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Three Essays on Financial Statement Comparability

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by

Mohammad Nazrul Islam

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To: Dean Joanne Li,
College of Business

This dissertation, written by Mohammad Nazrul Islam, and entitled Three Essays on Financial Statement Comparability, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

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DEDICATION

I would like to dedicate this dissertation, Three Essays on Financial Statement Comparability, to those wonderful people who supported me during my journey. The first person is my honorable, respected, deceased father, Mohammad Abed Ali, who was always there for me. Second person is my mother, who has always dreamed on me and supported me to go ahead. The most important person without whose supports and encouragement I would not be able to complete this work is my wife, Ratna Akter. I am truly thankful for having you in my life. This work is also dedicated to my princess, Nazia Islam Sanam, who has always missed me when I was working at the office. I am sorry, Sanam, I am always there for you wherever I am. I also dedicate this dissertation to my mentor and trusted friend, Shofiqur Rahman, who has always shared his experiences that helped me a lot. It would not be complete if I fail to recognize the contributions of two persons who have always encouraged me to exceed the expectations of professors. They are none other than Dr. Abhijit Barua and Mrs. Anoma Barua. Above all, I would like to dedicate this work to my respected advisor, Dr. Clark Wheatley, who has always given me incredible supports, astute advice, and guidance. I will miss the golden time I spent with him.

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ABSTRACT OF THE DISSERTATION

THREE ESSAYS ON FINANCIAL STATEMENT COMPARABILITY

by

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Comparability is a central feature of financial reporting systems. Comparability is defined by FASB (2010, 19) as "the qualitative characteristic that enables users to identify and understand similarities in, and differences among, items." The Accounting Principles Board ranked comparability as one of the most important objectives of financial reporting and Generally Accepted Accounting Principles have underscored the importance of comparability for the past four decades. Using empirical measures of financial statement comparability, studies confirm that comparability plays an important role in analyst following, audit fees, credit risk, acquisition decisions, stock price volatility, the cost of debt, the cost of equity, and cash holdings. This dissertation, investigates the impact of comparability on trade credit, earnings management through classification shifting, and on non-Big4 auditors. Prior studies find that comparable firms enjoy a lower cost of equity capital and a lower cost of debt. They should, therefore, require less trade credit. I also find that comparable smaller and/or financially distressed firms require less trade credit whereas they normally require higher levels of trade credit. The results presented in my first essay support this hypothesis in that comparability and trade credit are significantly negatively associated. The results presented in my second essay show that managers' earnings

management through classification shifting is significantly influenced by the degree of financial statement comparability with other firms. I also find that comparable firms engage in less classification shifting and that the impact of comparability is more pronounced after the passage of the Sarbanes Oxley Act. The results presented in my third essay show that companies audited by non-Big4 auditors are less comparable than the companies audited by Big4 auditors. Non-Big4 auditors are thus less likely to be able to apply the same audit process to multiple clients. I find that this results in greater audit effort, as proxied by higher audit fees, for Non-Big4 firms.

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I. INTRODUCTION

"Until we can measure the amount of comparability obtained for a given level of detailed guidance, we will not be well armed with evidence on which to base discussions about the desirability of limiting the amount of detail provided in standards, when the intent of that detail is increased comparability."

---*Katherine Schipper (2003)*

Comparability, unlike other qualitative characteristics, is one of the enhancing qualitative characteristics that augment the usefulness of information (FASB 2010). Comparability is the quality of information that enables users to identify and understand similarities and differences between items. Even though Statement of Financial Accounting Concept No. 2 (FASB 1980) considered comparability as second to relevance and faithful representation, the Framework (1989) stated that comparability is as important as relevance and faithful representation. SFAC No. 8 states that "Investing and lending decisions essentially involve evaluations of alternative opportunities, and they cannot be made rationally if comparative information is not available." (FASB 2010, p. 26). Despite the importance of accounting comparability, there is still little empirical evidence on the benefits of financial statement comparability. Recent empirical measures of comparability (e.g., De Franco et al. 2011) have, however, helped scholars to investigate the role of comparability on analyst forecasts, analyst following, analyst coverage, mergers, acquisitions, audit fees, stock price crash risk, cost of equity capital, cost of debt, accruals, and real earnings management. No study has, however, yet examined whether financial statement comparability plays a role in trade credit decisions, classification shifting of operating expenses, and the behavior of non-Big4 and Big4 auditors in auditing comparable clients.

This dissertation examines the role of financial statement comparability in three important areas. In the first essay, I examine whether managers of comparable firms require less trade credit. Studies (Imhof et al. 2017; Fang et al. 2016) find that comparable firms enjoy a lower cost of capital and a lower cost of debt. This suggests that they can easily meet their financing needs by generating money from capital markets or financial institutions. Finance studies (e.g., Petersen and Rajan 1997; Molina and Preve 2012) document that firms facing financial difficulties require more trade credit because they are rejected by traditional financial institutions. Schwarts (1974) predicts that suppliers extend credit to firms who are credit rationed. Prior research (e.g., Kim et al. 2013; Fang et al. 2016) find that firms with better accounting comparability attract a greater number of lenders and have less credit risk, suggesting that comparable firms are less likely to be credit rationed. These theories suggest that firms with higher accounting comparability should require less trade credit. To test this prediction, I employ a sample of US listed firms over the 1987-2015 period. I find a negative relation between financial statement comparability and trade credit. The documented association is robust to alternative research designs and measures of comparability as well as trade credit, and holds after controlling for endogeneity issues. A change regression also confirms these results. To substantiate the impact of financial statement comparability on trade credit, I conduct cross-sectional tests and find that comparable smaller firms and comparable firms in financial distress, which generally use more trade credit due to their external financing constraints, require less trade credit than their less comparable peers.

The second essay examines whether firms with higher accounting comparability are less likely to be engaged in earnings management through classification shifting.

Scholars in accounting have extensively investigated earnings management through manipulation of accruals and real activities management. The literature also expresses concern that managers use alternative forms of earnings management when one of them is constrained. A third category of earnings management, classification shifting, can also be employed (McVay 2006), and concerns about this tactic have been voiced by regulators such as SEC. Prior studies document that accounting comparability works as a monitor, and the extant literature documents significant relationships between financial statement comparability and a number of characteristics/activities. De Franco et al. (2011) find that analyst following is associated with comparability. Zhang (2012) finds an association with audit fees. Other research links comparability to: IFRS adoption (Brochet et al. 2013), Credit risk (Kim et al. 2013), valuation of seasoned equity offerings (Shane et al. 2014), stock-price crash risk (Kim et al. 2016), and the efficiency of acquisition decisions (Chen et al. 2016). Still other research has linked comparability to debt contracting (Fang et al. 2016), accrual based and real earnings management (Sohn 2016), the informativeness of stock prices about future earnings (Choi et al. 2017), and the cost of equity capital (Imhof et al. 2017). While Sohn (2016) addresses the impact of comparability on accruals and real activities management, he does not test whether comparability also plays a role in classification shifting. From the above discussion, I hypothesize that firms with better financial statement comparability are less likely to be engaged in classification shifting. Studies (e.g., McVay 2006; Fan et al. 2010) posit that a positive relation between unexpected core earnings and income-decreasing special items is an indicator of likely classification shifting. I classify a firm as a shifter if its unexpected core earnings are positive (actual core earnings less expected core earnings) and the change in special items

(special items in year t less special items in year t-1) is positive for fiscal year t. In additional analysis, I follow Fan and Liu (2017), and employ alternative measures of classification shifting: cost of goods sold classification shifting, and operating expense classification shifting. I adopt De Franco et al.'s (2011) proxy for financial statement comparability that is built on the idea that the output of comparable financial reporting systems (e.g., earnings) should be similar for firms with similar economic events. Using a sample of 34,686 firm-year observations, I find (consistent with Abernathy et al. 2014) that 18% of firms engage in classification shifting. I also find that financial statement comparability is significantly negatively associated with shifters. I find that 36% of the firms engage in cost of goods sold classification shifting *(CS_COGS*) and 14% of the firms engage in general and administrative expense classification shifting (*CS_XSGA*). I also find that financial statement comparability is significantly negatively associated with *CS_COGS* and *CS_XSGA*. To establish a link between financial statement comparability and classification shifting, I test whether governance is associated with comparability. I find that governance is significantly, positively associated with comparability.

My third essay examines whether Big4 and non-Big4 auditors respond to the comparability of client firms in similar way. Studies (e.g., Zhang 2018) on comparability find that firms with better financial statement comparability pay lower audit fees. Closely related literature (e.g., Cairney and Young 2006; Bills et al. 2015) find that auditors are more likely to be specialized in homogenous industries and they charge incrementally lower audit fees for homogenous clients. My results indicate that the findings of these studies are likely driven by the influence of Big4 auditors, as the Big4 audit approximately 80 percent of listed firms (Zeff and Fossum 1967; Hogan and Jeter 1999). It is therefore

worth investigating whether Big4 and non-Big4 auditors follow similar patterns when auditing comparable firms. I.e., are the client firms equally comparable between the Big4 and non-Big4, and do Big4 and non-Big4 auditors charge the same audit fees for comparable firms? Studies, such as Simunic (1980), find that big audit firms charge lower audit fees because they have economies of scale. Smaller auditor firms that lack this scale charge higher audit fees. Since Big4 auditors audit the majority of listed companies, their client base should comprise a greater number of comparable firms. They will, therefore, be able to charge lower audit fees because they can transfer the knowledge learned and audit processes designed, to many, similar clients. In contrast, non-Big4 auditors are likely to have fewer comparable clients, and will thus be less likely to achieve economies of scale. As a result, they are more likely to charge higher audit fees. Following this intuition, I hypothesize that firms audited by non-Big4 auditors are less comparable than firms audited by the Big4, and that non-Big4 auditors charge higher audit fees for auditing comparable firms. Using U.S. firm data for the years 2000 to 2015, I find that firms audited by Big4 auditors are more comparable than firms audited by non-Big4 auditors. I also find that Big4 auditors charge incrementally lower audit fees for auditing comparable firms, and non-Big4 auditors charge incrementally higher audit fees for auditing comparable firms. These findings are robust to alternative measures of comparability and hold after controlling for endogeneity. The remainder of this dissertation is structured as follows: Chapter II discusses the role of financial statement comparability on trade credit. Chapter III narrates whether comparable firms are less likely to be engaged in earnings management through classification shifting. Finally, Chapter IV investigates whether Big4 and non-Big4 auditors follow the similar patterns in auditing comparable firms.

II. ESSAY 1: FIRM COMPARABILITY AND TRADE CREDIT

II. 1. Motivation

Comparability is one of the four enhancing qualitative characteristics of accounting information.[1] As a central feature of the financial reporting system, comparability is defined by the FASB (2010, p. 19) as "the qualitative characteristic that enables users to identify and understand similarities in, and differences among, items." One of the main purposes of financial reporting standards is to increase the comparability of reported financial information. Using empirical measures of financial statement comparability, prior studies have confirmed that comparability plays an important role in analyst following (De Franco, Kothari, and Verdi 2011; De Franco, Hope, and Larocque 2015), audit fee (Zhang 2012), credit risk (Kim, Kraft, and Ryan 2013), acquisition decisions (Chen, Collins, Kravet, and Mergenthaler 2018), stock price volatility (Kim, Li, Lu, and Yu 2016), the cost of debt (Fang, Li, Xin, and Zhang 2016), the cost of equity capital (Imhof, Seavey, and Smith 2017), and the informativeness of stock prices (Choi, Choi, Myers, and Ziebart 2017). The role of accounting comparability in one of the most important financing decisions firms face - trade credit - is, however, heretofore unexplored.

Trade credit is recorded as accounts payable on a borrowing firm's balance sheet and as accounts receivable on a lending firm's balance sheet. Trade credit is the single most important source of short-term external financing for most firms (Petersen and Rajan 1997). It is used by more than 80 percent of all firms and constitutes more than 20 percent of all firm liabilities (Jain 2001). Despite the magnitude of these items, trade credit has

[1] FASB (2010, 19) in its Statement of Financial Accounting Concepts No. 8 mentions four enhancing qualitative characteristics--*Comparability, Verifiability, Timeliness, and Understandability*.

been largely ignored by accounting research. I address a portion of this research gap by enriching the understanding of the role of financial statement comparability in firms' trade credit decisions. Specifically, I examine the relation between financial statement comparability and firms' reliance on trade credit. My results indicate that financial statement comparability is inversely related to trade credit. This result is important because it sheds light on the relation between accounting comparability and short-term financing decisions, which is one of the prime objectives of standard setters.[2]

Existing studies in finance[3] and accounting[4] suggest several reasons why financial statement comparability and trade credit may be related. First, since comparable firms enjoy a lower cost of capital (Imhof et al. 2017, Fang et al. 2016), they can easily meet their financing needs through the credit and equity markets. Alternatively, Petersen and Rajan (1997) and Molina and Preve (2012) conclude that firms facing financial difficulties require more trade credit because they are rejected by traditional financers. In his economic model, Schwartz (1974) predicts that suppliers extend credit to firms who are credit

[2] Statement of Financial Accounting Concepts (SFAC) No. 8 states that "Investing and lending decisions essentially involve evaluations of alternative opportunities, and they cannot be made rationally if comparative information is not available." (FASB 2010, p. 26).

