is not deducted from the CET1 capital as a prudential filter, the amount of software expenses capitalized on the balance sheet will be reduced via depreciation and potential impairments. Therefore, the CET1 capital will be reduced over the useful life of the software. The amount reduced over the useful life of the software (cumulative depreciation and impairments) equals the actual deduction of the prudential filter from the CET1 capital.

Moreover, the term 'software' covers many different types of intangible assets. Therefore, the European Banking Authority (EBA) shall develop regulatory technical standards to specify the term 'software', which seems to be a synonym for digital technologies. The amendment of Article 36 (1b) CRR shall apply from twelve months after the date of entry into force of the regulatory technical standards. The earliest this could be, is by 2021.

DATA AND METHODOLOGY

This study provides a detailed descriptive overview and quantifies the impact in practice using data from German and Austrian financial institutions. The list of O-SII institutions included in this study follows the European Banking Authority (EBA) Guidelines on the criteria for the assessment of O-SIIs – pursuant to Article 131 (3) of Directive 2013/36/EU and was downloaded from the EBA official website (European Banking Authority, 2018).

As Table 1 shows the study consists of twenty financial institutions, divided into six 'Systematically Important Institutions' (SIIs) and fourteen 'Other Systemically Important Institutions' (O-SIIs) of the EBA O-SII list of 2018. Due to their systemic importance, these financial institutions may bring negative externalities into the system and contribute to market distortions. Therefore, it is also expected that an impact on KPIs such as the capital ratios, would cause a market reaction.

Table 1: Sample Selection

SIIs*	
Austria	1
Germany	5
O-SIIs**	
Austria	6
Germany	8
Sample size	**20**

*Based on the EBA O-SII list, table 1 includes all German and Austrian SIIs and O-SIIS included in the study. *SIIs means 'Systemically Important Institutions' and ** O-SIIs means 'Other Systemically Important Institutions.'*

To examine the relevance of capitalized software expenses, we collected relevant data from the balance sheet and disclosures of the years 2013 to 2018 published on the website of the financial institutions included in the study. To show the relevance of capitalized software over the years 2013 to 2018, we analyzed 120 financial statements. As under IFRS, capitalized software is not shown in the balance sheet, we analyzed the IFRS notes. Furthermore, we analyzed whether capitalized software as internally generated or acquired. However, not all financial institutions provided the information necessary in the IFRS notes. Therefore, we observed 142 data over the period 2013 to 2018.

To calculate the impact on capital ratios in the year 2018, we used data from the Pillar III reports of the selected financial institutions. Therefore, we analyzed 15 Pillar III reports. The study includes only Pillar III data for financial institutions which provided the information about software expenses capitalized. We collected the data of Total Risk-weighted Assets, Common Equity Tier 1, Additional Tier 1, Total Capital and observe 60 data from the Pillar III reports of the year 2018.

Methodology of the Empirical Research

The following study is characterized as a deductive analysis, which means that hypotheses introduced will be confirmed or rejected. Descriptive deviation analysis is elected as the methodology, whereby KPIs, such as the CET1, T1 and TC capital ratio are calculated twice. For actual ratios, we collected by hand the capital ratios published in the Pillar III report of the financial institutions. Based on the actual capital, we calculated the fictitious capital ratios. The calculation of fictitious capital ratios includes that software is recognized and therefore not deducted as a prudential filter from the CET1 capital. Whereas, under the actual CRR treatment, software is deducted as a prudential filter from the CET1 capital. To calculate the CET1, T1 and

TC capital under the CRR amendment of Article 36 (b) of the CRR, the amount of capitalized software disclosed in the financial statements is added to calculate the fictitious CET1, T1 and TC capital.

Furthermore, we added the amount of capitalized software to the total risk-weighted assets. Therefore, the denominator 'total risk-weighted assets' is adjusted. Accordingly, we risk-weighted the software such as PPE, which means that the capitalized software on the balance sheet is risk-weighted as 100% in the denominator. In addition, the calculation does not include adjustments to thresholds due to the lower CET1 capital. The capital ratios are calculated as follows:

CET1 capital ratio$_{CRR}$ = CET1 capital$_{CRR}$/total risk-weighted assets$_{CRR}$
CET1 capital ratio$_{fictitious}$ = (CET1 capital$_{CRR}$ + software$_{capitalized}$)/ (total risk-weighted assets$_{CRR}$ + software$_{capitalized}$)
T1 capital ratio$_{CRR}$ = T2 capital$_{CRR}$/total risk-weighted assets$_{CRR}$
T1 capital ratio$_{fictitious}$ = (T2 capital$_{CRR}$ + software$_{capitalized}$)/ (total risk-weighted assets$_{CRR}$ + software$_{capitalized}$)
TC capital ratio$_{CRR}$ = TC capital$_{CRR}$/total risk-weighted assets$_{CRR}$
TC capital ratio$_{fictitious}$ = (TC capital$_{CRR}$ + software$_{capitalized}$)/ (total risk-weighted assets$_{CRR}$ + software$_{capitalized}$)

Abbreviations:

CET1 = Common Equity Tier 1
CRR = Actual amount recorded in CRR
Fictitious = Amount calculated according to the amendment of CRR
T1 = Tier1
TC = Total Capital

For the fictitious calculation of the capital ratios, only the amount of intangible assets can be seen directly on the balance sheet. The amount of software expenses capitalized within the financial position of 'intangibles assets' is a disclosure in the notes of the IFRS financial statements. However, these disclosures depend on the level of detail a financial institution provides. A high level of detail means internally generated and acquired software are disclosed in the notes of the financial statements of the financial institutions. In the case of a low level of detail, explanatory information about capitalized software is missing. Therefore, in cases with a low level of detail, the calculation of fictitious capital ratios is not possible.

The aim of the study is to answer the following questions:

1) What is the impact of the increasing digitalization on the amount of intangible assets capitalized (especially software) in the financial statements of Austrian and German financial institutions?

2) Based on the financial statements of Austrian and German financial institutions, are intangible assets (especially software) getting more relevant over time than tangible assets?

3) What are the quantitative impacts that the amendment of Article 36 (1b) of the CRR has on KPIs such as capital ratios, i.e. what is the impact of the non-deduction of software on the CET1, T1 and TC capital ratio?

<u>Development of Hypotheses</u>

IAS 1.9 states that '…the objective of financial statements is to provide information about the financial position, financial performance and cash flows of an entity that is useful to a wide range of users in making economic decisions. We expect that the digitalization affects financial positions such as intangible assets

and consequently, key financial ratios such as capital ratios material. In the accounting literature, an annual increase in a financial position of more than 5 percent is defined as material. An annual increase of 5 percent over the period 2013 to 2018 would cause an increase of about 28 percent. Therefore, we analyze whether there has been a material increase of more than 28 percent for capitalized software over the last five years.

According to our research questions, we checked the following hypotheses:

H1: For German and Austrian O-SIIs, the average amount of capitalized software increases material over the period 2013 to 2018.

Moreover, the study analyzes the development of investments of tangible assets and software. An investment in tangible assets or software is assumed, if the carrying amount of software or the financial position PPE increases.

H2: Over the period 2013 to 2018, for German and Austrian O-SIIs, the investment in software increases on average more than in tangible assets.

The study also indicates how the amendment of Article 36 (1b) CRR influences capital ratios. To strengthen the regulation of the financial institutions, the new regulations for calculation capital ratios came into force on 1st January 2014, however, with various transitional arrangements applying until 2019. Because of these transitional arrangements, we compare the latest capital ratios available.

H3: The amendment of Article 36 (1b) CRR changes capital ratios of German and Austrian O-SIIs by more than 5 percent in 2018.

RESULTS AND DISCUSSION

Based on the data of the twenty financial institutions in the sample, the proportion of intangible assets on the balance sheet total remains relatively stable over the period 2013 to 2018. The relation of the financial position 'intangible assets' to equity is not material for the majority. The impact on equity is only material in 2013. The results also show that on average there is a decline in the materiality of intangible assets in comparison with equity, whilst half of the institutions have a proportion of intangible assets on equity of less than 1.9 percent over the period 2013 to 2018. However, results show that the proportion of intangible assets in comparison with equity is on average higher than 5 % over the years 2013 to 2018 for SIIs. Whereas these results depend on the high amount of capitalized intangible assets in three SIIs. Based on the data of 2018, the proportion of intangible assets on equity is 14.63 percent in the Deutsche Bank AG, 11.04 percent in the Commerzbank AG and 7.99 percent in the Erste Group Bank AG.

Even according to the significance of the institution, or according to the country, the intangible assets decrease on average over the years. However, as mentioned above, the capitalized intangible assets also include goodwill, brand names and customer relationships, which are not necessarily related to digitalization. In many cases, for example the Deutsche Bank AG (9,074 million Euros in 2013 to 3,876 million in 2018 Euros), the capitalized goodwill decreases sharply.

To show the increasing significance of intangible assets caused by digitalization, we analyzed the capitalized software as an intangible asset. Therefore, we analyzed the carrying amount of software disclosed within the Notes of the IFRS financial statements. In 2018, fifteen of the twenty German and Austrian financial institutions disclosed the amount of software in the Notes. For the financial institutions, which show the amount of capitalized software, the amount rises constantly. The average amount of capitalized software is 348 million Euros on average in 2013 and 547 million Euros in 2018. This includes an average increase of 57.19 percent over the period 2013 to 2018 and H1 is confirmed. Results also indicate that the amount of capitalized software in SIIs increases sharply. Figures show an average increase in software of 93.29 percent in SIIs over the period 2013 to 2018. There is a gradual annual increase of more than 10 percent over the period 2013 to 2017 and even from 2017 to 2018, there is an average annual increase of 2.62 percent. These figures may be an indicator that SIIs started to invest in digitalization much earlier than O-SIIs and have recognized the importance of.