[3] In his economic model of trade credit, Schwartz (1974) predicts that larger, more financially secure producers offer trade credit to firms who are "rationed" from the direct credit market. To protect their investments, Smith (1987) argues, suppliers extend trade credit to firms not able to secure alternative low-cost financing. Empirically, Petersen and Rajan (1997) find that because of their comparative advantage in acquiring information about buyers, suppliers lend to constrained firms whose access to capital markets is limited. When banks' monitoring costs are higher, they prefer to lend credit through a channel of suppliers (Jain 2001) because suppliers have the added advantage of having private information. Trade credit is a way for buyers to circumvent the noncompetitive rents of financial institutions (Emery 1984).

[4] De Franco et al. (2011) empirically find that financial statement comparability is positively associated with the number of analyst following and it lowers the cost of acquiring information. Kim, Li, Lu, and Yu (2016) argue that comparable firms' information asymmetry is lower. Comparable firms enjoy lower cost of debt (Fang, Li, Xin, and Zhang 2016) and lower cost of capital.

rationed from direct credit markets. Studies in accounting[5] find that firms with greater financial statement comparability attract a greater number of lenders, a greater number of uninformed participating lenders, and exhibit lower credit risk. This suggests that comparable firms are less likely to be credit rationed, and it follows that financial statement comparability and trade credit should be negatively associated.

Second, prior research (e.g., Wittenberg-Moerman 2008; Healy and Palepu 2001) finds that information asymmetry is negatively associated with the cost of capital. Consistent with this, Cheng and Pike (2003) note that both buyers and sellers are more likely to be attracted to trade credit when there is high information asymmetry between them. Comparable firms should, however, exhibit lower information asymmetry (Kim et al. 2016) as peer monitoring prevents managers from hiding information. Because financial statement comparability works as a monitoring device, and financial institutions can invest less time and lower the cost of monitoring comparable firms, financial institutions would, ceteris paribus, be more likely to extend credit to comparable firms. This would reduce the dependence of comparable firms on trade credit.

Third, greater comparability facilitates information transfer among the comparable firms (De Franco et al. 2011), lowers information acquisition costs, increases the quality and quantity of information to the outsiders, and decreases the uncertainties related to performance evaluation. Together these works to reduce the external financing constraints on firms, which again should reduce their reliance on trade credit.

[5] See for more Kim, Kraft, and Ryan (2013) and Fang et al. (2016).

Fourth, suppliers do not perform in depth analyses of the financial statements of buyers when they extend trade credit (Smith 1987). This suggests comparability is of no concern to suppliers, and that a lack of comparability will cause firms to seek out trade credit. Based on the above I predict that firms with greater (lesser) financial statement comparability require less (more) trade credit.

To test my prediction, I employ a sample of U.S. listed firms over the 1987-2015 period. I find a negative relation between financial statement comparability and trade credit. The documented association is robust to alternative research designs and measures of comparability as well as alternative measures of trade credit. The association also holds after controlling for endogeneity. Change regression also confirms the documented results. To substantiate the impact of financial statement comparability on trade credit, I conduct cross-sectional tests and find that while smaller firms and firms in financial distress use more trade credit, comparable firms in that group require less trade credit than their less comparable peers.

This study contributes to the literature in several ways. First, this paper contributes to the literature on corporate financing. Prior studies (e.g., Schwartz 1974; Smith 1987; Petersen and Rajan 1997; Jain 2001; Molina and Preve 2012) have investigated the determinants of trade credit. No study has yet, however, investigated whether accounting comparability might also be a determinant in trade credit decisions.[6] I establish that accounting comparability is an important determinant in trade credit decisions.

[6] Accrual quality is within firm accounting quality whereas comparability is between firm accounting quality. Discretionary accruals affect accounting outcomes, whereas the quality of earnings affects accounting comparability. Studies on audit fees (Gul, Chen, and Tsui 2003 vs Zhang 2018), cost of debt (Bharat, Sunder, and Sunder 2008 vs Fang et al. 2016), cost of capital (Francis, Nanda, and Ohlson 2008 vs Imhof, Seavey, and Smith 2017), and acquisition decisions (McNichols and Stubben 2015 vs Chen et al. 2018) suggest that

Studies on trade credit (e.g., Schwartz 1974; Smith 1987; Biais and Gollier1997) document that suppliers want to form long-term relationships with buyers who are smaller, have been credit rationed, and are not transparent in reporting. This indicates that firms that have good relationships with their suppliers and do not have easy access to external financing have less motivation to prepare comparable financial statements. I deal with this potential endogeneity in several ways— (1) I use the lag of the independent variables [reverse causality is mitigated] (2) I employ instrumental variables and two-stage regressions, and (3) I employ firm fixed-effects to control for time-invariant firm-specific characteristics that may be correlated with omitted variables. Next, my study contributes to the growing literature investigating the impact of accounting comparability on financial markets. The role of accounting comparability has been investigated with respect to the impact of accounting comparability on external financial--debt and equity financing (Fang et al. 2016; Imhof et al. 2017), but no study has yet examined the role of comparability on trade credit, the most commonly used source of short-term financing.[7] Third, this study also helps regulators in the sense that it confirms the benefits of accounting comparability.[8]

The remainder of the paper is structured as follows. Section 2 discusses the literature and develops the hypotheses. Section 3 explains the research design. Section 4 presents my results. Section 5 concludes the paper.

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discretionary accruals and accounting comparability are different from each other. Indeed, FASB (1980, 2010) has termed comparability as an accounting "quality." Please see Appendix B for more information.

[7] Wilner (1996) notes that in the US economy for each $1 in short-term debt, there was $1.94 in trade credit. In my sample, trade credit is 8% of total assets whereas the remaining short-term liabilities comprise only 4% of total assets. Before the financial crisis in 2007-2009, about 90% of the global merchandise trade was financed by trade credit (Klapper, Laeven, and Rajan (2011).

[8] Investing and lending decisions essentially involve evaluations of alternative opportunities, and they cannot be made rationally if comparative information is not available (FASB 1980, 26).

II. 2. Literature and Hypothesis development

Financial Statement Comparability

The Statement of Financial Accounting Concepts (SFAC) No. 2 states that comparability is a qualitative characteristics of accounting information (FASB 1980), and the Statement of Financial Accounting Concepts No. 8 states that comparability is an enhancing qualitative characteristic (FASB 2010). FASB defines financial statement comparability as the extent to which an information user can recognize the similarities and differences in the financial performance of two firms. SFAC No. 8 states that "Investing and lending decisions essentially involve evaluations of alternative opportunities, and they cannot be made rationally if comparative information is not available." (FASB 2010, p. 26). One of the objectives of accounting information is to help investors compare the performance of different firms so that they can make informed decisions. The U.S. FASB and the International Accounting Standards Board (IASB) developed a common conceptual framework, based on and built on both the IASB framework and the FASB framework. This framework mentions comparability as an important decision-useful qualitative characteristic of financial information (FASB 2010). The Securities and Exchange Commission (SEC) has also emphasized financial statement comparability across firms. SEC Chairman, Mary Jo White, in her Public Statement on January 5, 2017, stated, for example, that "Building high-quality, globally accepted accounting standards requires that the Commission support further efforts by the FASB and IASB on convergence between their accounting standards to enhance the quality and comparability of financial reporting – both domestically and across borders." (SEC 2017).

Other qualitative characteristics (e.g., value relevance, persistence, predictability), have received more attention than comparability in the accounting literature. Holthausen and Watts (2001) mention, for example, 62 papers on value relevance that were published in top tier journals, yet despite the importance of comparability in the conceptual framework of accounting (FASB 1980, 2010), prior literature has paid little attention to financial statement comparability. The paucity of research on comparability was likely due to lack of a standard comparability measure. Schipper (2003 expresses the concern as follows:

> "…until we can measure the amount of comparability obtained for a given level of detailed guidance, I will not be well armed with evidence on which to base discussions about the desirability of limiting the amount of detail provided in standards, when the intent of that detail is increased comparability." (Schipper 2003, p. 68)

After the development of De Franco et al.'s (2011) measure of financial statement comparability, researchers responded to the call of Schipper (2003) for more research on accounting comparability. There are two streams to this research. One has investigated the impact of events (e.g., IFRS adoption) on accounting comparability. Here, accounting numbers are deemed comparable if, when two firms face the same economic outcomes, they report similar accounting numbers (Barth et al. 2012). The other stream of research has examined the impact of accounting comparability on financial and economic phenomena.[9] Because comparable firms become better benchmarks for each other,

[9] The existing literature, for example, documents a significant relation between financial statement comparability and: analyst following (De Franco et al. 2011); audit fees (Zhang 2018); accounting after the adoption of IFRS (Brochet, Jagolinzer, and Riedl 2013); credit risk (Kim et al. 2013); valuation of seasoned

information transfer among them becomes easy and users have access to more information about firms' financial performance with less effort (Kim et al. 2013).

Trade Credit

There has been a long running debate among researchers on what motivates sellers and buyers to extend or receive trade credit. The two most discussed motives are financing and transactions. The financing motive (Schwartz 1974) suggests that suppliers have an advantage over traditional lenders in their access to information about the creditworthiness about their clients, and their ability to monitor and force repayment of credit. Suppliers that have easier access to capital markets than their customers can extend more credit to utilize their capacity for borrowing. The financing motive argues that in case of imperfections in the credit market, rationing of credit to borrowers leads to the use of trade credit.[10]

The transactions motive (Ferris 1981) argues that rather than paying suppliers as they receive goods, buyers want to cumulate obligations and pay them once a month or quarter. This process helps managers to manage cash more efficiently. Sellers also benefit because they can predict cash receipts efficiently. While financially solvent firms are likely to prefer the transactions approach, for startups and smaller firms the financing motive is crucial (they're more likely to be rationed[11] by institutional sources of credit). Based on the above discussion, I predict and test the following hypothesis in alternative form:

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equity (Shane, Smith, and Zhang 2014); crash risk (Kim et al. 2016); efficiency of acquisition decisions (Chen et al. 2018); debt contracting (Fang et al. 2016); accrual based and real earnings management (Sohn 2016); informativeness of stock price about future earnings (Choi et al. 2017); and the cost of equity capital (Imhof et al. 2017).

[10] See Lewellen, McConnell, and Scott (1980), Emery (1984), Schwartz (1974), Smith (1987)

[11] For example, see Bester (1985), Jaffee and Stiglitz (1990), Minetti and Zhu (2011), Freel (2007).

H1a: Financial statement comparability is negatively associated with trade credit.

While my first hypothesis predicts a negative association of comparability with trade credit overall, there are two sub-populations that prior research has shown to place greater reliance on trade credit. Those populations are distressed firms and small firms. Whether my overall prediction holds for those sub-populations is thus worthy of investigation.

Financial distress

Because financially distressed firms are more likely to go bankrupt (Tsuruta and Xu 2007), their ability to acquire external financing is severely curtailed (Molina and Preve 2012). Financial distress impairs access to credit from financial institutions and raises the cost of capital (Opler and Titman 1994; Wilner 1996; Molina and Preve 2012). As a consequence, distressed firms would be more likely to use trade credit as an alternative source of financing. Peteren and Rajan (1994, 1995) theorize that when cheaper sources of external financing are exhausted, firms turn to trade credit, and Molina and Preve (2012) document that financially distressed firms use significantly larger amounts of trade credit. From the suppliers' side, there is evidence that suppliers, in order to maintain long-term relationships, grant more concessions to customers in financial distress (Evans 1998). Therefore, financially distress firms either take more trade credit or they are provided more trade credit. As noted above, however, financial statement comparability plays a role in external financing with more comparable firms enjoying a lower cost of capital (e.g., Fang et al. 2016; Imholf 2017) and utilizing less trade credit. In this circumstance, comparability may enable lenders to better evaluate the extent of a firm's distress and the resulting

likelihood of bankruptcy. Based on this, I hypothesize that comparable firms, even when they are financially distressed, will require less trade credit than less comparable distressed firms. My second hypothesis, in alternative form, is thus:

H1b: Financial statement comparability is negatively associated with trade credit for distressed firms.

Firm size

Firm size has also been shown to play a role in financing. Smaller firms suffer from information opacity because they do not enter into publicly visible contracts with their labor force, suppliers, and customers. In most cases, small firms do not issue securities in the capital markets, suggesting that there are few or no analysts following those firms. Studies (e.g., Frankel and Li 2004; Bhattacharya, Desai, and Venkkataraman 2013) document that information asymmetry is higher for smaller firms. Due to this information opacity, financial institutions are less likely to provide financing to smaller firms and when they do, the cost of debt is higher. Archer and Faerber (1966) also find that the overall cost of capital is higher for smaller firms. Schwartz's (1974) economic model of trade credit predicts that larger, more financially secure producers offer trade credit to their smaller, less financially secure customers. Consistent with my expectations for distress, I expect that comparable smaller firms will also require less trade credit than less comparable small firms. My third hypothesis is thus:

H1c: Financial statement comparability is negatively associated with trade credit for small firms.

II. 3. Research Design

Sample

I start with COMPUSTAT firms for the period 1987 through 2015.[12] I then merge CRSP with COMPUSTAT and remove utilities (SIC codes: 4000 to 4999) and financial services firms (SIC codes: 6000 to 6999). I also remove firm-year observations that have missing data on financial statement comparability, trade credit, and missing control variables. I winsorize all continuous variables at the 1st and 99th percentiles. My final sample comprises 38,738 firm-year observations.

Model specification:

To test the impact of financial statement comparability on trade credit, I use the following multivariate regression:

$$\text{TRADECREDIT}_{it} = \beta_0 + \beta_1 \text{FSCOMP4}_{it} + \sum_{j=2}^{14} \beta_j \text{CONTROLS}_{it} + \text{In}_k + \text{Yr}_t + \varepsilon_{it} \qquad (1)$$

I also use the following logistic regression.

$$\text{PROB\_TC}(=1) = \beta_0 + \beta_1 \text{FSCOMP4}_{it} + \sum_{j=2}^{14} \beta_j \text{CONTROLS}_{it} + \text{In}_k + \text{Yr}_t + \varepsilon_{it} \qquad (1.1)$$

where TRADECREDIT_{it} is accounts payable (AP) scaled by total assets (AT) and FSCOMP4_{it} is the firm specific comparability measure based on the mapping of firms' economic events to financial statements from De Franco et al. (2011). In_k and Yr_t are included in the model to control for industry and year fixed effects respectively. PROB_TC in equation (1.1) is an indicator variable taking the value of 1 if a firm's trade credit is

[12] I use cash from operating activities (OANCF), available from 1987 onward.

greater than its industry mean (based on Fama-French 48 industry) for three consecutive years and 0 otherwise. I use different regression settings because my dependent variable, trade credit, is left censored. *First*, I use ordinary least square (OLS) to test the linear relationship between financial statement comparability and trade credit. *Second*, since trade credit is left censored, I use a Tobit regression with a lower limit of zero. *Third*, I use the Fama-MacBeth (1973) regression. The Fama-MacBeth regression runs the regression yearly and reports the average coefficient. I have also controlled for industry fixed effects in my Fama-MacBeth regression to minimize the noise of industry differences.

The key coefficient of interest in regressions (1) and (1.1) is β_1 for FSCOMP4, which depicts the impact of financial statement comparability on trade credit. If financial statement comparability helps managers to acquire lower cost external financing (Fang et al. 2016; Imhof et al. 2017), trade credit should be lower and β_1 should be negative. Following prior studies (e.g., Petersen and Rajan 1997; Jain 2001; Atanasova 2007; Fabbri and Klapper 2016; Chen et al. 2018), I include 14 control variables. I control for: firm size (log of the book value of total assets); the market to book ratio (MTB); discretionary accruals (DAC); investment opportunities (TOBINQ); non-cash current assets relative to total assets (CA); cash holdings (CASHHOLD); profitability (ROA); current liabilities excluding accounts payable divided by total assets (CL_XTRADE); the debt ratio (LEVERAGE); inventory liquidation cost (LIQUIDCOST); firm age (AGE); market share (MARKETSHARE); industry competition (COMPETITION); and positive sales

(POS_SALE) which is an indicator variable taking the value of 1 if sales increased from year t-1 to t, and 0 otherwise.[13]

Measuring Financial Statement Comparability

I follow the De Franco et al. (2011) measure of financial statement comparability, which is based on the earnings-returns relationship of paired firms. De Franco et al. (2011) develop an empirical model based on the assumption that for a given set of economic events, two firms produce similar financial results. Following De Franco et al. (2011), I first estimate the following:

$$\text{Earnings}_{it} = \alpha_i + \beta_i \text{Return}_{it} + \varepsilon_{it} \qquad (2)$$

where Earnings is the quarterly net income before extraordinary items (IBQ) scaled by beginning of the period market value of equity (PRCC_F*CSHO), and Return is the respective quarter's stock return. I calculate $\hat{\alpha}_i$ and $\hat{\beta}_i$ for firm i and in the same way I estimate $\hat{\alpha}_j$ and $\hat{\beta}_j$ for firm j. I then use these parameters to estimate expected earnings of firm i and j. I use the Return of firm i and the parameters of i and j to compare the Earnings of firm i and j as follows:

$$\text{E(Earnings)}_{iit} = \hat{\alpha}_i + \hat{\beta}_i \text{Return}_{it} \qquad (3)$$

$$\text{E(Earnings)}_{ijt} = \hat{\alpha}_j + \hat{\beta}_j \text{Return}_{ij} \qquad (4)$$

Keeping the economic event, $Return_{it}$, constant, I calculate predicted earnings of firm i *and* j for the period t. Then I compute the accounting comparability between firm i and j (FSCOMP4_{ijt}) from the following:

[13] I do not include bid-ask spread (a measure of information asymmetry) in my tabulated results as I am only able to acquire this metric for 25% of my sample observations. Inclusion of that variable for the resulting sub-sample yields, however, results consistent with those presented in the paper.

$$FSCOMP_{ijt} = -\frac{1}{16} * \sum_{t-15}^{t} \left| E(Earnings_{iit}) - E(Earnings_{ijt}) \right| \quad (5)$$

The smaller the difference between the predicted earnings of *i* and *j*, the more comparable are the two firms' accounting systems. I estimate comparability for each firm *i*-firm *j* combination for *J* firms within the same two-digit SIC industry classification. Then I rank all *J* values of $FSCOMP_{ijt}$ for each firm *i* from the highest to lowest. Next I calculate $FSCOMP4_{it}$ as the average of highest four comparability score of firm *i* with firm *j*. I also compute FSCOMP10, COMP_INMDN, and COMP_INDMEAN. The detailed calculations of these measures are defined in Appendix A.

II. 4. Empirical Results

Summary statistics and univariate results

Panel A of Table 1 reports the summary statistics for the variables employed in the main regression. TRADE CREDIT has a mean (median) of 0.08 (0.06). Financial statement comparability (FSCOMP4) is negative by construction, with a less negative value indicating greater comparable. The FSCOMP4 has a mean (median) of -0.53 (-0.29). These values are consistent with those of recent studies (e.g., Fang et al. 2016; Kim et al. 2016; Imhof et al. 2017). SIZE (log of assets) has a mean (median) of 5.27 (5.11), MTB has a mean (median) of 1.95 (1.51), TOBINQ has a mean (median) of 0.47 (0.09). The mean (median) firm in my sample has |DAC| of 1.96 (1.53), CA of 0.56 (0.51), CASHHOLD of 0.21 (0.13), ROA of -0.02 (0.03), and CL_XTRADE of 0.17 (0.14). The mean (median) firm AGE is 16.58 (15.00) years, indicating that my sample firms are mature. The mean values of LEVERAGE, LIQUIDCOST, MARKETSHARE, COMPETITION, and

POS_SALE are 0.21, 0.05, 0.01, 39.59, and 0.52 respectively. These values are also consistent with the recent studies (e.g., Wu et al. 2014; Goto et al. 2015; Chen et al. 2017).

I divide firms into two groups: firms with high financial statement comparability and low financial statement comparability, based on the median score of FSCOMP4. Firms with a FSCOMP4 score above the median are classified as high comparable firms whereas those with FSCOMP4 scores below the median are classified as low comparable firms. Panel B of Table 1 reports the univariate comparisons of my model variables by high versus low financial statement comparability. The mean of TRADE CREDIT in the high comparable group is 0.067, while the low comparable group has a mean of. The t-statistic for the mean difference is -30.64, suggesting that the difference is statistically significant at the 1% level. Most of the mean differences between the two groups are statistically significant and support my prediction that high comparable firms require less TRADE CREDIT.

The correlation coefficients for variables included in the main analyses are presented in Table 2. Across the sample period, FSCOMP4 is significantly (p-value $\leq$ 0.000) and negatively (-0.17) correlated with TRADE CREDIT. FSCOMP4 is also significantly correlated with other firm specific variables, and these characteristics are also significantly correlated with TRADE CREDIT. TRADE CREDIT, for example, is significantly negatively correlated with SIZE, MTB, CASHHOLD, and ROA, suggesting that firm characteristics should be controlled in my multivariate analysis.

Multivariate results

The results of my multivariate regressions are reported in Table 3. Column (1) presents the OLS results with both year and industry fixed effects. The standard errors are

clustered by firm. The coefficient of -0.012 on FSCOMP4 is significant at the 1% level. The result is also economically significant as firms require 7.65 percent less trade credit with a one standard deviation increase in the financial statement comparability.[14] I find that firm SIZE, TOBINQ, CASHHOLD, and LEVERAGE are negatively associated with TRADE CREDIT, which is consistent with prior studies (e.g., Petersen and Rajan 1997; Biais and Gollier 1997). The Variables CA, MARKETSHARE, and POS_SALE are positively associated with TRADE CREDIT (also consistent with prior studies e.g., Liu et al. 2017).

Column 2 presents the results of my Tobit model. This model implies nonnegative predicted values for TRADE CREDIT, and has sensible partial effects over a wide range of control variables. The Tobit model expresses the observed response, TRADE CREDIT, in terms of underlying latent variables as:

$$\text{TRADE CREDIT}^{*} = \beta_0 + x\beta + \varepsilon, u|x \sim \text{Normal}(0, \sigma^2) \qquad (6)$$

where TRADE CREDIT= max (0, TRADE CREDIT*) *(7)*

Equation (7) suggests that *TRADE CREDIT* will be equal to *TRADE CREDIT** when $\text{TRADE CREDIT}^{*} \geq 0$, but TRADE CREDIT will equal 0 when $\text{TRADE CREDIT}^{*} < 0$. Since TRADE CREDIT^{*} is normally distributed, TRADE CREDIT has a continuous distribution over positive values. The coefficient of FSCOMP4 is negative (-0.013) and significant at the 1% level. Again, this indicates that firms with high financial statement comparability require less trade credit. The signs of all control variables are consistent with prior studies.

[14] 7.65=0.51*0.012/0.08, where the standard deviation of *FSCOMP4* is 1.48, 0.012 is the coefficient of *FSCOMP4*, and 0.08 is the mean of *TRADE CREDIT*.

Column (3) of Table 3 presents the results of my Fama-MacBeth (1973) regression. Assigning equal weight to each firm-year observation, the Fama-MacBeth technique runs each regression cross-sectionally for each year and then aggregates the coefficients across the years. The results are consistent with my other models in suggesting that financial statement comparability is negatively associated with trade credit.

Finally, I employ a logit model to test the probabilistic relation between financial statement comparability and trade credit. The result of this test is presented in column (4) of Table 3. PROB_TC is an indicator variable taking the value of 1 if firm trade credit is greater than the industry-adjusted mean of trade credit within same two-digit SIC industry for three consecutive years and 0 otherwise. The results are consistent with my prior models and support the hypothesis that comparable firms require less trade credit.

Quantile regression

Figure 1 shows the distribution of TRADE CREDIT. (the variable is right skewed). The most commonly used regression model for determining the relation between the predicted and predictor variables is ordinary least squares (OLS), which assesses how the mean value of a predicted variable of a conditional distribution fluctuates with the changes in the independent variable(s). OLS may, however, give us an incomplete picture (e.g., Mosteller and Tuke 1977; Koenker and Hallock 2001; Koenker 2005) because the mean of a distribution may not be the representative of the entire distribution (e.g., Austin and Schull 2003). In a skewed distribution, for example, the median of the distribution is alternatively used as central tendency (e.g., Wilcox and Keselman 2003; Manikandan 2011). While OLS can answer whether the independent variable is important or has an impact on the dependent variable, to know the complete influence of the predictor

variable(s) on the predicted variable, analysis of the tail of a distribution is necessary (e.g., Austin and Schull 2003). Quantile regression addresses this by offering a more complete picture of a distribution (Koenker 2005), and studies in accounting (e.g., Basu 2005; Armstron et al. 2015), finance (e.g., Connolly 1989; Zietz et al. 2008; Meligkotsidou et al. 2009; Lee and Li 2012), and economics (E.g., Buchinsky 1995**;** Koenker and Park 1996; Koenker and Hallock 2001; Machado and Mata 2005) have used quantile regression to overcome the limitations of OLS. Because my predicted variable, trade credit, is right skewed, I also use quantile regression to measure the impact of accounting comparability on the different quantiles of trade credit.