The figures in Table 2 also prove that the carrying amount of software generated internally, is on average higher than the carrying amount of software acquired. Furthermore, while the carrying amount of software generated internally increases on average by 109.09 percent over the period 2013 to 2018, the amount of software acquired decreases on average about 5.30 percent. In only two of the financial institutions, the amount of capitalized software is equal to software acquired and software is not internally generated. The results also show the high importance of internally generated software and a material increase over the period 2013 to 2018 in SIIs. For example, the amount of internally generated software in the Deutsche Bank AG is 97.6 percent (4,372 million Euros) of the total amount of capitalized software (4,481 million Euros).

Table 2: Descriptive Statistics on the Total Carrying Amount of the Software Internally Generated and Software Acquired

Software Internally Generated in Million Euros						
	2013	**2014**	**2015**	**2016**	**2017**	**2018**
n*	10	11	12	12	11	11
Number of SIIs and O-SIIs included						
SIIs	6	7	8	8	7	7
O-SIIs	4	4	4	4	4	4
Mean	264	312	349	424	524	552
Std. Deviation	552	702	843	1,050	1,176	1,250
Maximum	1,867	2,466	3,064	3,817	4,110	4,372
Impact according to the significance of the institution						
SIIs		material	material	material	material	material
O-SIIs		immaterial	immaterial	immaterial	immaterial	Immaterial
Software Acquired in Million Euros						
	2013	**2014**	**2015**	**2016**	**2017**	**2018**
n**	11	12	13	13	13	13
Number of SII-S and O-SIIs included						
SIIs****	6	7	8	8	7	7
O-SIIs******	4	4	4	4	4	4
Mean	151	134	129	136	147	143
Std. Deviation	157	144	150	153	165	156
Maximum	464	422	411	423	466	424
Impact according to the significance of the institution						
SIIs		immaterial ***	material****	material	material	immaterial
O-SIIs		immaterial	immaterial	material	material	immaterial

*Based on the data for the years 2013 to 2018, Table 2 points out the increase of internally generated software (in million Euros) and shows that the amount of software acquired (in million Euros) decreases slightly over the years. Furthermore, the table shows the number of SIIs and O-SIIs included in the study.*n means the number of financial institutions disclosing the carrying amount of the software internally generated.**n means the number of financial institutions disclosing the carrying amount of the purchased software, ***immaterial means a yearly decline of less than 5 percent or a decrease, ****material means a yearly decline of more than 5 percent, ***** SIIs means 'Systemically Important Institutions' and ****** O-SIIs means 'Other Systemically Important Institutions.'*

Table 3 shows a decrease in investments in PPE over the total period 2013 to 2018 for SIIs and O-SIIs, even though there has been an increase of 6.79 percent on average from 2016 to 2017. However, this increase is caused by the merger of the two financial institutions Raiffeisen Bank International AG (RBI) and Raiffeisen Zentralbank AG (RZB). Without this outlier, there would be a decrease of 0.47 percent on average. As mentioned above, investments in software decreases 57.19 percent on average over the period 2013 to 2018. Even with the outlier, the average tangible assets such as PPE decrease on average by about 26.95 percent. Therefore, H2 is confirmed over the period 2013 to 2018. The figures propose a higher relevance of investments in software than in tangible assets, such as PPE. Even in SIIs the amount of PPEs decrease over the period 2013 to 2018, whereas investments in software increase sharply, as mentioned above.

Table 3: Comparison of the Development of Investments in Software and PPE in Percent

	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	Total Increase/Decrease 2013-2018
Average Decrease/Increase in Capitalised Software in Percent According to the Significance of the Institution						
SIIs*	18.06	20.26	17.79	12.62	2.62	93.29
O-SIIs**	-9.99	-4.81	12.32	1.11	4.18	1.37
Total	**-4.33**	**29.89**	**17.09**	**5.08**	**2.81**	**57.19**
Average Decrease/Increase in PPE* in Percent According to the Significance of the Institution**						
SIIs	-9.96	-3.61	-6.46	-4.21	-5.36	-26.41
O-SIIs	-4.62	-15.96	-23.82	34.71	-5.53	-22.29
Total	**-10.52**	**-8.02**	**-12.12**	**6.79**	**-5.42**	**-26.95**

*Table 3 compares the increase/decrease of software expenses capitalized and PPE over the period 2013 to 2018 for German and Austrian financial institutions. The figures show an increasing amount of software expenses capitalized. In comparison to software expenses capitalized, the amount of PPE is decreasing over the period 2013 to 2018.*SIIs means 'Systemically Important Institutions', ** O-SIIs means 'Other Systemically Important Institutions,' *** PPE means property, plant and equipment.*

This section evaluates the impact on future capital ratios caused by the amendment of Article 36 (1b) CRR. A calculation of the impact on the CET1 capital ratio, T1 capital ratio and TC capital ratio based on the data of 2018 was possible for fifteen O-SIIs.

Table 4 shows an average increase on the CET1 capital ratio of 2.36, T1 capital ratio of 2.12 and TC capital ratio 1.73 percent. The results show an impact of less than 5 percent on average. This means that the impact on capital ratios are not material. Using a deductive approach, H3 is rejected for each of the capital ratios analyzed, as the impact is less than 5 percent.

Results also show that on average the impact on capital is higher for SIIs than for O-SIIs. By analyzing the capital ratios, we find an average impact on the CET1 capital ratio of 0.31, T1 capital ratio of 0.31 and TC capital ratio of 0.39 percentage points. However, in the case of Deutsche Bank AG, the CET1 capital ratio would increase by 1.09 percentage points. With a simplified calculation, which does not consider adjustments to thresholds and without the scenario of the amendment of CRR, an increase of the CET1-ratio by 1.09 percentage points would mean, for example, an increase of retained earnings of about 3.8 billion Euros. The consolidated statement of income of the Deutsche Bank AG in 2018 shows a net income after tax of 341 million Euros. An increase of about 3.8 billion Euros would mean an 11-fold increase of net income after tax in 2018. Our findings also show that for the sample, an equivalent increase in the CET1-ratio (without the non-deduction of software expenses) would mean on average an increase of 468 million Euros. Based on the figures for 2018, the amendment of CRR will be difficult to compensate through operating activities.

Table 4: Impact of the Amendment on the Capital Ratios in Percentage Points

n*	15	15	15
	Actual CET1 Capital Ratio in Percent of 2018	**Actual T1 Capital Ratio in Percent of 2018**	**Actual TC Capital Ratio in Percent of 2018**
SII**	13.78	14.74	17.27
O-SII***	15.96	16.78	19.58
Total	15.55	16.41	19.11
	Fictitious CET1 Capital Ratio in Percent of 2018	**Fictitious T1 Ratio in Percent of 2018**	**Fictitious TC Capital Ratio in Percent of 2018**
SII	14.32	15.27	17.78
O-SII	16.16	16.98	19.77
Total	15.55	16.41	19.11
	Average Impact on CET1 Capital Ratio in Percent	**Average Impact on T1 Capital Ratio in Percent**	**Average Impact on TC Capital Ratio in Percent**
Mean	2.36	2.12	1.73
Std. Deviation	2.54	2.23	1.89
Median	0.84	0.75	0.61
Maximum	8.05	6.77	5.96
Hypothesis (H_3)	rejected	rejected	rejected

*Based on the figures in the Pillar III reports of the year 2018 and our calculation of fictitious CET1, T1, TC, Table 4 shows the average impact on capital ratios (CET1, T1 and TC) for German and Austrian SIIs and O-SIIs by not deducting software expenses capitalized as a prudential filter from CET1, which corresponds with the amendments of CRR. Furthermore, table 4 shows statistical parameters for all financial institutions included in the study. The results show an impact of less than 5 percent on average, which means that the results are not material. Based on a deductive approach, H3 is rejected as results are not material on average.*n means the number of financial institutions showing the carrying amount of the software, ** SIIs means 'Systemically Important Institutions,' *** O-SIIs means 'Other Systemically Important Institutions.'*

CONCLUDING COMMENTS

In this paper we study the relevance of software expenses capitalized in the financial sector and how the amendment of CRR to non-deduct software expenses capitalized influences the capital ratios.

Our results of the study show that the amount of capitalized software on the balance sheets of German and Austrian O-SIIs has significantly increased over the last five years and shows the increasing importance of digitalization in the financial industry. However, based on the descriptive deviation analysis, the amount of capitalized software depends on the systematic significance of the financial institutions. Therefore, the amount of capitalized software increases strongly in SIIs, while in O-SIIs the increase is only slight. This might be an indicator that in a growing digital world, SIIs recognize the importance of software more than O-SIIs.

Therefore, the amendment of CRR is a step forward in compensating for the disadvantage the financial institutions in the European Union had so far, through the deduction of capitalized intangible assets in the CET1 capital. Due to the amendment, financial institutions do not have to deduct capitalized software from the CET1 capital any longer. Therefore, capital ratios increase. Our findings show an average increase of the CET1 capital ratio and the T1 capital ratio by 0.31 and TC capital ratio by 0.30 percentage points. This implies an increase of the CET1 capital by 468 million Euros on average. In times of low interest rates, it is hard to compensate for such an increase by operating activities.

The paper has a limitation in the selection of the sample size and therefore in statistical evidence. In a future study, we plan to extend the sample size and provide a regression model and statistical tests. In the light of the recent amendments of the conceptual framework of the IFRS, the regulations for internally generated software should be reconsidered. Finally, further research in the field of definition and the valuation of software – as a synonym for investments in digital technologies – is necessary, to improve the decision usefulness of financial and regulatory reporting in a digital world.

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THE DIFFERENTIAL IMPACT OF PRIVATE AND PUBLIC DEBT ON ACCOUNTING CONSERVATISM

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ABSTRACT

The private and public debt markets differ in monitoring functions and covenant features. This paper empirically examines whether these differences impact accounting conservatism. Using a sample drawn from Loan Pricing Corporation's Dealscan, I find that firms report more conservatively in the years following the issuance of private debt than the years before. I also find that firms report more conservatively following initial public debt offerings (bond IPOs). However, there is no change in the degree of conservatism around seasoned bond offerings. I interpret the results as reflecting differences in monitoring functions of the private and public debt markets. The direct monitoring by private debt holders and the external monitoring including regulatory scrutiny in the context of bond IPOs are effective in enforcing accounting conservatism. The limited monitoring in the case of seasoned bonds fails to do so.

JEL: M41, M42

KEYWORDS: Accounting Conservatism, Monitoring Function of Debt, Private Debt, Public Debt

INTRODUCTION

The role of debt in financial reporting has been of great interest in the accounting literature. In this study, I differentiate the impact of private and public debt on accounting conservatism to shed light on the mechanism that drives firms' application of accounting conservatism. This research question is motivated by differences between private and public debt with respect to monitoring functions and covenant features.

Prior studies provide evidence that both private and public debt holders demand accounting conservatism (Ahmed et al., 2002; Beatty et al., 2008; Nikolaev, 2010). In addition, compared to private debt holders, public debt holders' demand for accounting conservatism might be stronger because their own monitoring is weaker and they do not have the protection of conservative covenants. On the other hand, enforcement of accounting conservatism is potentially conditional on an effective monitoring system including the use of maintenance covenants to gain control rights when situations arise, which is lacking for public debt holders. It is then an empirical question to examine whether the potentially stronger demand from public debt holders for conservatism drives more conservative reporting for firms that access the public debt market or their lack of effective monitoring fails to enforce more conservative reporting.

To identify the differential impact of the public and private debt markets on accounting conservatism, I take an incremental approach and examine the change in accounting conservatism subsequent to the issuance of new debt. Using a private debt sample drawn from Dealscan, I find that borrowing firms accelerate their recognition of bad news and delay their recognition of good news following the issuance of private debt. Using a public debt sample obtained from the SDC platinum, I do not find any change in reporting conservatism for the full sample. Because the external monitoring from the financial intermediaries such as credit rating agencies, auditors and underwriters and the regulatory scrutiny are stronger in the context of bond IPOs, I also test whether there is any difference in conservative reporting following the issuance of bond IPOs and the seasoned bond offerings. I find that firms indeed report more conservatively following the issuance of bond IPOs. The result, however, does not hold following the issuance of seasoned bonds. Overall, the results support the interpretation that the direct monitoring by private debt holders and the external monitoring in the context of bond IPOs are effective in enforcing accounting conservatism. The limited monitoring in the case of seasoned bonds fails to do so. The rest of the paper is organized as follows. The next section is the literature review and development of the hypotheses, followed by a discussion of the research design and the sample selection procedure. The last two sections present the results and conclusion.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The Debt Contracting Role of Conservatism

Several papers review various explanations for the existence of accounting conservatism (e.g. Watts 2003). Debt contracting is one of the most important. This line of research argues that debt contracting drives the existence and degree of conservatism. The debt market demands conservatism because debt holders have asymmetric payoffs – their payoffs are more sensitive to downside risk than upside gains. Consequently, debt holders are more concerned with the lower ends of the earnings and assets distributions, which are used to evaluate the creditworthiness of a business and its debt-repaying ability. Conservatism provides a timelier and more reliable estimate of the lower bound of a firm's assets-in-place. Debt holders' preference for conservatism also arises due to their concern over managers' over-optimism engendered either by compensation incentives (the management's compensation is dependent upon accounting numbers) or by corporate governance incentives (the potential to lose jobs because of poor financial performance makes the management tend to avoid reporting losses). Conservatism constrains managers from behaving opportunistically to increase their own welfare and the benefits of other claimholders.

Critics of using accounting conservatism in financial reporting to mitigate agency conflicts argue that the demand for conservatism from the debt markets can be realized through conservative adjustments to debt covenants. It is not necessary to introduce conservative bias in financial reporting. Beatty et al. (2008) consider the use of income escalator as one type of conservative adjustments to net worth covenant thresholds. Specifically, income escalator allows only a portion of positive income to increase covenant slack, but the full amount of losses to reduce covenant slack. Using a private debt sample, Beatty et al. (2008) find the use of income escalator is positively associated with conservatism in financial reporting. The result suggests that conservative adjustments in debt contracts and accounting conservatism are complements in their sample rather than substitutes. Using a public debt sample, Nikolaev (2010) finds that the reliance on covenants is positively associated with accounting conservatism, again suggesting the two are complements.

Private Debt versus Public Debt: Monitoring and Covenants

Continuous review of financial reporting is an important component of debt holders' monitoring system. They use it to evaluate the creditworthiness of a business and its debt paying ability. Many debt contracts have covenant restrictions that are also based on accounting numbers. Managers are often required to certify the accuracy of accounting information and to provide monthly or quarterly covenant compliance reports (FITCH IBCA 1999). The close monitoring of financial reporting by debt holders can then affect borrowers' financial reporting behaviors including the application of accounting conservatism. Through close monitoring, lenders can enforce more conservative reporting as borrowers take on additional debt. Borrowers have to yield to the reporting demand if their financing structure is more debt-oriented. Otherwise, they could lose credibility with lenders, which in turn jeopardizes other lending relations and future credit accessibility.

Private debt and public debt differ in their monitoring functions. First, the investor base and liquidity of the two markets affect the incentives for monitoring. Private debt holders have more incentives to monitor because the lending is concentrated and the debt is more likely to be held to maturity. In contrast, public debt is held by diffuse creditors and their incentives to engage in monitoring are weak due to the "free rider" problem (Strahan, 1999). The incentive is further reduced when there is an active secondary market and investor holding is more transient (Armstrong, 2003). Private debt holders are also more efficient in monitoring. The majority of private debt is held by banks that are monitoring experts and have better information processing ability. They also have better access to a firm's private information. They may request monthly internal financial statements. They can even require firms to provide weekly or daily updates on certain accounts (Standard & Poor's, 2009; Wittenberg-Moerman, 2009).

Private and public debt contracts also differ in the use of accounting-based debt constraints. Private debt agreements typically have more negative financial covenants. FITCH IBCA (1999) reports that their sample of leveraged bank loan agreements on average contain 20 covenants, while the same issuers' high-yield indentures have only 6 covenants on average. The financial covenants in private debt are set tightly and quarterly covenant compliance reports are required, giving private debt holders considerable control (Milken Institute, 2004). Dichev and Skinner (2002) find that private lenders set debt constraints just below the actual current value. Covenant violation occurs frequently. Such tight covenant restrictions and frequent violations of debt covenants suggest that lenders have significant power in enforcing their preferred managerial behaviors including the application of more conservative accounting. Public debt contracts, on the other hand, typically do not have financial covenants that require quarterly compliance. Even if they do, the covenants are set looser and technical violations are rare (Begley and Freedman 2004). The existence of accounting-based constraints in debt contracts, however, potentially has opposing effects on a firm's financial reporting behaviors. On one hand, it is an important part of the monitoring system a debt holder could impose; on the other hand, it gives managers additional incentives to manage earnings upward with a purpose of avoiding covenant violations (DeFond and Jiambalvo, 1994; Dichev and Skinner, 2002)

Development of Hypotheses

Based on prior research, it is unclear whether there is a change in the degree of conservatism around the issuance of private debt and if there is the direction of the change. First of all, if it is true that the debt market values conservatism and thus lowers cost of debt for firms reporting more conservatively, borrowing firms might voluntarily bond themselves to conservative reporting to reduce the cost of borrowing. It is then expected that this is done *ex ante* and borrowers will not become less conservative *ex post*. Zhang (2008) and Ahmed et al. (2002) propose that managers' concern over reputation cost constrains them from deviating from their ex ante financial reporting commitment. Therefore, there will not be a significant change in the degree of conservatism around debt issuance.

Second, the costs of being conservative might prevent firms from reporting more conservatively *ex ante*. The managers of borrowing firms might be against conservatism because (1) conservatism leads to accelerated covenant violation (Zhang 2008); (2) managers have limited horizon and their compensation is tied to their current reported levels of income (Watts 2003); (3) conservatism increases earnings volatility (Givoly and Hayn 2000) but income smoothness if preferred by managers (Graham, Harvey and Rajgopal 2005); and (4) equity holders have other reporting preferences (Ball and Shivakumar 2008). However, with an increase in the level of debt, firms become more debt-oriented and the agency conflict between debt holders and owners/managers becomes more severe. Given conservatism is a preferred reporting mechanism for the debt market, *ex post* debt holders might force firms to report more conservatively through their monitoring mechanism, although borrowers might have other reporting preferences. This hypothesis assumes that the debt market has an effective monitoring and enforcement mechanism.

Third, the debt covenant hypothesis suggests that firms might also report less conservatively following debt issuance. Because the probability and cost of covenant violation are higher for firms with an increase in their debt level, firms have more incentives to make income-increasing accounting choices to avoid covenant violation, which is in direct contrast with conservatism that delays recognition of gains and accelerates recognition of losses when uncertainty is involved.