The results of these tests are reported in Table 4. From my OLS results, I found that a one standard deviation increase in FSCOMP4 was associated with a 7.65 percent decrease in TRADE CREDIT. My quantile regression results show, however, that at the 10^{th} quantile a one standard deviation increase in FSCOMP4 is associated with only a 1.27 percent decrease in TRADE CREDIT. At the 90^{th} quantile TRADE CREDIT decreases 21.03 percent with a one standard deviation increase in FSCOMP4. These results indicate that OLS overestimates the impact of FSCOMP4 at the 10^{th} quantile and underestimates FSCOMP4 at the 90^{th} quantile. The tests of differences between the 10^{th} and 90^{th}, 25^{th} and 90^{th}, 50^{th} and 90^{th}, and 75^{th} and 90^{th} quantile coefficients are also reported in Table 4. These results indicate that FSCOMP4 has a heterogenous impact on different levels of TRADE CREDIT.

Endogeneity

The relation between financial statement comparability and trade credit may be biased because of potential endogeneity related to omitted variables and reverse causality.

Firms with high comparability, for example, take less trade credit. This suggests that firms that take less trade credit are more likely to have high financial statement comparability. Since trade credit generates new accounting items (e.g., accounts payable, discounts, and accounts receivable) in firm financial statements, firms with less or no trade credit are more likely to have less complex and more transparent accounting reports (Chen et al. 2017). In other words, since firms (especially small and startup firms) do not employ financing from financial institutions and capital markets, instead maintaining good relationship with suppliers - they have less motivation to make their financial statements comparable. Existing studies (e.g., Smith 1987; Schwartz 1974) find that while providing credit to buyers, suppliers do not perform any credit analysis. It is intuitive, therefore, that trade credit may also influence financial statement comparability. To mitigate this potential endogeneity concern, I use several methods.

Endogeneity—Lag of Explanatory Variable

Following prior studies (Nagar and Rajan 2001; Miguel et al. 2004; MacKay and Philips 2005; Collier 2013; Lehoucq and Linan 2014; Sohn 2016), I use the lag value of the independent variables to mitigate potential endogeneity between trade credit and financial statement comparability. Lagged independent variables also deal with simultaneity where the explanatory variable is jointly determined with the dependent variable (Clemens et al. 2012). The results of these tests are reported in Table 5, Panel A. Column (1) of presents the results of my OLS regression and column (2) reports results of my Fama-MacBeth (1973) regression with industry fixed effects. The coefficients on FSCOM4 are negative and significant for both the OLS and Fama-MacBeth regressions.

This supports my main results of a negative association between financial statement comparability and trade credit.

Endogeneity—Omitted variables

To mitigate the omitted variable bias, I perform a firm-fixed effects regression analysis. The inclusion of firm-fixed effects control for unobserved firm characteristics that may be correlated with omitted explanatory variables and removes any purely cross-sectional correlation between financial statement comparability and trade credit. The use of a fixed effects approach addresses omitted variables bias arising from unobserved firm level time-invariant heterogeneity. The results for these tests are reported in Table 5, Panel B. In column (1), the dependent variable is TRADE CREDIT, computed as accounts payable (AP) divided by total assets (AT). In column (2), the dependent variable is total payables computed as accounts payable (AP) and notes payable (NP) divided by total assets (AT). Again, the coefficients on FSCOMP4 are negative

Endogeneity—Instrumental Variable

My previous empirical tests are predicted on the assumption that financial statement comparability determines whether firms require trade credit. It is also possible that financial statement comparability is lower for firms that use more trade credit. I use the lead and lag approach to conduct a Granger causality test and find that trade credit may, indeed, cause financial statement comparability. To address this concern, I employ a two-stage regression. In the first stage, I regress FSCOMP4 on all exogenous variables and use the fitted value of FSCOMP4 in the second stage. Following prior studies (Sohn 2016; Lee et al. 2016), I choose: firm SIZE; the market to book ratio (MTB); profit (PROFIT); discretionary actuals (DAC); Z-Score (Z-SCORE); return on assets (ROA); CL_XTRADE;

LEVERAGE; the book value of equity (BVE); firm age (AGE); market share (MARKETSHARE); TOBINQ; GROWTH; SOX; and regulated industry (REGUL) as my exogenous variables. The results of my reported in Table 5, Panel C. Column (1) presents the first stage regression. Firm SIZE, AGE, TOBINQ, CRISIS, GROWTH, PROFIT, and ZSCORE are positively associated with financial statement comparability. MTB, DAC, ROA, LEVERAGE, SOX, REGUL, and MARKETSHARE are negatively associated with comparability. The adjusted R^2 of the first stage regression is 21.2%, which is consistent with prior research.[15] I then use the fitted value of FSCOMP4 and repeat the regression from Table 3. The results are reported in column (2) of Table 5, Panel C. The coefficient on *Predicted (*FSCOM4*)* is negative (coeff. = -0.024) and significant at the 1% level. This suggests that omitted variables do not affect my main results that financial statement comparability is negatively associated with trade credit. In sum, the above results suggest that my documented association between financial statement comparability and trade credit is not driven by endogeneity.

Changes Analysis

To further confirm the association between financial statement comparability and trade credit, I conduct change analyses. I investigate whether changes in trade credit are explained by changes in financial statement comparability. First, I examine the impact of changes in financial statement comparability and control variables on changes in trade credit. Second, I create two additional dichotomous variables: IN_TRADECREDIT (an increase in trade credit) and DEC_TRADECREDIT (a decrease in trade credit) to test the

[15] Sohn's (2016) analysis has 20.67% of R^2.

impact of changes in ΔFSCOM4. Consistent with my hypothesis above, I predict a negative association between ΔFSCOMP4 and TRADE CREDIT in an overall change regression. I also predict that there will be a negative relation between ΔFSCOMP4 and IN_TRADECREDIT and a positive association between ΔFSCOM4 and DEC_TRADECREDIT. I replace the dependent variable, TRADE CREDIT, in the main regression equation by ΔTRADE CREDIT, IN_TRADECREDIT, and DEC_TRADECREDIT respectively as follows:

$$\Delta TRADECREDIT=\beta_0+\beta_1 \Delta FSCOMP4_{it}+\sum_{j=2}^{15} \beta_j \Delta CONTROLS_{it}+FY_i + Ind_i+\varepsilon_{it} \quad (8)$$

$$IN\_TRADECREDIT=\beta_0+\beta_1 \Delta FSCOMP4_{it}+\sum_{j=2}^{15} \beta_j \Delta CONTROLS_{it}+FY_i+Ind_i+\varepsilon_{it} \quad (9)$$

$$DEC\_TRADECREDIT=\beta_0+\beta_1 \Delta FSCOMP4_{it}+\sum_{j=2}^{15} \beta_j \Delta CONTROLS_{it}+FY_i+Ind_i+\varepsilon_{it} \quad (10)$$

where Δ indicates the change in a variable from year *t-1* to *t*. IN_TRADE CRDIT is an indicator variable taking the value 1 if the change in trade credit from year *t-1* to *t* is positive and 0 otherwise. DEC_TRADE CREDIT is an indicator variable taking the value of 1 if the change in trade credit from year *t-1* to *t* is negative, and 0 otherwise. The results are presented in Table 6. In column (1), the OLS regression coefficient on FSCOMP4 is negative (coeff. = -0.002) and significant at the 1% level, indicating that changes in trade credit are explained by changes in financial statement comparability. In column (2), the logit regression coefficient on FSCOMP4 is significantly negative ($p \leq 0.05$), suggesting that increases in trade credit are negatively associated with changes in financial statement comparability. In column (3), the coefficient on FSCOMP4 is positively significant ($p \leq 0.05$), indicating that decreases in trade credit are positively associated with financial

statement comparability. Taken together, the results presented in Tables 3 through 6 provide considerable support for Hypothesis 1a that, overall, financial statement comparability is negatively associated with the use of trade credit.

Financial distress

Because financially distressed firms are more likely to use trade credit per se, I investigate whether my overall results hold for a subsample of distressed firms. I test Hypothesis 1b by employing the interest coverage ratio as my measure of distress. Following prior studies (e.g., Asquith et al. 1994; Arnold et al. 2014; Corbae and D'Erasmo 2017) I create an indicator variable DISTRESS that is equal to 1 if the interest coverage ratio (earnings before interest divided by interest and related expense), is below 0.80 in any fiscal year and 0 otherwise. The results of my tests are presented in column (1) of Table 7. The coefficient on FSCOMP4×DISTRESS is negative and significant at the 1% level, and the coefficient on DISTRESS is insignificant. The test for difference between the coefficients of FSCOMP4×DISTRESS and DISTRESS is highly significant and indicates that comparable financially distressed firms take less trade credit than less comparable firms.

Firm size

Like distressed firms, smaller firms have also been shown to utilize more trade credit overall. To test whether comparability has any impact on this, I divide my sample into two groups: small and large, separated at the median. SIZE_SMALL is an indicator variable equal to 1 if a firm's size is less than the median of size, and 0 otherwise. The results of my tests are presented in column (2) of Table 7. The coefficient on FSCOMP4×SIZE_SMALL is significantly negative, ($p \leq 0.01$) and the test for difference

between the coefficients of FSCOMP4×SIZE_SMALL and SIZE_SMALL is also significant ($p \leq 0.01$),

Robustness checks

My results may be driven by the firm specific measure of financial statement comparability, biased due to the measure of trade credit, or driven by omitted variables. To address these potential concerns, I use: three alternative measures of financial statement comparability; three alternative measures of trade credit; and add additional control variables.

Alternative measures of financial statement comparability

My main regression analysis is based on the most commonly used financial statement comparability measure (FSCOMP4). To control for industry effects and as a robustness check, I employ three alternative measures of comparability. I use (1) FSCOMP10, computed as the average of top-10 firms' FSCOMP score (e.g., De Franco et al. 2011 p.901); (2) COMP_INDMEAN, which is the average FSCOMP of all firm i's FSCOMP scores in the same two-digit SIC group; and (3) COMP_INDMDN, which is the median FSCOMP score for all firms j in the same two-digit SIC group as firm i. The results of these tests are reported in columns (1), (2), and (3) of Table 8, Panel A. The coefficients on all comparability measures are significantly negative, indicating that the results of out main regression presented in Table 3 are robust to alternative measures of comparability.

Alternative measures of trade credit

The documented result in my analysis may be driven by the choice of trade credit measures. To address this concern, I employ three alternative measures of trade credit. Following prior studies (e.g., Love et al. 2007; Molin and Preve 2012), I use TC2,

computed as accounts payable (AP) scaled by cost of goods sold (COGS), TC3 calculated as accounts payable (AP) divided by total current liabilities (LCT), and TC4 computed as accounts payable (AP) plus notes payable (NP) divided by total assets (AT). The results, reported in Table 8, Panel B, are consistent with my results presented in Table 3.

Additional control variables

Because my results may be driven by omitted variables, I rerun my tests after including the additional control variables SALEGROWTH, INV_TURN, AP_TURN, INFOASYM, and PROFIT (prior studies by Smith 1987; Petersen and Rajan 1997; and Molina and Preve 2012 find that these variables are associated with TRADE CREDIT). The results of these tests are reported in Table 8, Panel C. In each instance the coefficient on FSCOMP4 is significantly negative.

II. 5. Summary

This investigation examines the effect of financial statement comparability on trade credit. How financial statement comparability influences trade credit is a topic worthy of examination given the sheer magnitude of trade credit as a financing mechanism, and the fact that trade credit is generally a costly alternative to external financing. I find an overall negative relation between financial statement comparability and trade credit. I also find a negative relation between comparability and trade credit for two groups of firms that known to rely significantly on trade credit: distressed firms and small firms. The findings I document are significant both statistically and economically, and are robust to consideration of alternative measures of comparability and trade credit. These findings add to my understanding of how comparability impacts economic behavior - specifically the role of financial statement comparability in short-term financing decisions. In addition, my

results support the financing motive theory, in that suppliers extend credit to firms that have lower quality accounting and are credit rationed. They further support standard setters' commitment to making accounting systems comparable across firms (FASB 2010). I also provide evidence that suppliers are indifferent to financial statement comparability – a finding that should be of solace to small or distressed firms.