The private debt market has a strong monitoring function including the use of accounting-based covenants, but on the other hand, the existence of accounting-based constraints is more prevalent in private debt contracts and therefore the debt covenant hypothesis is more relevant. It is an empirical issue then to investigate whether there is a change in the degree of conservatism around the issuance of private debt, and if there is, which direction the change is. I present the following hypothesis in the null form:

> *H1: There is no change in a firm's conservative reporting following the issuance of private debt.*

The monitoring function of the public debt market is weaker. The external monitoring from financial intermediaries such as rating agencies is also expected to be weaker than direct monitoring from banks. Therefore, if it is indeed the monitoring function of the debt market that makes borrowers report more conservatively, I expect the change toward being more conservative following debt issuance to be weaker for the public debt sample, hence the following hypothesis:

> *H2: Any change towards being more conservative in financial reporting is weaker for firms getting public debt than firms borrowing from the private debt market.*

There are also significant differences between bond IPOs and seasoned bond offerings. The external monitoring from rating agencies, auditors and underwriters are expected to be stronger for initial bond offerings than subsequent bond issuance. The initial issuance is also subject to more regulatory scrutiny. Therefore, I expect the impact of bond IPO issuance on the enforcement of accounting conservatism is stronger than the issuance of seasoned bonds. I then have the following hypothesis:

> *H3: Any change towards being more conservative in financial reporting is stronger for the bond IPO sample than the seasoned bond sample.*

RESEARCH DESIGN AND SAMPLE SELECTION

The tests are to compare the reported level of conservatism three years before and after debt issuance. The measure of conservatism is calculated from the model developed in Basu (1997). Basu (1997) operationalizes this interpretation of conservatism by running an earnings-return regression with earnings as the dependent variable. Return is taken as a proxy for news, and earnings are expected to reflect bad news (negative return) more quickly than good news (positive return). The following model is used:

$$Earnings = \alpha + \beta_1 DR + \beta_2 Return + \beta_3 Return * DR + \varepsilon \tag{1}$$

To capture changes in the reported level of conservatism, I adjust the model with a *Post* indicator variable. To be specific, the following model is used:

$$\begin{aligned} Earnings = \alpha + \beta_1 DR + \beta_2 Return + \beta_3 Return * DR + \beta_4 Post + \beta_5 DR * Post + \beta_6 Return * Post \\ + \beta_7 Return * DR * Post + \varepsilon \end{aligned} \tag{2}$$

Earnings is defined as annual earnings per share scaled by price per share at the beginning of the fiscal year. *Return* is fiscal year buy-and-hold return. *DR* is an indicator variable that equals 1 if *Return* is less than 0, and 0 otherwise. *Post* is an indicator variable that takes on the value of 1 if a year is after the debt issuance year and 0 otherwise. The issuance year is not included in the analyses. All variables are for firm i and period t. α, the intercept is expected to be positive according to Basu (1997) because it captures realized gains reflecting previous good news. β_2 represents the sensitivity of earnings to good news and is expected to be positive. β_3 captures the incremental response of earnings to bad news over good news and it is expected to be positive for conservative reporting. The incremental sensitivity of earnings to bad news over good news after the debt is issued is $\beta_3 + \beta_7$. If firms report more conservatively following the debt issuance, β_7 is expected to be positive, meaning that firms further accelerate the recognition of bad news. The sensitivity of earnings to good news following debt issuance is $\beta_2 + \beta_6$. If conservatism is also reflected as further delay of recognizing unrealized gains, β_6 is expected to be negative.

I obtain the private debt sample from Loan Pricing Corporation's Dealscan. The sample selection procedure starts with all facilities in the Dealscan database for the period from 1987 to 2005, totaling 157,717 observations. I keep one deal for each firm each year, which results in 26,022 deals. Of these deals, 22,630 have necessary borrowers' attribute available through COMPUSTAT. I truncate deals with borrowers' return and earnings per share (EPS) scaled by the prior year closing price being in the top and bottom 1% to reduce the effect of outliers on the regression results, leaving 20,773 deals. To improve comparability, I test the hypotheses using a constant sample. The constant sample is constructed to include only deals whose borrowers have all seven years data (3 years before, the issuance year and 3 years after) available. The final sample consists of 8,774 deals, representing 2,863 different borrowing firms.

I use Securities Data Company's SDC platinum to identify all non-convertible public debt issued from 1970 to 2005. A bond IPO is identified as the first issuance of public debt by each firm in the SDC platinum. I have a total of 6,296 bond IPOs. Similar to the private debt sample, I construct a constant sample that must have seven years data available (3 years before, the issuance year and 3 years after), which yields 890 bond IPOs. To construct the seasoned bond sample, I keep only one deal for each firm each year excluding the bond IPO. For this sample I again require that financial data should be available for all seven years of interest. After deleting deals with borrowers' return and earnings per share scaled by the prior year close price being in the top and bottom 1%, the final constant sample of seasoned bonds has 1,968 deals, representing 579 unique firms.

RESULTS AND DISCUSSION

Table 1 presents the descriptive statistics for the private debt sample, the bond IPO sample and the seasoned bond sample. Comparison of the medians shows that firms in the seasoned bond sample are, on average, much larger (median total assets are \$7,947 million vs \$1,100 million for the private debt sample and \$1,628 for the bond IPO sample). The other financial attributes of the private debt and seasoned bond samples are comparable. Median market to book is around 2, leverage around 23%, ROA about 4%, earnings per share scaled by price around 0.06 and fiscal year return about 12%. The Bond IPO sample has lower market to book ratio (1.575). Table 2 also shows that the additional borrowings in the samples are economically important for the borrowing firms. The median deal size in the private debt sample is \$150 million, representing about 13% of total assets and about 59% of total long-term debt for a firm. The median deal size of the bond IPO is \$100 million, representing about 6.6% of total assets and 34.9% of total long-term debt. The materiality of the deals makes it possible that a firm might change its reporting practice for the purpose of debt contracting.

Table 1: Descriptive Statistics

Panel A: The Private Debt Sample					
Variable	**N**	**Mean**	**Median**	**75%**	**25%**
Size (in millions)	52,640	9,195	1,100	4,409	270
Market to book	52,572	2.842	1.926	3.054	1.275
Leverage	52,591	0.242	0.223	0.348	0.101
ROA	52,640	0.031	0.039	0.071	0.012
Earnings	52,644	0.034	0.056	0.083	0.025
Return	52,644	0.17	0.106	0.364	-0.129
Deal month	46,782	39	36	60	12
Deal size (in millions)	52,638	397	150	380	45
Deal size/long term debt	49,739	22.567	0.590	1.475	0.231
Deal size/total assets	52,634	0.235	0.130	0.272	0.055
Panel B: The Bond IPO Sample					
Variable	N	Mean	Median	75%	25%
Size (in millions)	5,340	11,326	1,628	4,773	561
Market to book	5,338	1.988	1.575	2.336	1.076
Leverage	5,311	0.233	0.212	0.342	0.099
ROA	5,339	0.043	0.041	0.066	0.014
Earnings	5,340	0.077	0.075	0.109	0.05
Return	5,340	0.145	0.103	0.324	-0.086
Deal month	5,340	174	122	304	86
Deal size (in millions)	5,340	190	100	200	40
Deal size/long term debt	5,230	1.304	0.349	0.739	0.152
Deal size/total assets	5,340	0.109	0.066	0.122	0.025
Panel C: The Seasoned Bond Sample					
Variable	N	Mean	Median	75%	25%
Size (in millions)	11,804	37,231	7,947	22,309	2,937
Market to book	11,794	2.937	2.026	3.072	1.477
Leverage	11,804	0.250	0.237	0.345	0.133
ROA	11,804	0.040	0.035	0.062	0.012
Earnings	11,806	0.064	0.065	0.089	0.044
Return	11,806	0.153	0.129	0.314	-0.038
Deal month	11,806	145	122	146	61
Deal size (in millions)	11,806	278	150	300	88
Deal size/long term debt	11,777	0.270	0.105	0.241	0.035
Deal size/total assets	11,804	0.042	0.021	0.051	0.006

Table 1 presents the descriptive statistics of the private debt sample, the bond IPO sample and the seasoned bond sample. Size is total assets. Market to book is the market value of equity divided by the book value of the equity. Leverage is long-term debt divided by total assets. ROA is net income divided by total assets. Return is fiscal year buy-and-hold return. Deal month is the length of the deal in months. Deal size is the borrowing amount of the deal in millions. Deal size/long term debt is the size of the deal divided by total long-term debt. deal size/total assets is the size of the deal divided by total assets.

The results of testing hypothesis 1 regarding changes in conservatism around private debt issuance are reported in Table 2. For comparison purpose, I also present the results using the Basu basic model (model 1). The sign and magnitude of the intercept (+ 0.052), coefficients for good news (+ 0.011) and incremental sensitivity of bad news to good news (+ 0.251) are all consistent with Basu (1997). Overall, the results show that the samples are representative and confirm that bad news is reflected more quickly in earnings than good news, as predicted by the conservatism literature.

The *Post* indicator variable allows us to compare the degree of conservatism across periods. β_6, the coefficient for the incremental sensitivity of earnings to good news, is significantly negative (-0.014) while β_7, the coefficient on *Return*DR*Post* is positive 0.146, highly significant. The results indicate that firms further delay their recognition of good news and accelerate their recognition of bad news following the issuance of private debt. This supports the argument that financial reporting becomes more conservative following private debt contracting.

I further break down the full sample into an investment grade sub-sample and a leveraged sub-sample. I have this segregation because a few papers document differences in earnings management behaviors around the issuance of these two types of debt (e.g. Anthony et al., 2009). Following the definition of Standard & Poor's, 125 basis points are used as the cutoff point for the segregation. For both the investment-grade and leveraged sub-samples, I find that the coefficient on *Return*Post* is significantly negative, suggesting that firms further delay their recognition of good news. The coefficient on *Return*DR*Post* is significantly positive for both sub-samples (0.105 and 0.180), suggesting that firms further accelerate their recognition of bad news. Overall, firms report more conservatively following the issuance of both investment-grade and leveraged private debt.

Table 2: Changes in Accounting Conservatism around Private Debt Issuance

Variable	Full		Investment Grade		Leveraged	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	0.052***	0.054***	0.057***	0.059***	0.037***	0.039***
DR	0.009***	0.004	0.001	-0.003	0.011**	0.007
Return	0.011***	0.018***	0.024***	0.026***	0.011***	0.017***
*Return*DR*	0.251***	0.176***	0.128***	0.063***	0.265***	0.186***
Post		0.004*		0.004**		0.003
*DR*Post*		0.008**		0.003		0.010
*Return*Post*		0.014***		0.007**		0.011*
*Return*DR*Post*		0.146***		0.105***		0.180***
Adj R^2	7.36%	7.99%	8.26%	9.13%	6.98%	7.81%

*Table 2 presents the results of testing whether there is a change in conservatism around private debt issuance. The sample is further broken down to two subsamples: investment-grade loans and leveraged loans. The dependent variable is Earnings defined as annual earnings per share scaled by price per share at the beginning of the fiscal year. Return is fiscal year buy-and-hold return. DR is an indicator variable that equals 1 if Return is less than 0, and 0 otherwise. Post is an indicator variable that takes on the value of 1 if the year is after the debt issuance year and 0 otherwise. The issuance year is not included in the analyses. *, **, *** are used to indicate significance at the 10, 5 and 1 percent levels respectively.*

To further test the hypothesis that it is the monitoring mechanism from the debt market that drives more conservative reporting, I use SDC platinum to identify new bond market issues and compare the public debt samples with the private debt samples (H2). Table 3 presents the results using the full public debt sample (the first two columns). Contrary to the private debt results, the coefficients on *Return*Post* and *Return*DR*Post* are not statistically significant, meaning there is no change in the reported level of conservatism around the issuance of public debt. This is consistent with the notion that the monitoring function of the public debt market is weaker. I also break down the full sample into an investment-grade bond sample and a high-yield bond sample. I find that the coefficient on *Return*DR*Post* is significantly positive for the investment-grade sub-sample, suggesting an increase in accounting conservatism. For the high-yield sub-sample, the coefficients on *Return*Post* is significantly positive, suggesting high-yield bond issuers engage in aggressive reporting and accelerate their recognition of gains.

Table 3: Changes in Accounting Conservatism around Public Debt Issuance

Variable	Full		Investment Grade		High Yield	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	0.059***	0.064***	0.060***	0.064***	0.041***	0.049***
DR	0.003*	-0.001	0.002	0.000	-0.006	-0.029*
Return	0.051***	0.046***	0.049***	0.048***	0.072***	0.045***
*Return*DR*	0.066***	0.058***	0.053***	0.036***	0.065*	0.079
Post		-0.009***		-0.008***		-0.015
*DR*Post*		0.007**		0.003		0.052**
*Return*Post*		0.008*		0.000		0.058**
*Return*DR*Post*		0.014		0.032***		-0.018
Adj R^2	11.73%	12.05%	11.62%	12.22%	12.85%	13.67%

*Table 3 presents the results of testing whether there is a change in conservatism around public debt issuance. The sample is further broken down to two subsamples: one has only public debt of investment grade and the other has only public debt of high yield. The dependent variable is Earnings defined as annual earnings per share scaled by price per share at the beginning of the fiscal year. Return is fiscal year buy-and-hold return. DR is an indicator variable that equals 1 if Return is less than 0, and 0 otherwise. Post is an indicator variable that takes on the value of 1 if the year is after the debt issuance year and 0 otherwise. The issuance year is not included in the analyses. *, **, *** are used to indicate significance at the 10, 5 and 1 percent levels respectively.*

To test H3, I first run the regression using the bond IPO sample and then the seasoned bond sample. Table 4 presents the results for the bond IPO sample. The coefficients on *Return*Post* is not significant, but the coefficient on *Return*DR*Post* is significantly positive, meanings firms further delay the recognition of bad news. The level of conservatism increases following the issuance of bond IPOs. The results hold for the full bond IPO sample as well as the investment grade sub-sample. On the other hand, I do not find any change in the degree of conservatism following the issuance of seasoned bonds. As shown in Table 5, the results of no change hold for both the full seasoned bond sample and the sub-samples broken down into investment-grade and high-yield bonds. Therefore, the result of being more conservative following the issuance of investment grade bonds reported in Table 3 is driven by bond IPOs. Table 4 and 5 also indicate there is no change in reported levels of conservatism following the issuance of high-yield bonds. Overall, the results suggest that external monitoring from financial intermediaries is stronger around the initial public debt offerings compared with the subsequent offerings.

Table 4: Changes in Accounting Conservatism around the Initial Public Debt Offerings

Variable	Full		Investment Grade		High Yield	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	0.079***	0.082***	0.079***	0.082***	0.066***	0.074***
DR	0.003	-0.006	0.002	-0.010**	-0.005	0.003
Return	0.041***	0.044***	0.044***	0.042***	0.049***	0.063***
*Return*DR*	0.131***	0.054***	0.078***	0.005	0.253***	0.185**
Post		-0.005		-0.006		-0.009
*DR*Post*		0.014*		0.020***		-0.022
*Return*Post*		-0.009		0.004		-0.049
*Return*DR*Post*		0.130***		0.120***		0.130
Adj R^2	9.42%	10.05%	9.31%	9.99%	12.75%	13.98%

*Table 4 presents the results of testing whether there is a change in conservatism around bond IPO issuance. The sample is further broken down into two subsamples: one has bond IPOs of investment grade and the other has bond IPOs of high yield. The dependent variable is Earnings defined as annual earnings per share scaled by price per share at the beginning of the fiscal year. Return is fiscal year buy-and-hold return. DR is an indicator variable that equals to 1 if Return is less than 0, and 0 otherwise. Post is an indicator variable that takes on the value of 1 if the year is after the debt issuance year and 0 otherwise. The issuance year is not included in the analyses. *, **, *** are used to indicate significance at the 10, 5 and 1 percent levels respectively.*

Table 5: Changes in Accounting Conservatism around Seasoned Bond Offerings

Variable	Full		Investment Grade		High Yield	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	0.059***	0.063***	0.059***	0.064***	0.040***	0.045***
DR	0.002	0.001	0.001	0.000	-0.004	-0.018
Return	0.049***	0.046***	0.047***	0.044***	0.083***	0.068***
*Return*DR*	0.061***	0.063***	0.052***	0.051***	0.062	0.086
Post		-0.009***		-0.009***		-0.017
*DR*Post*		0.003		0.001		0.032
*Return*Post*		0.006		0.004		0.038
*Return*DR*Post*		-0.004		0.002		-0.045
Adj R^2	11.00%	11.43%	10.83%	11.44%	12.89%	12.61%

*Table 5 presents the results of testing whether there is a change in conservatism around the issuance of seasoned bonds. The sample is further broken down to two subsamples: one has only seasoned bonds of investment grade and the other has only seasoned bonds of high yield. The dependent variable is Earnings defined as annual earnings per share scaled by price per share at the beginning of the fiscal year. Return is fiscal year buy-and-hold return. DR is an indicator variable that equals 1 if Return is less than 0, and 0 otherwise. Post is an indicator variable that takes on the value of 1 if the year is after the debt issuance year and 0 otherwise. The issuance year is not included in the analyses. *, **, *** are used to indicate significance at the 10, 5 and 1 percent levels respectively.*

CONCLUSION

This paper examines the differential impact of public and private debt on accounting conservatism, using a private debt sample drawn from Dealscan and a public debt sample obtained from the SDC platinum. An incremental approach is used to examine whether firms increase their degree of accounting conservatism following an increase in debt levels resulting from the issuance of private debt, bond IPOs and seasoned bonds. I find that firms report more conservatively following the issuance of private debt. They also report more conservatively following the issuance of bond IPOs. But I do not find that firms change their degree of accounting conservatism following the issuance of seasoned bonds. I attribute the results to the monitoring effectiveness of the debt market. The debt market demands conservative reporting. The direct monitoring of the private debt holders including the use of accounting-based constraints is strong for the private debt market and therefore I find a positive relation between an increase in debt levels and an increase in accounting conservatism. The external monitoring from the financial intermediaries is also strong in the context of bond IPOs. I therefore also find a positive relation using the bond IPO sample. In the case of seasoned bonds, however, the monitoring function is weak for the diffuse holders of public debt and the external monitoring is also not very strong and thus there is no change in accounting conservatism.

This paper contributes to the stream of research on the role of debt in financial reporting. It provides evidence that changes in conservatism around debt issuance differ between private debt, bond IPOs and seasoned bonds. There are two key differences between this paper and prior studies. First, this paper recognizes the cost of conservatism to managers and considers the importance of having an effective monitoring system in place for debt holders to enforce conservatism. Second, this paper differentiates the impact of public and private debt on firms' financial reporting. This distinction is important because it has long been recognized that monitoring functions and covenant restrictions imposed in debt agreements of the two markets are very different. Our paper also has practical implication for standard setting. Standard setters leave conservatism off the list of qualitative characteristics of reporting because it clashes with concepts like neutrality. Th primary users of financial statements as capital providers, however, include both equity investors and creditors. Given the importance of accounting conservatism in debt contracting, especially for public debt holders, the move away from conservatism might have a negative effect on the credit supply by the public debt market.

One caveat about our analysis is that the use of the incremental approach does not consider the effect of the existing debt level and mix, which could be an extension of this research. Another potentially fruitful direction of future research is to study how the move away from conservatism in accounting standards could affect debt holders' use of accounting information and what compensating mechanism has been adopted by managers and creditors to mitigate the potential negative effect.