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Appendix A: Variable definitions

Definition of variables

Variable	Definition
TRADE CREDIT	Accounts payable (AP) devided by total assets (AT).
TC2	Accounts payable (AP) divided by cost of goods sold (COGS)
TC3	Accounts payable (AP) divided by total current liabilities (LCT)
TC4	Accounts payable (AP) plus notes payable (NP) divided by total assets (AT)
FSCOMP4	Financial statement comparability score computed as in De Franco et al. (2011).
SIZE	Size of firm, computed as log of total assets (AT)
MTB	Market to book ratio, computed as (AT+CSHO*PRCC_F-CEQ-TXDB)/AT
|DAC|	Discretionary accruals calculated from the modified jones model (Dechow et al. 1995).
TOBINQ	Tobin's Q, calculated as market value of equity (CSHO*PRCC_F) plus book value of total assets (AT) minus total common equity (CEQ) divided by book value of total assets (AT).
CA	Non-Cash Current Assets (ACT-OANCF) divided by book value of total Assets (AT)
CASHHOLD	Firm cash holdings, computed as cash and marketable securities (CHE) divided by total assets (AT)
ROA	Profitability, computed as net income (NI) divided by total assets (AT)
CL_XTRADE	Current liabilities (LCT) minus accounts payable (AP) divided by total assets (AT)
LEVERAGE	Ratio of long term debt (DLTT) and debt in current liabilities (DLC) to total assets (AT)
LIQUIDCOST	Raw materials (INVRM) divided by total assets (AT)
AGE	Firm age, computed as the log of the number of years elapsed (plus one) since the year of firms' first listing in CRSP
MARKETSHARE	Firm sales over total industry sales where industry classification is based on Fama-French's 48 industry classification.
COMPETITION	Firm competition, computed as the log of the number of common shares outstanding (CSHO)
POS_SALE	An indicator variable equal to 1 if the change in sales (SALE - LAG of SALE) is positive and 0 otherwise.

Table 1 – Descriptive Statistics and Tests of Differences: High versus Low Comparability

Panel A – Descriptive Statistics

This table presents the descriptive statistics of my variable of interest and of the control variables used in the baseline regressions. The sample reflects data for the years 1987 through 2015. All continuous variables are winsorized at the 1st and 99th percentiles. Variables are defined in Appendix A.

	n	Mean	Std.Dev.	Min	P25	Median	P75
TRADE CREDIT	38748	0.08	0.06	0.02	0.03	0.06	0.10
FSCOM4	38748	-0.53	0.51	-1.62	-0.70	-0.29	-0.13
SIZE	38748	5.27	2.11	0.00	3.72	5.11	6.68
MTB	38748	1.95	1.19	0.84	1.10	1.51	2.35
TOBINQ	38748	0.47	3.05	0.00	0.04	0.09	0.24
|DAC|	38748	1.96	1.17	0.87	1.12	1.53	2.36
CA	38748	0.56	0.34	0.03	0.31	0.51	0.75
CASHHOLD	38748	0.21	0.21	0.00	0.04	0.13	0.34
ROA	38748	-0.02	0.18	-0.58	-0.06	0.03	0.09
CL_XTRADE	38748	0.17	0.12	0.02	0.08	0.14	0.23
LEVERAGE	38748	0.21	0.21	0.00	0.01	0.16	0.33
LIQUIDCOST	38748	0.05	0.05	0.00	0.00	0.03	0.08
AGE	38748	16.58	7.65	4.00	10.00	15.00	26.00
MARKETSHARE	38748	0.01	0.02	0.00	0.00	0.00	0.01
COMPETITION	38748	39.59	43.28	2.48	8.28	20.86	53.52
POS_SALE	38748	0.52	0.50	0.00	0.00	1.00	1.00

Table 1 – Descriptive Statistics and Tests of Differences: High versus Low Comparability

Panel B – Test of Differences: High versus Low Comparability

This table presents the univariate tests on the differences of variables used in equation (1) between firms with high financial statement comparability and low financial statement comparability. High Comparability is an indicator variable takes the value of 1 if *FSCOMP4* if greater than median *FSCOMP4*, and Low Comparability otherwise. *, **, and *** indicate the level of significance at 0.10, 0.05, and 0.01, respectively. Appendix A defines the variables.

Variable	High Comparability		Low Comparability		Mean	
	Mean	Std. Dev.	Mean	Std. Dev.	Difference	*t*-value
TRADE CREDIT	0.067	0.05	0.084	0.06	-0.017***	-30.64
SIZE	5.764	2.03	4.782	2.08	0.982***	46.99
MTB	2.096	1.18	1.798	1.17	0.298***	24.93
|DAC|	0.434	2.80	0.498	3.27	-0.064**	-2.08
TOBINQ	2.114	1.17	1.811	1.16	-0.303***	-25.68
CA	0.532	0.32	0.581	0.36	-0.049***	-14.24
CASHHOLD	0.222	0.22	0.205	0.21	0.017***	7.80
ROA	0.031	0.13	-.078	0.20	0.109***	-62.58
CL_XTRADE	0.166	0.11	0.181	0.13	-0.014***	-11.23
LEVERAGE	0.186	0.19	0.231	0.22	-0.045***	-21.21
LIQUIDCOST	0.046	0.05	0.044	0.05	0.002***	4.62
AGE	17.487	7.74	15.677	7.45	1.81***	23.43
MARKETSHARE	0.003	0.00	0.001	0.00	0.001***	30.33
COMPETITION	44.668	45.71	34.591	40.13	10.076***	23.05
POS_SALE	0.594	0.49	0.449	0.50	0.145***	28.88

Table 2 - Pearson Correlation Coefficient Matrix

Coefficients in bold are significant at $p \leq 0.01$. Variable definitions are presented in Appendix A.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	TRADECREDIT	**1.00**															
2	FSCOM4	**-0.17**	**1.00**														
3	SIZE	**-0.18**	**0.18**	**1.00**													
4	MTB	**-0.08**	**0.14**	**-0.09**	**1.00**												
5	TOBINQ	**-0.01**	**-0.01**	**0.02**	**0.05**	**1.00**											
6	|DAC|	-0.08	0.15	**-0.09**	**1.00**	**0.05**	**1.00**										
7	CA	**0.15**	**-0.03**	**-0.42**	**0.34**	**0.03**	**0.33**	**1.00**									
8	CASHHOLD	**-0.28**	**0.07**	**-0.18**	**0.44**	**0.04**	**0.43**	**0.60**	**1.00**								
9	ROA	**-0.09**	**0.29**	**0.37**	**-0.22**	**-0.04**	-0.21	**-0.37**	**-0.20**	**1.00**							
10	CL_XTRADE	**0.15**	**-0.08**	**-0.05**	**0.12**	**0.01**	0.12	**0.25**	0.01	**-0.05**	**1.00**						
11	LEVERAGE	**0.07**	**-0.13**	**0.22**	**-0.15**	**0.00**	**-0.15**	**-0.17**	**-0.35**	0.01	**0.20**	**1.00**					
12	LIQUIDCOST	**0.28**	**0.04**	**-0.20**	**-0.14**	**-0.02**	**-0.14**	**0.21**	**-0.22**	**0.15**	**0.04**	**0.03**	**1.00**				
13	AGE	0.01	**0.10**	**0.34**	**-0.17**	**0.03**	**-0.16**	**-0.24**	**-0.26**	**0.25**	**-0.04**	**0.04**	**0.10**	**1.00**			
14	MARKETSHARE	**0.01**	0.00	**0.57**	**-0.13**	**-0.04**	**-0.12**	**-0.32**	**-0.28**	**0.23**	0.01	**0.20**	**-0.11**	**0.27**	**1.00**		
15	COMPETITION	**-0.16**	**0.08**	**0.74**	**0.16**	**0.05**	**0.17**	**-0.25**	0.00	**0.07**	**-0.01**	**0.10**	**-0.26**	**0.19**	**0.41**	**1.00**	
16	POS_SALE	**-0.02**	**0.13**	**0.38**	**-0.03**	**0.00**	-0.02	**-0.15**	**-0.08**	**0.20**	**0.03**	**0.04**	**-0.04**	**0.14**	**0.21**	**0.25**	**1.00**

Table 3 - Baseline Regressions

Panel A: OLS and Tobit regression [Column (1) to Column (2)]

This table presents the results of the regression of equation (1), which shows the impact of financial statement comparability on trade credit. Column (1) presents results of OLS regression with industry and year fixed effects and standard errors clustered by firm. Column (2) presents results of Tobit regression, where the value of trade credit is censored at 0. The *t*-values are calculated based on robust standard errors clustered by firm. All continuous variables are winsorized at the 1st and 99th percentiles. *, **, *** indicate significance levels at 10%, 5%, and 1% respectively. Variables are defined in Appendix A.

Dependent variable=*TRADE CREDIT*				
	(1)		(2)	
	OLS		Tobit	
	Coeff.	*t*-value	Coeff.	*t*-value
FSCOMP4	-0.012***	-11.52	-0.013***	-24.42
SIZE	-0.005***	-7.44	-0.003***	-11.12
MTB	0.113***	7.39	0.121***	13.94
|DAC|	0.000	-0.07	0.000	0.50
TOBINQ	-0.112***	-7.22	-0.121***	-13.79
CA	0.061***	20.49	0.066***	53.68
CASHHOLD	-0.135***	-31.98	-0.144***	-76.95
ROA	0.000	0.12	0.005***	2.71
CL_XTRADE	0.018***	3.57	0.016***	7.49
LEVERAGE	-0.015***	-5.74	-0.017***	-12.44
LIQUIDCOST	0.080***	4.14	0.094***	14.35
AGE	0.000	-1.12	0.000	-0.84
MARKETSHARE	0.359***	6.43	0.210***	11.86
COMPETITION	0.000**	1.70	0.000***	3.03
POS_SALE	0.005***	8.76	0.004***	7.56
CONSTANT	0.016	0.61	0.067***	17.40
Year FE	Yes		Yes	
Industry FE	Yes			
Adj. R^2	0.329			
Log likelihood			62355	
Pseudo R^2				
Observations	38,158		38,398	

Table 3 - Baseline Regressions

Panel B: Fama-McBeth and Logit regression [Column (3) to Column (4)]

This table presents the results of the regression of equation (1), which shows the impact of financial statement comparability on trade credit. Column (3) presents the results of Fama-MacBeth (1973) regression with industry fixed effects. Column (4) reports the results of logistic regression, where Prob_TradeCredit is an indicator variable that takes the value of 1 if the firm's trade credit is greater than the industry mean of trade credit in the same 2 digit SIC group for three consecutive years and 0 otherwise. The *t*-values are calculated based on robust standard errors clustered by firm. All continuous variables are winsorized at the 1st and 99th percentiles. *, **, *** indicate significance levels at 10%, 5%, and 1% respectively. Variables are defined in Appendix A.

Dependent variable=*TRADE CREDIT*				
	(3)		(4)	
	Fama-McBeth		Logit	
	Coeff.	*t*-value	*Coeff.*	z-value
FSCOMP4	-0.013***	-12.40	-0.400***	-9.42
SIZE	-0.004***	-13.17	-0.145***	-5.72
MTB	0.103***	10.33	5.577***	6.65
|DAC|	0.008***	2.97	0.013***	2.81
TOBINQ	-0.102***	-10.19	-5.539***	-6.54
CA	0.065***	23.28	2.097***	18.32
CASHHOLD	-0.134***	-45.26	-5.133***	-27.57
ROA	0.003	0.57	-0.144	-1.06
CL_XTRADE	0.015***	4.94	0.830***	4.11
LEVERAGE	-0.014***	-13.08	-0.580***	-4.77
LIQUIDCOST	0.096***	8.01	4.923***	6.84
AGE	0.000***	-2.64	0.000	-0.01
MARKETSHARE	0.380***	15.81	14.770***	6.18
COMPETITION	0.000***	3.63	0.000	-0.09
POS_SALE	0.005***	6.60	0.209***	7.47
CONSTANT	0.056***	17.56	-2.457***	-3.88
Year FE			Yes	
Industry FE	Yes		Yes	
Adj. R^2	0.201			
Pseudo R^2			0.1395	
Observations	38,158		38,142	

Figure 1: Distribution of TRADE CREDIT

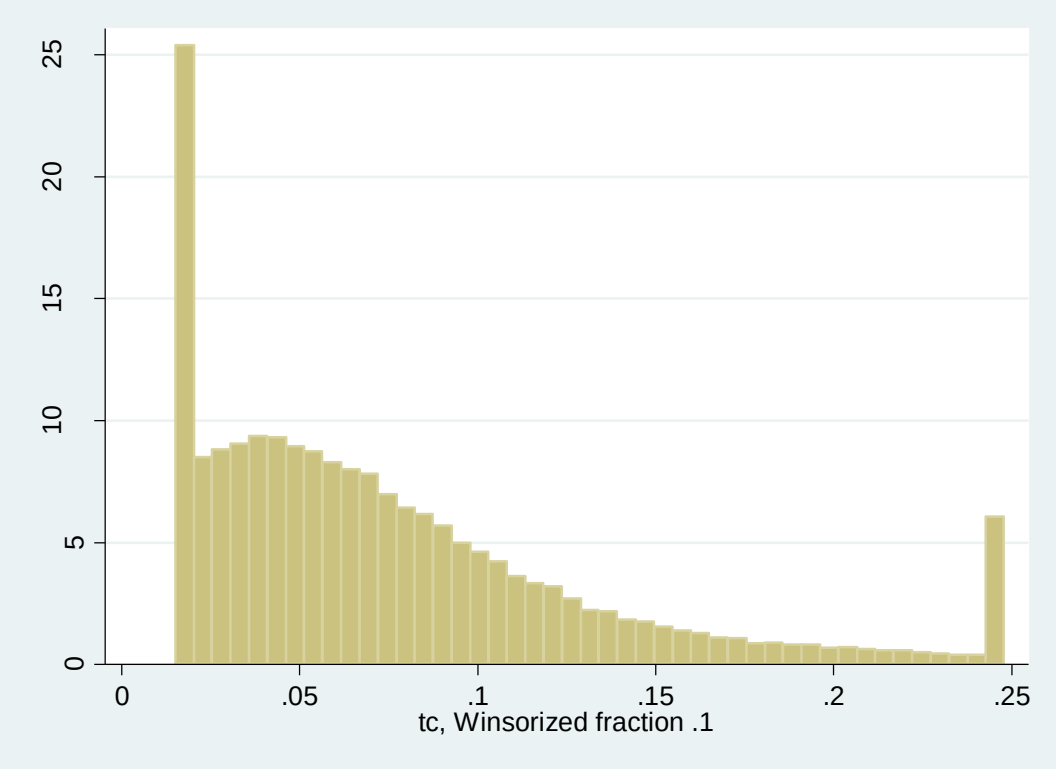

Table 4 - Quantile Regressions

Panel A: Quantile 10th to 25th

This table presents the results of quantile regressions. All continuous variables are winsorized at the 1st and 99th percentiles. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively. Variables are defined in Appendix A.