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BIOGRAPHY

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INCOME TAX ADMINISTRATION IN GHANA: PERCEIVED IMPLEMENTATION CHALLENGES

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ABSTRACT

In recent times, the focus of tax research has shifted from income tax compliance to Value Added Tax compliance. Meanwhile, the legislature on some occasions subject persons to what it calls income tax by reference to sums which do not represent income in any accounting or economic sense, or even in respect of sums which the person concerned has not received. This makes income tax administration challenging than in the case of value Added Tas This paper therefore seeks to gain an understanding of similarities and differences in the overall quantitative assessment and qualitative content of personal income tax and corporate income tax, from the perspectives of income taxpayers. For this purpose, the author examined a total of 259 Ghanaian income taxpayers; 174 personal income taxpayers and 85 corporate income taxpayers. Moreover, the author measured knowledge, attitudes and emotional reactions of personal income taxpayers and corporate income taxpayers towards income taxation. The results indicated that overall, income tax was negatively evaluated by both taxpayers. However, corporate income taxpayers occasioned a larger number of negative attitudes towards income tax, had more knowledge on income tax obligations, and conveyed more negative emotions than personal income taxpayers. The paper argues that findings from personal income tax research cannot be directly adapted to the context of corporate income tax.

JEL: H21, H30

KEYWORDS: Income Tax, Personal Income Tax, Corporate Income, Ghana

INTRODUCTION

Since its legislation in 1799, income tax has developed into a key source of tax revenue. By 2017, it accounted for 36.2% of total tax revenue in member countries of the African Union. Within the same period, for five African countries (Botswana, Equatorial Guinea, Eswatini, Nigeria and South Africa), income tax accounted for the principal share of total tax revenue. (OECD, 2019). Based on these statistics, the distinctive focus on income tax within the field of empirical tax research is not surprising. One reason might be rooted in the unique nature of income tax, income tax Acts merely provide for a series of definitions of various types of incomings, which are declared to be either taxable or not taxable. They do not define income and the rules only generally define the various sources of income. At the same time, the legislature on some occasions subject persons to what it calls income tax by reference to sums which do not represent income in any accounting or economic sense, or even in respect of sums which the person concerned has not received. This makes income tax administration challenging than in the case of Value Added Tax (VAT), which clearly defines what constitutes taxable supply. To the best of the author's knowledge, a systematic analysis of how income tax is perceived by personal income taxpayers and corporate income taxpayers in a comparative study is currently missing from the literature. The author aims to address this gap by investigating similarities and differences between personal income taxpayers and corporate income taxpayers' knowledge, attitude and emotions towards income taxation. First, this paper will reveal taxpayers' knowledge, attitudes and emotions towards income tax from the perspective of personal income taxpayers and corporate income taxpayers, whereas prior research focused on taxpayers' perception on taxes in general (Armah-Atttoh and Awal, 2013, Kirchler, 1998 and Kirchler, Maciejovsky, & Schneider, 2003). Additionally, in comparing personal income tax against corporate income tax, the former constitutes an adequate benchmark, because it is well-researched in terms of tax compliance compared with the later. Hence, apart from revealing similarities and differences in knowledge, attitudes and emotions per se, the results can serve as a basis for future research on income tax compliance. The results indicated that overall, income tax was negatively evaluated by both taxpayers (personal income taxpayers and corporate income taxpayers). However, corporate income taxpayers occasioned a larger number of negative attitudes towards income tax, had more knowledge on income tax obligations, and conveyed more negative emotions than personal income taxpayers. The paper argues that findings from personal income tax research cannot be directly adapted to the context of corporate income tax. In Ghana, where this study was conducted, income tax is payable each year of assessment on the "chargeable incomes" of both resident and nonresident persons. For a resident person, the income tax law currently in force in Ghana encumbers income from sources within Ghana and sources outside of Ghana. In the case of a non-resident person, it includes income which accrues in or derived from Ghana, and income which is effectively connected with a permanent establishment of that person.

For tax purposes, a resident person in Ghana is either a resident individual, a resident company or a resident partnership. An individual is said to resident in Ghana for tax purposes if that individual is: (1) present in Ghana for a cumulative period of 183 days or more in any 12-month period that begins or ends during the year; (2) a Ghanaian citizen who is temporarily absent from Ghana for a period of not more than 365 continuous days where that Ghanaian citizen has a permanent home in Ghana; (3) an employee of the Government of Ghana who has been posted abroad. A partnership is resident for a year if any of the partners resided in Ghana at any time during that year. A company is resident in Ghana for tax purposes if it is incorporated under the laws of Ghana, or its management and control is exercised in Ghana at any time during the year. Persons falling outside the above criteria are impliedly non-resident in Ghana for tax purposes. The income tax of resident individuals from employment in Ghana is deducted at source by the employer and remitted to the tax authorities by the fifteenth day of the month following the month in which the deduction ought to have been made. In comparison, corporate bodies make quarterly pre-payments of their own income tax based on their own estimation. The actual income tax payable is determined when the annual tax returns is filed, leading to either a tax refund or an additional payment. (Income Tax Act 2015, Act 896) as amended. The remainder of this paper is structured as follows: The next section describes related literature; The following section discusses data and methodology used in this paper; Thereafter, the paper provides results and analysis; The paper closes with some concluding comments.

LITERATURE REVIEW

This section summarizes the previous studies that examine taxpayers' attitudes towards taxation. Sussman and Olivola (2011), Kirchler, (2007) and Kirchler (1998) suggested that generally, there is negative attitudes towards taxation. Other authors that focused on income tax compliance have confirmed individual differences with regards to mental accounting practices and associations with tax compliance (Muehlbacher, Hartl, & Kirchler, 2015; Muehlbacher & Kirchler, 2013). According to Schenk & Oldman, (2006), personal income tax is a direct tax that is levied upon the income of a taxpayer. OECD (2016) observed that most countries employ different types of progressive income tax structures, in which tax rates grow with increasing income (OECD, 2016). In Ghana, the location of the present study, annual incomes of resident individuals up to 3,828 Ghana Cedis are exempted, and five progressively increasing tax rates (5%, 10%, 17.5%, 25% and 30%) are then applied. The highest rate, 30%, is applied to incomes exceeding 240,000 Ghana Cedis annually. Nonresident individuals with chargeable income which has a source in Ghana are generally taxed at a flat rate of 25%. (Income Tax Act 2015, Act 896 as amended). Olsen, Kogler, Stark & Kirchler (2017) conducted a comparative study on social representations of income tax and VAT by employed and self-employed taxpayers. They examined a total of 489 Austrian taxpayers; 140 employed and 349 self-employed. The results show that self-employed taxpayers generated a larger number of negative associations, had higher knowledge, and expressed more negative emotions than employed taxpayers. Kirchler, (2007); Kirchler & Maciejovsky, (2001); and Yaniv, (1999) all support the finding that employed taxpayers tend to have a less pronounced loss perception towards taxation as compared with self-employed taxpayers who pay their taxes out-of-pocket. Armah-Atttoh and Awal (2013) in their study observed that most Ghanaians are generally favorably disposed towards paying taxes, and more so paying taxes in return for public services. Their results further show that regardless less of whether they can pay or not, most Ghanaians know about the specific taxes they are required to pay by law.

In their study, Allingham & Sandmo, (1972) argues that a taxpayer will evade taxes if it seems advantageous based on certain parameters, including income size, tax rate, fine level, and audit probability. They however conceded that their proposition is simple as it does not consider non-monetary factors, which is an argument brought forward in the majority of psychological publications dealing with income tax. Since then, many different approaches have been added to the understanding of tax compliance. Apart from deterrence (i.e. fine level and audit probability), many other factors, including knowledge, attitudes, different types of norms, justice perceptions, interindividual differences in taxpayers' motivation to comply, framing effects, and trust in the tax authorities, influence compliance behavior (Kirchler, 2007). However, majority of these publications refer to the context of income tax compliance in general and not to personal income tax and corporate income tax. This paper extends the work of Olsen, Kogler, Stark & Kirchler (2017), by investigating similarities and differences between personal income taxpayers and corporate income taxpayers' attitude towards income tax. The work here extents the work of Armah-Atttoh and Awal (2013) by using set of data after the passage of Income Tax Act 2015, (Act 896) as amended, Income Tax Regulations, 2016 (LI 2244) and Revenue Administration Act 2016, (Act 915).

DATA AND METHODOLOGY

A total of 259 Ghanaian taxpayers participated in this study: 174 individuals and 85 corporate bodies. The sample of corporate bodies can be further divided into three branches of industry: (1) Consumer and Industrial Products and Services (n=26), Fast Moving Consumer Goods (FMCGs), Telecommunications, Manufacturing and Construction; (2) Energy, Utilities and Resources (n=27), Mining and Exploration, Oil and Gas, Renewable Energy and Utilities and (3) Financial Services (n=32), Banking, Insurance and Pensions taxpayers. In the case of the individual taxpayers, female respondents dominated the study (57%), suggesting majority of Ghanaian individual taxpayers are females. The finding is consistent with the gender composition of Ghana (see Ghana Statistical Service, 2014). The survey shows that majority of the respondents (about 68%) are below 45 years. This suggests that majority of Ghanaian personal income taxpayers are young people. Only few respondents (14%) do not have formal education. At least 86% of the respondents are literates with majority (54%) having tertiary education. In Table 1, further socio-*demographic* characteristics of survey respondents of the study are presented.