	Dependent variable = TRADE CREDIT			
	Quantile regression			
	A		B	
	10th		25th	
	Coeff.	*t*-value	Coeff.	*t*-value
FSCOMP4	-0.002***	-7.72	-0.005***	-13.70
SIZE	0.000	1.60	-0.001***	-3.35
MTB	0.038***	10.29	0.060***	20.82
|DAC|	0.000	1.43	0.000***	2.20
TOBINQ	-0.038***	-10.36	-0.060***	-20.53
CA	0.020***	22.00	0.034***	35.27
CASHHOLD	-0.043***	-31.93	-0.073***	-62.56
ROA	0.002**	2.11	0.003**	2.55
CL_XTRADE	0.008***	7.03	0.013***	7.81
LEVERAGE	-0.004***	-6.53	-0.007***	-7.42
LIQUIDCOST	0.121***	25.66	0.148***	34.21
AGE	0.000***	6.85	0.000***	7.95
MARKETSHARE	0.807***	14.45	1.108***	19.40
COMPETITION	0.000***	-5.52	0.000*	-1.78
POS_SALE	0.001***	6.68	0.002***	6.17
Constant	0.019	12.70	0.029***	12.19
Year FE	Yes		Yes	
Firm cluster	Yes		Yes	
Pseudo R^2	0.111		0.161	
Observations	38,698		38,698	

Table 4 - Quantile Regressions

Panel B: Quantile 50th to 90th

This table presents the results of quantile regressions. All continuous variables are winsorized at the 1st and 99th percentiles. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively. Variables are defined in Appendix A.

	Dependent variable = TRADE CREDIT					
	Quantile regression					
	C		D		E	
	50th		75th		90th	
	Coeff.	*t*-value	Coeff.	*t*-value	Coeff.	*t*-value
FSCOMP4	-0.010***	-15.77	-0.020***	-14.44	-0.033***	-18.22
SIZE	-0.002***	-6.57	-0.005***	-8.42	-0.007***	-9.47
MTB	0.092**	17.44	0.110***	12.72	0.144***	9.79
|DAC|	0.000**	2.28	0.000	1.38	0.000	-0.40
TOBINQ	-0.092***	-16.92	-0.109***	-12.37	-0.143***	-9.54
CA	0.056***	36.04	0.090***	32.22	0.115***	30.02
CASHHOLD	-0.120***	-62.40	-0.180***	-45.18	-0.228***	-55.97
ROA	0.009***	3.96	0.015***	3.38	0.016**	2.46
CL_XTRADE	0.019***	11.51	0.019***	6.74	0.017***	2.84
LEVERAGE	-0.011***	-9.95	-0.017***	-7.76	-0.031***	-7.97
LIQUIDCOST	0.135	21.07	0.083***	6.91	0.011	0.77
AGE	0.000***	3.27	0.000***	-2.87	-0.001***	-7.61
MARKETSHARE	1.192***	11.33	1.219***	8.07	1.790***	7.32
COMPETITION	0.000	1.52	0.000***	4.68	0.000***	2.71
POS_SALE	0.002***	4.38	0.004***	5.72	0.005***	4.66
Constant	0.051***	25.74	0.088***	25.12	0.132***	18.76
Year FE	Yes		Yes		Yes	
Firm cluster	Yes		Yes		Yes	
Pseudo R^2	0.174		0.188		0.221	
Observations	38,698		38,698		38,698	

Table 5 – Endogeneity Controls

Panel A - Lag Value of Financial Statement Comparability on Trade Credit.

This table presents the results of the impact of lag value of financial statement comparability score on trade credit. Column (1) presents the results of the impact of lag value of *FSCOMP4* on the *TRADE CREDIT*. Column (2) reports the results of Fama-MacBeth (1973) regressions with industry fixed effects. All continuous variables are winorized at the 1st and 99th percentile level. *, **, and *** indicate significance level of 0.10, 0.05, and 0.01 level respectively. Variables are defined in Appendix A.

	Dependent variable = TRADE CREDIT			
	(1)		(2)	
	OLS		Fama-McBeth	
	Coeff.	*t*-value	Coeff.	*t*-value
Lag(FSCOMP4)	-0.001**	-2.53	-0.002***	-3.12
SIZE	-0.004***	-6.32	-0.004***	-10.92
MTB	0.136***	8.54	0.119***	9.44
|DAC|	0.000	0.48	0.009***	2.84
TOBINQ	-0.137***	-8.52	-0.121***	-9.42
CA	0.065***	20.84	0.070***	18.57
CASHHOLD	-0.144***	-33.30	-0.147***	-43.32
ROA	-0.005	-1.32	-0.002	-0.26
CL_XTRADE	0.020***	4.10	0.016***	3.84
LEVERAGE	-0.013***	-4.58	-0.010***	-6.60
LIQUIDCOST	0.093***	4.99	0.078***	11.19
AGE	0.000	-0.87	0.000***	-2.45
MARKETSHARE	0.268***	5.70	1.292***	7.93
COMPETITION	0.000**	2.08	0.000***	3.67
POS_SALE	0.004***	5.51	0.004***	3.74
CONSTANT	0.077***	17.42	0.084***	41.91
Year FE	Yes			
Industry FE	Yes		Yes	
Pseudo R^2/R^2	0.265		0.146	
Observations	38,697		38,697	

Table 5 - Endogeneity Controls - Panel B - Firm-fixed effects

This tables presents the results of firm-fixed effect regressions of financial statement comparability on trade credit. In column (1) the dependent variable is TRADE CREDIT computed as accounts payable (AP) divide by total assets (AT). In column (2) the dependent variable is TOTAL CREDIT computed as the sum of accounts payable (AP) and notes payable (NP) divided by total assets (AT). All continuous variables are winsorized at the 1st and 99th percentiles. Variables are defined in Appendix A. The *t*-values reported are based on robust standard errors clustered by firm.

	Dependent variable = *TRADE CREDIT*			
	(1)		(2)	
	TRADE CREDIT		TOTAL CREDIT	
	Coeff.	*t*-value	Coeff.	*t*-value
FSCOMP4	-0.011***	-13.25	-0.008***	-8.92
SIZE	-0.010***	-16.35	-0.010***	-11.62
MTB	0.001***	5.40	0.000	1.30
|DAC|	0.000	-1.36	0.000***	-3.20
CA	0.020***	7.74	0.016***	6.82
CASHHOLD	-0.039***	-10.46	-0.039***	-10.05
ROA	-0.005***	-2.67	-0.005**	-2.32
CL_XTRADE	0.013***	3.27	0.075***	14.08
LEVERAGE	-0.006***	-3.71	-0.001	-0.57
LIQUIDCOST	0.103***	8.60	0.065***	4.91
AGE	0.001***	8.08	0.012***	3.02
MARKETSHARE	0.404***	7.81	0.379***	4.80
COMPETITION	0.000	-0.84	0.000	-1.66
POS_SALE	0.002***	5.95	0.002***	5.43
Constant	0.100***	23.88	0.057***	2.58
Year Fixed Effect	Yes		Yes	
Industry Fixed Effect	Yes		Yes	
Firm Cluster	Yes		Yes	
Firm Fixed Effect	Yes		Yes	
Adj. R^2	0.220		0.080	
Observations	38,698		38,650	

Table 5 - Endogeneity Controls - Panel C - Instrumental Variable Regressions

This table presents the results of instrumental variable estimation of financial statement comparability (FSCOMP4) on trade credit. Column (1) reports the first stage regression results, and column (2) presents the second stage regression results.

	Dependent variables First Stage = *FSCOMP4* and Second Stage = *TRADE CREDIT*			
	(1)			(2)
	First Stage			Second Stage
	Coeff.	*t*-value		Coeff.	*t*-value
SIZE	0.032***	13.13	Predicted(FSCOMP4)	-0.024***	-5.04
MTB	-0.899***	-11.29	MTB	0.054***	4.05
PROFIT	0.622***	10.50	SIZE	-0.010***	-13.67
|DAC|	-0.001	-1.36	|DAC|	0.000*	-1.81
Z-Score	0.041***	24.47	TOBINQ	-0.049***	-3.61
ROA	-0.121***	-2.75	CA	0.036***	18.56
CL_XTRADE	-0.280***	-14.01	CASHHOLD	-0.089***	-31.04
LEVERAGE	-0.302***	-24.14	ROA	0.000	0.02
AGE	0.002***	6.27	CL_XTRADE	0.013***	3.64
MARKESHARE	-16.149***	-16.27	LEVERAGE	-0.018***	-7.27
BVE	0.000***	8.97	LIQUIDCOST	0.122***	8.28
LIQUIDCOST	-0.024	-0.62	AGE	0.000	0.78
TOBINQ	0.967***	12.01	MARKETSHARE	3.503***	9.74
GROWTH	0.119***	12.15	COMPETITION	0.000	0.43
SOX	-0.118***	-21.97	POS_SALE	0.002***	5.27
CRISIS	0.051***	5.50			
REGUL	-0.213***	-17.99			
Constant	-0.750***	-54.32		0.070	2.08
Year Fixed Effect	Yes			Yes	
Firm Fixed Effect				Yes	
Industry Fixed Effect				Yes	
Adj. R^2	0.212			0.363	
Observations	38,599			38,061	

Table 6 - Change in Trade Credit and Changes in Comparability

This table reports the results from the change regression where: IN_TRADE CRDIT is an indicator variable equal to 1 if the change in trade credit from year *t-1* to *t* is positive and 0 otherwise; and DEC_TRADE CREDIT is an indicator variable equal to 1 if the change in trade credit from year *t-1* to *t* is negative, and 0 otherwise. Δ indicates the change in a variable from the year *t-1* to *t*. Column (1) presents the results of the impact of changes in financial statement comparability on the changes in trade credit. Column (2) presents the results of a logit regression of changes in financial statement comparability on an increase in trade credit. Column (3) presents the results of a logit regression of changes in financial statement comparability on a decrease in trade credit. The column (1) has fewer observations because of missing continuous variables whereas column (2) and (3) are 0's and 1's. Variables are defined in Appendix A. All specifications include firm cluster and year fixed effects. The *t*-statistics reported in the table are calculated based on standard errors clustered by firm and year. *, **, *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively.