Data collection took place between November 2019 and March 2020. The author collected data for the months of November 2019, January 2020, and March 2019. All respondents were contacted in person and were asked to participate in a questionnaire study on taxes. For this purpose, the questionnaire, which took approximately 10 minutes to complete, was given out to the literate respondents to fill by themselves with or without the assistance of the author while the author assisted the non-literate respondents to fill. Questionnaire was employed because it saved the author and the respondents' time. Also, respondents were able to express their views across without any fear due to the anonymity of the questionnaires. This further helped in generating more valid data. Overall, the response rate was 23 .9% (62 out of 259 contacted persons), which is well above the threshold of survey response rate in tax research (Olsen, Kogler, Stark & Kirchler, 2017: 4.5%). The respondents were identified and selected using referral sampling; the respondents then referred the author to taxpayers within their circles who would be willing to participate in the study. The initial respondent from the personal income taxpayers' sub group was known to the author through professional networks and that personal income taxpayer introduced the author to other personal income taxpayer and so on. With respect to the corporate income taxpayers' sub group, the author approached a tax registered Ghanaian resident company personally known to him, but did not allow her to participate in the study; instead, that resident company was instrumental in referring the author to other corporate income taxpayers in Ghana. Ogembo (2019) argued that snow ball sampling method is beneficial in the context of tax research because of potential respondents are understandably wary of participating in a tax compliance related issues and a good number of them will go to the extent of enquiring the researcher's relationship with the tax authorities. It was therefore much easier to access the population through referrals by their trusted professional colleagues.

Table 1: Socio-Demographic Information by Sub Sample

Gender of Respondents	Male	43 Percent
	Female	57 Percent
Respondents' level of education	Non/Informal	14 percent
	Primary	12 percent
	High School	20 percent
	Tertiary	54 percent
Age of respondents	Mean Age	38 years
	Youngest Respondent	19 years
	Oldest Respondent	78 years
	18 - 30 years	54 percent
	31 - 45 years	22 percent
	46 - 60 years	18 percent
	60 years and above	6 percent
Industry distribution of respondents	Consumer and Industrial Products	30.58 Percent
	Energy, Utilities and Resources	31.76 Percent
	Financial Services	37.65 Percent

This Table illustrates socio-demographic information by sub-sample. For Age, M and SD were computed, whereas the author used Mdn and IQR for the ordinal scales Education. Education was measured with 1 = Non-Formal, 2 = Primary School, 3 = High School, and 4 = Source: Field survey (2019)

Their colleagues assured them that the author was "safe" and that the questions did not pose a risk to them. By taking this approach, the author was able to gather even more sensitive data than he set out to collect. Snowball sampling does have its disadvantages; for example, because of sampling bias, it may not be clear whether the sample is sufficiently representative of the population. The initial respondents are likely to have refereed the author to respondents who share their traits. There is a risk that respondents with different traits were not adequately represented (Ogembo, 2019). However, the author took steps to vary the characteristics of the respondents to ensure that they did not fall into the same category; no attempt was made to ensure that their ages, sexes and nature and size of their practice varied.

Using a mixed-methods approach, the questionnaire fused qualitative and quantitative parts, and comprised four sections. Section one served to collect socio-demographic information. In section two, participants' knowledge about personal income tax and corporate income tax was measured. Taxpayers were asked to reply to seven multiple choice questions about personal income tax and eight multiple choice questions about corporate income tax by marking the correct answer from a set of two (e.g., "Both resident and nonresident individuals with chargeable pay the same amount of income tax in proportion to their income?"). The author constructed these items for this study. Section three served to assess participants' personal attitudes toward income taxes in general, and was adapted from Olsen, Kogler, Stark & Kirchler (2017) survey methodology. Participants were asked to indicate their agreement with nine statements requiring Yes, No or Neutral answer (e.g., "Paying tax is the right thing to do;" Yes = .72). Section four assessed personal and corporate income taxpayer' feelings about income tax. The Participants were first asked about their emotional responses corresponding to the association task, which required Yes, No or Neutral answer, and was adapted from Olsen, Kogler, Stark & Kirchler (2017) survey methodology. (e.g., "When I think about paying income tax, I feel distressed").

Olsen, Kogler, Stark & Kirchler (2017) argued that free associations can be analyzed quantitatively or qualitatively, wherein the quantitative analyses focus on the ratio of positive, neutral, and negative evaluations and the qualitative level highlights the content of the associations and how they are organized. Beginning with the quantitative analyses, the appraisals assigned to each association with respect to the stimuli personal income tax or corporate income tax were used to calculate two indices: a polarity index and a neutrality index, and was adapted from Olsen, Kogler, Stark & Kirchler (2017) survey methodology. With respect to the quantitative analyses, the author analyzed the data using a thematic analysis method. Some major themes that emerged from the data are discussed below.

RESULTS AND DISCUSSION

The results are presented in four main sections. Firstly, the author analyzes polarity and neutrality by stimulus and taxpayer status. Secondly, the author investigates knowledge differences between the two income taxpayer groups for income taxes. Thirdly, the author investigates differences in attitudes between the two income taxpayer groups towards income tax. Finally, differences in emotional responses to the stimulus by income taxpayer groups are tested. In Table 2, the results of the polarity (average evaluation of the stimulus) and neutrality (ratio of neutral associations) indices for the stimulus by sub-sample are presented.

Table 2: Mean Polarity and Neutrality

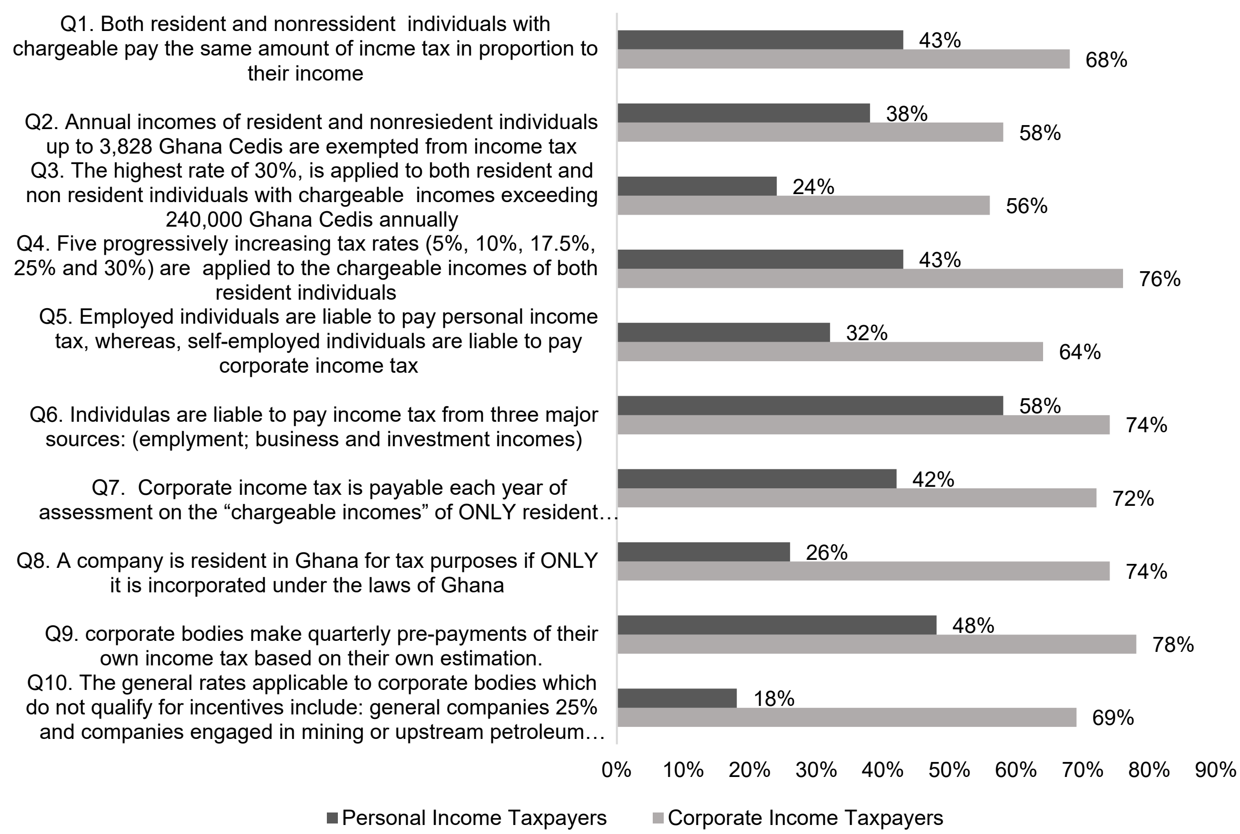
	Corporate Income Taxpayers				**Personal Income Taxpayers**
	Consumer and Industrial Products and Services	**Energy, Utilities and Resources**	**Financial Services**	**Overall**	
Income tax	*n* = 26	*n* = 27	*n* = 32	*n* = 85	*n* = 174
Polarity	−.48 (0.42)	−.38 (0.43)	−.21 (0.43)	−.33 (0.64)	−.12 (0.41)
Neutrality	.14 (0.09)	.21 (0.13)	.23 (0.06)	.20 (0.28)	.22 (0.08)

This Table shows the polarity (average assessment of the stimulus) and neutrality (ratio of neutral associations) indices for the stimulus by sub-sample. Indices are presented for income tax, divided by income taxpayer status and branch of industry