	Dependent Variable=ΔTRADE CREDIT, INCREASE or DECREASE in TRADE CREDIT								
	sign	(1) TRADE CREDIT (OLS)		sign	(2) IN_TRADE CREDIT (Logit)		sign	(3) DEC_TRADE CREDIT (Logit)	
		Coeff.	*t*-value		Coeff.	*t*-value		Coeff.	*t*-value
ΔFSCOM4	-	-0.002***	-2.34	-	-0.079**	-1.957	+	0.075**	1.86
ΔSIZE		-0.017***	-14.18		1.350***	20.76		-1.361***	-20.87
ΔMTB		0.022**	2.27		2.575***	3.81		-2.602***	-3.84
Δ|DAC|		0.000***	-3.18		0.005	1.62		-0.005	-1.60
ΔTOBINQ		-0.020***	-2.00		-2.649***	-3.88		2.674***	3.91
ΔCA		0.015***	9.98		-0.864***	-11.09		0.863***	11.05
ΔCASHHOLD		-0.054***	-20.83		-1.236***	-9.73		1.241***	9.76
ΔROA		-0.015***	-6.53		-0.501***	-4.51		0.507***	4.56
ΔCL_XTRADE		0.009***	3.03		-1.233***	-7.62		1.251***	7.73
ΔLEVERAGE		-0.010***	-5.12		-0.710***	-6.17		0.706***	6.13
ΔLIQUIDCOST		0.142***	9.69		-6.885***	-8.74		6.893***	8.75
ΔAGE		0.001***	3.05		-0.070***	-2.73		0.065**	2.54
ΔMARKETSHARE		0.223***	4.50		18.676***	5.59		-18.738***	-5.61
ΔCOMPETITION		0.000	-1.47		0.007***	4.34		-0.007***	-4.37
POS_SALE		0.000	-1.55		0.117***	4.98		-0.113***	-4.80
Constant		0.005*	1.64		1.517*	1.88		-1.507*	-1.86
Year Fixed Effect		Yes			Yes			Yes	
Industry Fixed Effect									
Firm Cluster		Yes			Yes			Yes	
R^2		0.1106							
Pseudo R^2					0.055			0.055	
Observations		31,860			32,279			32,279	

Table 7 - Cross section analysis: Financial Distress and Firm Size

This table presents the cross-sectional variation of the impact of accounting comparability on TRADE CREDIT by financial distress and firm size. Financial distress is an indicator variable equal to 1 if the interest coverage ratio is less than 0.8, and 0 otherwise. Size_small is equal to 1 if size is less than the median size, and 0 otherwise. The *t*-values are calculated based on robust standard errors clustered by firm. All continuous variables are winsorized at the 1st and 99th percentiles. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Variables are defined in Appendix A.

	Dependent variable = *TRADE CREDIT*			
	(1)		(2)	
	Financial Distress		Small Size Firms	
	Coeff.	*t*-value	Coeff.	*t*-value
FSCOMP4×DISTRESS	-0.007***	-3.38		
DISTRESS	-0.001	-0.46		
FSCOMP4×SIZE_SMALL			-0.009***	-3.55
SIZE_SMALL			0.002	0.81
FSCOMP4	-0.012***	-10.23	-0.012***	-10.45
SIZE	-0.003***	-4.77	-0.002**	-2.25
MTB	0.119***	7.43	0.122***	7.66
|DAC|	0.000	-0.03	0.000	0.11
TOBINQ	-0.118***	-7.35	-0.122***	-7.59
CA	0.067***	21.36	0.067***	21.38
CASHHOLD	-0.144***	-32.40	-0.143***	-32.30
ROA	0.010***	2.68	0.007**	2.01
CL_XTRADE	0.014***	3.00	0.014***	2.98
LEVERAGE	-0.016***	-5.83	-0.016***	-5.84
LIQUIDCOST	0.079***	4.26	0.081***	4.42
AGE	0.000	-0.76	0.000	-0.85
MARKETSHARE	1.263***	4.90	1.023***	3.93
COMPETITION	0.000	0.67	0.000	-0.24
POS_SALE	0.004***	6.17	0.004***	6.31
Constant	0.072***	15.54	0.066***	13.34
Year Fixed Effect	Yes		Yes	
Firm Cluster	Yes		Yes	
Adj. R^2	0.277		0.276	
Observations	38,698		38,698	
$\beta_1 - \beta_2 = 0$	*(F-statistics=16.75) p<0.000*		*F-statistics=23.65) p<0.000*	

Table 8 – Robustness Tests: Panel A - Alternative measures of Trade Credit

The results in this table are based on equation (1) with alternative measures of TRADE CREDIT. In Column (1), TC2 is calculated as accounts payable (AP) divided by cost of goods sold (COGS) as used in prior studies (e.g., Love et al. 2007; Molina and Preve 2012), in column (2), TC3 is calculated as accounts payable (AP) divided by total current liabilities (LCT), and in column (3), TC4 is calculated as (AP+NP)/AT. The t-values are adjusted for clustering at the firm level. All variables are winsorized at 1st and 99th percentile. *, **, *** indicate significance at the 0.10, 0.05, and 0.01 levels respectively. Variables are defined in Appendix A.

	Dependent variable = *TRADE CREDIT*					
	(1)		(2)		(3)	
	TC2		TC3		TC4	
	Coeff.	*t*-value	Coeff.	*t*-value	Coeff.	*t*-value
FSCOMP4	-0.011***	-7.25	-0.013***	-5.03	-0.012***	-10.92
SIZE	0.001	1.44	-0.009***	-6.00	0.117***	6.87
MTB	0.029	1.11	0.017	0.34	-0.004***	-6.93
|DAC|	0.000***	-2.38	0.001***	3.44	0.000	0.09
TOBINQ	-0.025	-0.95	-0.012	-0.23	-0.119***	-6.90
CA	0.020***	5.44	0.178***	28.95	0.061***	22.02
CASHHOLD	-0.021***	-3.49	-0.244***	-25.30	-0.156***	-38.53
ROA	-0.020***	-3.56	0.081***	9.77	0.003	0.84
CL_XTRADE	0.017**	2.25	-0.730***	-62.62	0.116***	21.13
LEVERAGE	0.014***	3.19	0.017**	2.45	-0.001	-0.47
LIQUIDCOST	-0.046*	-1.88	0.359***	8.62	0.120***	7.03
AGE	-0.001***	-8.23	-0.001***	-3.37	0.000	1.56
MARKETSHARE	-0.527	-1.23	5.589***	7.31	1.575***	5.74
COMPETITION	0.000***	6.39	0.000**	-2.40	0.000***	3.20
POS_SALE	-0.003***	-3.32	0.008***	5.11	0.002***	3.68
Constant	0.094***	2.86	0.337***	3.96	0.081***	16.86
Year Fixed Effect	Yes		Yes		Yes	
Industry Fixed Effect	Yes		Yes		Yes	
Adj. R^2	0.174		0.442		0.380	
Observations	38,338		38,697		38,650	

Table 8 – Robustness Tests: Panel B - Alternative measures of Financial Statement Comparability

The regression results in this table present alternative measures of financial statement comparability. Column (1) presents FSCOMP10, calculated as the average of FSCOMP scores of the top-10 firms. Column (2) presents COMP_INDMEAN, which is the average FSCOMP of all firm i's FSCOMP scores in the same two-digit SIC group. Column (3) presents COMP_INDMDN, computed as the median FSCOMP scores for all firms j in the same two-digit SIC group as firm i. All continuous variables are winsorized at the 1st and 99th percentiles. *, **, and *** indicate significance at the 0.10, 0.05, and 0.01, levels respectively. Variables are defined in Appendix A.

	Dependent variable = *TRADE CREDIT*					
	FSCOMP10		COMP_INDMEAN		COMP_INDMDN	
	Coeff.	*t*-value	Coeff.	*t*-value	Coeff.	*t*-value
FSCOMP	-0.010***	-5.44	-0.005***	-4.88	-0.004***	-4.90
SIZE	-0.009***	-5.90	-0.009***	-5.92	-0.009***	-5.82
MTB	0.016	0.32	0.023	0.46	0.021	0.42
|DAC|	0.001***	3.39	0.001***	3.24	0.001***	3.32
TOBINQ	-0.010	-0.21	-0.018	-0.36	-0.016	-0.32
CA	0.178***	28.98	0.178***	28.96	0.178***	28.93
CASHHOLD	-0.244***	-25.31	-0.245***	-25.42	-0.245***	-25.43
ROA	0.082***	9.91	0.082***	9.85	0.086***	10.27
CL_XTRADE	-0.731***	-62.61	-0.730***	-62.53	-0.730***	-62.59
LEVERAGE	0.017**	2.41	0.018**	2.52	0.017**	2.50
LIQUIDCOST	0.360***	8.64	0.357***	8.58	0.358***	8.60
AGE	-0.001***	-3.33	-0.001***	-3.31	-0.001***	-3.27
MARKESHARE	5.560***	7.28	5.574***	7.28	5.565***	7.27
COMPETITION	0.000**	-2.45	0.000**	-2.49	0.000**	-2.55
POS_SALE	0.008***	5.13	0.008***	5.09	0.008***	5.09
Constant	0.335***	3.92	0.332***	3.88	0.334***	3.91
Year Fixed Effect	Yes		Yes		Yes	
Industry Fixed Effect	Yes		Yes		Yes	
Adj. R^2	0.442		0.441		0.441	
Observations	38,697		38,697		38,697	

Table 8 Robustness Tests: Panel C - Additional Control Variables [Column (1) to (2)]

This table presents the results of my regression of comparability on trade credit after including additional control variables. Those variables are: SALEGROWTH, calculated as (Sale-lag_Sale)/lag_Sale; INV_TURN, computed as COGS/INVRM; AP_TURN, calculated as COGS/AVERAEG AP; INFOSYSM, the bid-ask spread; and PROFIT, calculated as NI/AT.

	(1)		(2)	
	SALEGROWTH		INV_TURN	
	Coeff.	*t*-value	Coeff.	*t*-value
FSCOMP4	-0.013***	-12.35	-0.012***	-9.72
MTB	0.113***	6.78	0.105***	5.26
SIZE	0.003***	-4.90	-0.001	-1.57
SALEGROWTH	0.000***	3.40		
INVENTORY_TURN			0.001***	18.05
|DAC|	0.000	0.46	0.000	0.99
TOBINQ	-0.113***	-6.71	-0.106***	-5.23
CA	0.071***	21.04	0.049***	14.75
CASHHLD	-0.150***	-31.68	-0.118***	-26.45
ROA	0.004	1.24	-0.017***	-4.42
CL_XTRADE	0.015***	2.90	0.026***	4.20
LEVERAGE	-0.021***	-6.00	-0.016***	-4.86
LIQUIDCOST	0.072***	3.88	0.379***	15.24
AGE	0.000	-0.97	0.000***	-2.99
MARKESHARE	1.190***	4.55	0.444	1.56
COMPETITION	0.000	1.08	0.000**	2.07
POS_SALE	0.002***	3.60	0.003***	4.10
Constant	0.071***	14.95	0.030***	5.65
Year Fixed Effect		Yes		Yes
Firm Cluster		Yes		Yes
Adj. R^2		0.272		0.319
Observations		34,149		28,185

Table 8 Robustness Tests: Panel C - Additional Control Variables [Column (3) to (5)]

This table presents the results of my regression of comparability on trade credit after including additional control variables. Those variables are: SALEGROWTH, calculated as (Sale-lag_Sale)/lag_Sale; INV_TURN, computed as COGS/INVRM; AP_TURN, calculated as COGS/AVERAEG AP; INFOSYSM, the bid-ask spread; and PROFIT, calculated as NI/AT.

	(3)		(4)		(5)	
	AP_TURNOVER		INFOASYM		PROFIT	
	Coeff.	*t*-value	Coeff.	*t*-value	Coeff.	*t*-value
FSCOMP4	-0.016***	-7.09	-0.016***	-3.48	-0.021***	-8.28
MTB	-0.147***	-3.30	0.011	0.09	-0.055	-1.01
SIZE	-0.005***	-3.70	-0.003	-0.85	-0.005***	-3.29
AP_TURNOVER	-0.010***	-43.84				
INFOASYM			-0.007**	-2.35		
PRPFIT					0.139***	6.00
|DAC|	0.001***	3.37	0.001	0.61	0.001**	2.46
TOBINQ	0.151***	3.36	0.002	0.02	0.058	1.05
CA	0.178***	31.23	0.163***	14.19	0.172***	26.65
CASHHLD	-0.257***	-28.36	-0.234***	-10.78	-0.266***	-26.62
ROA	0.120***	15.96	0.013	0.73	-0.011	-0.62
CL_XTRADE	-0.756***	-68.52	-0.801***	-41.05	-0.775***	-68.08
LEVERAGE	0.020***	3.24	0.056***	3.61	0.024***	3.22
LIQUIDCOST	0.242***	6.82	0.138**	2.06	0.331	8.42
AGE	0.000	0.79	0.000	-0.95	0.000	-1.39
MARKESHARE	2.555***	4.03	0.575	0.32	1.517**	2.07
COMPETITION	0.000***	-5.64	0.000	1.57	0.000	0.14
POS_SALE	0.003**	2.31	0.002	0.58	0.002	1.46
Constant	0.515***	48.24	0.438***	18.94	0.415***	34.52
Year Fixed Effect		Yes		Yes		Yes
Firm Cluster		Yes		Yes		Yes
Adj. R^2		0.503		0.379		0.384
Observations		38,638		6,757		38,697

III. ESSAY 2: ACCOUNTING COMPARABILITY AND CLASSIFICATION SHIFTING

III. 1. Motivation

Accounting researchers have extensively investigated earnings management through manipulation of accounting accruals (Schipper 1989; Jones 1991; Burgstahler and Dichev 1997; Dechow et al. 1995; Becker et al. 1998; Heal and Wahlen 1999; Degeorge et al. 1999; Cohen et al. 2008) and through real activities management (Roychowdhury 2006; Cohen and Zarowin 2010; Gunny 2010; Zang 2011; Zhu and Lu 2013; Pacheco and Wheatley 2017). Existing literature (e.g., Cohen et al. 2008; Zang 2011; Ipino and Parbonetti 2011) confirms that managers use alternative forms of earnings management when one of them is constrained or seems costly.