Knowledge

In Ghana, the location of this study, three major sources are liable to income tax as follows; income from employment, income from business and income from investment. Regarding personal income tax rates in Ghana, annual incomes of resident individuals up to 3,828 Ghana Cedis are exempted, and five progressively increasing tax rates (5%, 10%, 17.5%, 25% and 30%) are then applied. The highest rate, 30%, is applied to incomes exceeding 240,000 Ghana Cedis annually. Nonresident individuals with chargeable income which has a source in Ghana are generally taxed at a flat rate of 25%. The Ghanaian income tax law also provides the following personal reliefs deductions to resident individuals in arriving at their chargeable income; dependent spouse / 2 dependent children 1,200 Ghana Cedis; Old Age (60 years and above) 1,500 Ghana Cedis; Children's Education (per child) up to a maximum of three children 600 Ghana Cedis; Disability Relief 25% of the assessable income of the individual ; Aged Dependent 1,000 Ghana Cedis and Training and Development Relief 2,000 Ghana Cedis. In the case of corporate income tax, the rates differ according to industry, location and type of business. The general rates applicable to entities which do not qualify for incentives include: general companies 25% and companies engaged in mining or upstream petroleum 35%. But is the suggestion that corporate taxpayers are more knowledgeable on income tax obligations compared with their individual compatriots grounded in research? Five items were used to measure knowledge about personal income tax and five items for corporate income tax, respectively. As the author did not have information regarding item difficulties, knowledge about the two taxes could not be compared against each other. This notwithstanding, the author compared the knowledge of the two taxpayer groups for each tax. The author conducted a MANOVA with taxpayer status (personal income taxpayers vs. corporate income taxpayers) as an independent variable and the two knowledge scores as dependent variables. The multivariate results revealed a differentiation of knowledge between the two taxpayer groups, $F(2, 259) = 11.16$, $p < .001$, $\eta p2 = .041$. The univariate results indicated that knowledge on income tax was higher among corporate income taxpayer participants compared with personal income taxpayer participants with $F(1, 259)= 14.40$, $p < .001$, $\eta p2 = .023$, personal income taxpayers $M = 3.69$, 85% CI [3.46, 3.91], corporate income taxpayers $M = 6.24$, 85% CI [6.09, 6.38]. In Figure 1, results of the two the taxpayers' groups knowledge of their income tax obligations to the government are presented. The univariate results clearly indicate that corporate income taxpayers had more knowledge about income tax than personal income taxpayers.

Figure 1: Taxpayers' Knowledge of Income Tax Obligations (Percent)



This figure shows. Ghanaian taxpayers' knowledge of their income obligations to Government of Ghana. Taxpayers were asked to reply to five multiple choice questions about personal income tax and five multiple choice questions about corporate income tax by marking the correct answer from a set of three. The author constructed these items for this study. Source: Field Survey (2019).

Attitude

To ascertain the differences in the negativism and neutrality indices between the stimuli (personal income tax vs. corporate income tax) and legal status (individuals vs. corporate bodies), the author conducted a MANOVA with two dependent variables (negativism and neutrality of the associations). The multivariate results suggested significant differences between the two stimuli, as well as significant differences between the two personality groups, $F(2, 259) = 5.52$, $p = .012$, $\eta p2 =.019$. The univariate results for the negativism index revealed significant differences between the two taxpayer groups in their evaluations. In Table 3, the results of personal and corporate income taxpayers' attitude towards income tax are presented. The results showed that both taxes were evaluated negatively overall, but the author could not confirm a relative difference between personal income tax and corporate income tax in terms of negativism of associations. However, the results showed that corporate bodies participants generated a higher share of negative content in comparison to individuals' participants. Furthermore, the exploration revealed a lower share of neutral associations for personal income tax in comparison to corporate income tax.

Table 3: Ghanaian Taxpayers' Attitude Towards Income Tax

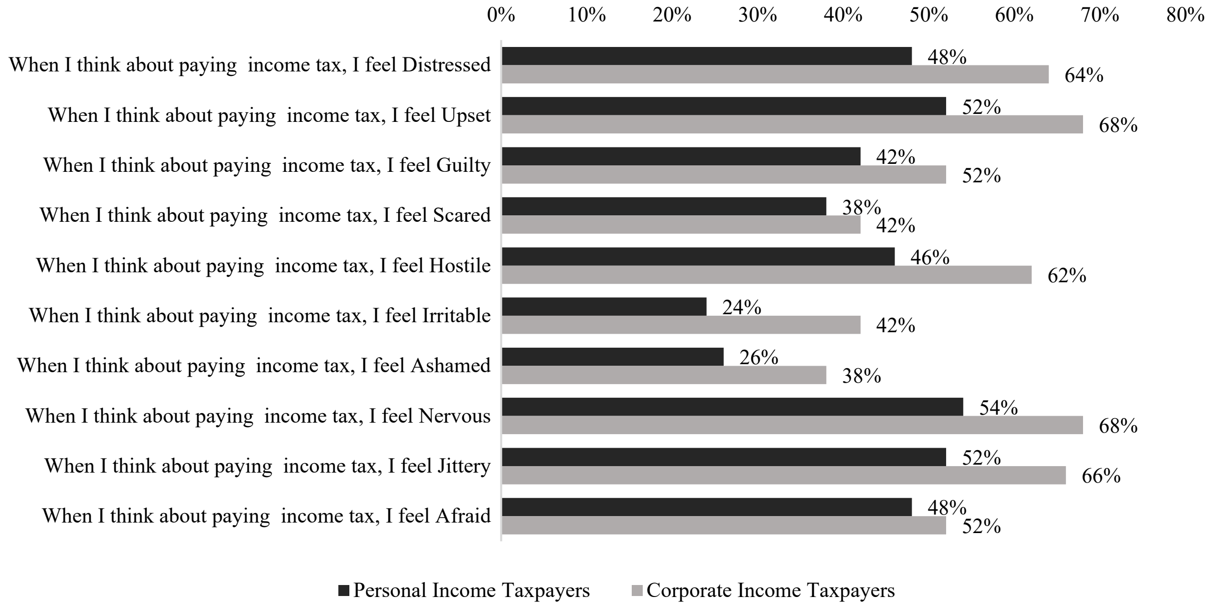
	Response Option	(%) Individuals	Corporate Bodies
Paying income tax is the right thing to do.	Yes	52	20
	No	44	68
	Neutral	8	12
Paying income tax is a responsibility that should be willingly accepted by all citizens.	Yes	43	38
	No	51	54
	Neutral	6	8
I resent paying income tax.	Yes	58	66
	No	30	18
	Neutral	12	14
I feel a moral obligation to pay my income tax.	Yes	42	22
	No	52	68
	Neutral	6	10
Paying my income tax ultimately advantages everyone.	Yes	30	24
	No	62	64
	Neutral	8	12
I think of income tax payment as helping the government of worthwhile things.	Yes	44	34
	No	52	58
	Neutral	4	8
Overall, I pay my income tax with good will.	Yes	42	40
	No	50	54
	Neutral	8	6
I accept responsibility for paying my fair share of income tax.	Yes	50	44
	No	42	44
	Neutral	8	12
I don't care if I am not doing the right thing required by the tax authorities.	Yes	46	38
	No	44	56
	Neutral	10	6

This Table shows personal and corporate income taxpayers' attitude towards income tax, and was adapted from Olsen, Kogler, Stark & Kirchler (2017) survey methodology. Participants were asked to indicate their agreement with nine statements requiring Yes, No or Neutral answer (e.g., "Paying tax is the right thing to do;" Yes = .72). Source: Field Survey (2019)

Emotions

In this section, emotional responses to income tax by individuals and corporate taxpayers are reported. The instrument measured 20 specific effects, which comprises ten positives and ten negatives, and was adapted from Olsen, Kogler, Stark & Kirchler (2017) survey methodology. The author computed one score for all 10 negative effects, which the author considered as the extent of negative emotions. The positive effects were eliminated from the analyses. The author ran a 1 (stimuli) by 2 (personality status) ANOVA with the negative effect score as dependent variable. Negative emotions were higher among corporate bodies, compared with individuals' participants. However, the observed effect sizes were rather small. The author did not observe an interaction effect, In Figure 2, the results of emotional responses to income tax by individuals and corporate taxpayers are reported. The results show that corporate participants reported more conspicuous negative feelings than individuals' ones.

Figure 2: Emotional Responses to Income Tax by Personal and Corporate Income Taxpayers



This Figure shows the results of personal and corporate income taxpayer' feelings about income taxation. The Participants were first asked about their emotional responses corresponding to the association task, which required Yes, No or Neutral answer, and was adapted from Olsen, Kogler, Stark & Kirchler (2017) survey methodology. (e.g., "When I think about paying income tax, I feel distressed"). Source: Field Survey (2019)

CONCLUDING COMMENTS

The main aim of this paper was to gain an understanding of similarities and differences in the overall quantitative evaluation and qualitative content of income tax, from the perspectives of personal and corporate income taxpayers. For this purpose, the author examined a total of 259 Ghanaian income taxpayers; 174 personal income taxpayers and 85 corporate income taxpayers. Moreover, the author measured knowledge, attitudes and emotional reactions of the two taxpayers towards income taxation. The results indicated that overall, income tax was negatively evaluated by both taxpayers (personal and corporate income taxpayers). However, corporate income taxpayers occasioned a larger number of negative attitudes towards income tax, had more knowledge on income tax obligations, and conveyed more negative emotions than personal income taxpayers. These insights have several implications for tax authorities, policy makers, and tax administrators: tax literacy and enactment of rigorous tax laws go hand in hand, thereby building the capacity of citizens to pay taxes, rather than the capacity of tax authorities to collect taxes. The study therefore recommends that Ghana Revenue Authority (GRA) in close collaboration with National Commission on Civic Education N.C.C.E) as a matter of urgency should set up a Tax Literacy Education Coalition (TLEC) to educate and inform Ghanaians on changes in the income tax law as well as newly introduced systems, since Income Tax Act, 2015, Act 896 (ITA), as amended and Revenue Administration Act 2016, Act 915 (RAA) were enacted.

The paper argues that findings from personal income tax research cannot be directly adapted to the context of corporate income tax. This study has some limitations: First, the author does not know the extent to which the sub-samples are representative of their respective populations. Furthermore, the author has not inquired into the factors fueling income tax evasion and the relative strength of the various factors. This study offers some directions for further research. For an enhanced understanding of personal and corporate taxpayers' knowledge, attitude and emotions towards income tax in Ghana, there is the need for a nationwide study on citizens' attitude toward income taxation in Ghana.

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