Cohen et al. (2008), for example, find that accrual-based earnings management increased until the passage of the Sarbanes-Oxley Act (SOX) in 2002, after which the magnitude significantly declined. In contrast, earnings management resulting from altering operating decisions declined prior to SOX and increased significantly after. The Chairman of the SEC, Arthur Levitt, in a speech in 1998, discussed five of the more popular earnings management techniques: "big bath" restructuring charges, creative acquisition accounting, "cookie jar reserves," "immaterial" misapplications of accounting principles, and the premature recognition of revenue.[16] Booking excessive restructuring charges and later reversing them is also an earnings management technique (Moehrle 2002).

Researchers have, further, shown that managers engaged in the misclassification of core expenses to manage earnings (e.g., McVay 2006; Fan et al. 2010). This type of

[16] Please read the full speech at: https://www.sec.gov/news/speech/speecharchive/1998/spch220.txt

earnings management—classification shifting—has attracted the attention of the Securities and Exchange Commission (SEC). Accounting and Auditing Enforcement Release No. 1721 in February 26, 2003 states, for example:

> "SmarTalk falsely reported net income of $478,000 in its quarterly report for the third quarter of 1997. In fact, SmarTalk had losses that period. As Folck knew or should have known, SmarTalk hid the losses by improperly capitalizing ordinary operating expenses. The expenses were improperly treated as an asset (SEC 2003)".[17]

The SEC has released a number of litigation releases regarding the improper classification or misstatement of operating expenses and net income (e.g., SafeNet, Inc. in 2009[18]; Symbol Technologies, Inc. in 2010[19]), yet even after the SEC expressed concerns about the market consequences of classification shifting, studies in this area are limited, (e.g., McVay 2006; Fan et al. 2010; Haw et al. 2011; Behn et al. 2013).

After the initial evidence of classification shifting found by McVay (2006) and Fan et al. (2010), studies have shown that classification shifting is affected by: external monitoring (Zhao 2012), analyst following (Behn et al. 2013), audit quality (Haw et al. 2011), and board and audit committee quality (Zalata and Roberts 2016). There is no evidence, however, on whether financial statement comparability, an enhanced qualitative characteristic of accounting information, is associated with classification shifting.

Comparability is the enhancing qualitative characteristic of accounting information that enables users to identify similarities and differences between two sets of economic

[17] For more information https://www.sec.gov/litigation/admin/33-8196.htm

[18] For more information: https://www.sec.gov/litigation/litreleases/2009/lr21290.htm.

[19] For more information: https://www.sec.gov/litigation/litreleases/2010/lr21480.htm

phenomena (FASB 2010). Prior studies document that accounting comparability works as monitoring, and the extant literature documents significant relationships between financial statement comparability and a number of characteristics/activities. De Franco et al. (2011) find that analyst following is associated with comparability. Zhang (2012) finds an association with audit fees. Other research links comparability to: IFRS adoption (Brochet et al. 2013), Credit risk (Kim et al. 2013), valuation of seasoned equity offerings (Shane et al. 2014), stock-price crash risk (Kim et al. 2016), and the efficiency of acquisition decisions (Chen et al. 2016). Still other research has linked comparability to debt contracting (Fang et al. 2016), accrual based and real earnings management (Sohn 2016), the informativeness of stock prices about future earnings (Choi et al. 2017), and the cost of equity capital (Imhof et al. 2017).

While Sohn (2016) addresses the impact of comparability on accrual based and real earnings management, no research of which I am aware, has investigated whether there is an association between comparability and earnings management though classification shifting. This study fills that gap by extending Sohn (2016) and by investigating the association between financial statement comparability and classification shifting. I predict, and find, that comparability increases the peer monitoring of firms and, as a consequence, reduces classification shifting.

Prior studies find that both internal and external monitoring mitigate classification shifting. Behn et al. (2013) find, for example, that higher financial analyst monitoring mitigates classification shifting. Using data from East Asian countries, Haw et al. (2011) find that Big4 audit firms and strong legal institutions play a role in mitigating classification shifting. Zalata and Roberts (2016), investigate UK Corporate behavior and

find that high quality internal governance (in terms of board and audit committees) moderates classification shifting.

Prior studies (McVay 2006; Fan et al. 2010; Haw et al. 2011) and regulators (SEC 2003) find that managers engage in earnings management through classification shifting. Abernathy et al. (2014), for example, find that 21% of firms engage in classification shifting. When, however,firms are more comparable, they become benchmarks for each other which subsequently fosters more peer monitoring. This greater peer monitoring reduces information asymmetry (Kim et al. 2016), rendering comparable firms less likely to exhibit excessive deviations in core earnings. Prior studies on accounting comparability also show that financial statement comparability lowers the cost of acquiring information (Brochet et al. 2013), makes firms better benchmarks for each other (Shane et al. 2014), increases the quantity and quality of information and analyst following (De Franco et al. 2011), reduces information asymmetry (Kim et al. 2016), and facilitates information processing (Fang et al. 2016). Based on this evidence, I expect that comparability will be associated with a lower incidence of classification shifting.

Financial statement comparability establishes a form of monitoring and reduces information asymmetry (Brochet et al. 2013; Shane et al. 2014; Fang et al. 2016), and therefore curbs opportunistic behavior by management. Although there is evidence that financial statement comparability mitigates accrual-based earnings management and real activities management (Sohn 2016), there is no prior evidence on whether accounting comparability is also mitigates classification shifting. The difference between accrual-based earnings management [AEM], real activities management [REM] and classification shifting is important because, unlike the first two forms of earnings management,

classification shifting is a disclosure issue that does not process through accounting system and does not affect bottom line earnings. As a consequence, classification shifting is more difficult to verify (Athanasakou et al. 2009; Zalata and Roberts 2016, p. 52).

To test whether accounting comparability is associated with classification shifting, I first classify firms as shifters and non-shifters. In making this classification, I follow the studies of McVay (2006), Fan et al. (2010), Abernathy et al. (2014), and Alfonso et al. (2015). That research posits that a positive relation between unexpected core earnings and income-decreasing special items is an indicator of likely classification shifting. I classify a firm as a shifter if its unexpected core earnings are positive (actual core earnings less expected core earnings) and the change in special items (special item of year t less special items of year t-1) is positive for fiscal year t. In additional analysis, I follow Fan and Liu (2017), and employ alternative measures of classification shifting: cost of goods sold classification shifting, and operating expense classification shifting. I adopt De Franco et al.'s (2011) proxy for financial statement comparability that is built on the idea that the output of comparable financial reporting systems (e.g., earnings) should be similar for firms with similar economic events. Using a sample of 34,686 firm-year observations, I find (consistent with Abernathy et al. 2014) that 18% of firms engage in classification shifting. I also find that financial statement comparability is significantly negatively associated with shifters. I find that 36% of the firms engage in cost of goods sold classification shifting (CS_COGS) and 14% of the firms engage in general and administrative expense classification shifting (CS_XSGA). I also find that financial statement comparability is significantly negatively associated with CS_COGS and CS_XSGA. To establish a link between financial statement comparability and

classification shifting, I test whether governance is associated with comparability. I find that governance is significantly, positively associated with comparability.

Certain unobserved characteristics that affect firms' financial statement comparability may, however, also affect firms' earnings management strategy via classification shifting. Sohn (2016) states, for example, that the results of accounting comparability and earnings management can be biased to the extent that the accounting variable is endogenous. I address this issue by first, using the lag of accounting comparability as my measure of comparability, and second by conducting two-stage least-squares regressions. The results of those regressions yield qualitatively similar results to those of my OLS regressions. This suggests that accounting comparability and classification shifting are unlikely to be subject to significant endogeneity problems.

I contribute to the financial statement comparability and classification shifting literature in several ways**.** First, this study extends the research of Sohn (2016) that investigates the association between financial statement comparability and AEM and REM. Sohn (2016) finds that accounting comparability is negatively associated with accrual-based earnings management and positively associated with real activities management. The distinction between traditional earnings management (AEM and REM) and classification shifting is important because both AEM and REM alter the bottom line of the income statement while classification shifting does not. For this reason, regulators, auditors, and researchers have paid less attention to classification shifting prior to McVay's (2006) research and the SEC's litigation releases related to shifting.

Second, this study provides new insights to the classification shifting literature with respect to the association between monitoring or governance and classification shifting.

While prior studies (Haw et al. 2011; Zhao 2012; Behn et al. 2013) find that both internal and external governance, and audit quality are associated with classification shifting, no study has yet examined the impact of accounting comparability on classification shifting despite the evidence that comparability works as monitoring tool (De Franco et al. 2011; Kim et al. 2014; Zhang 2012; Fang et al. 2016; Sohn 2016).

Third, this study enlarges the scope of the accounting comparability literature. There are two streams of research on accounting comparability. One stream has treated accounting comparability as the outcome of an event (e.g., Callao et al. 2007; Cascino and Gassen 2010; Lang et al. 2010; DeFond et al. 2011; Yip and Young 2012; Ahmed et al. 2013), while the other has treated comparability as a determinant (De Franco et al. 2011; Kim et al. 2014; Fang et al. 2016; Sohn 2016; Imhof et al. 2017). De Franco et al. (2011) measured output based comparability and find that it explains analysts' firm selection behavior and forecast properties. Other studies (Kim et al. 2016; Chen et al. 2016) find that accounting comparability works as a monitoring tool. This study adds to the literature of the usefulness of assessing accounting comparability by examining its effect on classification shifting.

Finally, this study has implications for regulators. The *Statement of Financial Accounting Concepts No. 2* states: "Information about an enterprise gains greatly in usefulness if it can be compared with similar information about other enterprises..., and the significance of information depends to a great extent on the user's ability to relate it to some benchmark" (FASB 1980, p. 26). In addition, the *Statement of Financial Accounting Concepts No. 8* states that: "Comparability is a qualitative characteristic that enhances the usefulness of information that is relevant and faithfully represented" and "…information

about a reporting entity is more useful if it can be compared with similar information about other entities and with similar information about the same entity for another period or another date" (FASB 2010, p.19). Thus, if regulators wish to set accounting standards so as to improve financial reporting quality, they should be apprised of the effect of comparability on earnings management via classification shifting.

The rest of the paper is organized as follows. Section II discusses literature review and hypothesis development. Section III explains the measures main variables and empirical specification. Section IV describes the sample selection procedure whereas section V explains the results of univariate and multivariate results. Section VI discusses the channel through which accounting comparability is associated with classification shifting. Section VII performs additional analyses, and the final section VIII concludes the study.

III. 2. Literature and Hypothesis Development

Financial Statement Comparability

The Statement of Financial Accounting Concepts (SFAC) No. 2 states that comparability is a qualitative characteristics of accounting information (FASB 1980), and the Statement of Financial Accounting Concepts No. 8 states comparability as an enhancing qualitative characteristic (FASB 2010). FASB defines financial statement comparability as the extent to which an information user can recognize the similarities and differences in the financial performance of two firms. SFAC No. 8 states that "Investing and lending decisions essentially involve evaluations of alternative opportunities, and they cannot be made rationally if comparative information is not available." (FASB 2010, p. 26). One of the objectives of accounting information is to help investors to compare

performance of two firms so that they can make informed decisions. The US FASB and International Accounting Standard Board (IASB) developed a common conceptual framework, based on and built on both the IASB framework and the FASB framework, and mentioned comparability as an important decision useful qualitative characteristic of financial information (FASB 2010). Securities and Exchange Commission (SEC) has emphasized on the comparability of financial statements across firms. SEC Chairman, Mary Jo White, in her Public Statement on January 5, 2017, for example, states that "Building high-quality, globally accepted accounting standards requires that the Commission support further efforts by the FASB and IASB on convergence between their accounting standards to enhance the quality and comparability of financial reporting – both domestically and across borders." (SEC 2017).

Other qualitative characteristics (e.g., value relevance, persistence, predictability), compared to comparability, have received more attention in accounting literature. Holthausen and Watts (2001), for example, mentions 62 papers on value relevance published in top tier journals, whereas by that time there were very little empirical evidence on comparability. Despite the importance of comparability in the conceptual framework of accounting (FASB 1980, 2010), to the regulators, and academic researcher (Schipper 2003), prior literature has paid much less attention to the financial statement comparability. The paucity of research on the accounting comparability was due to lack of a standard comparability measure. Schipper (2003), for example, expressed the concern as follows:

> "However, until we can measure the amount of comparability obtained for a given level of detailed guidance, we will not be well armed with evidence on which to base discussions about the desirability of limiting the amount

> of detail provided in standards, when the intent of that detail is increased comparability." (Schipper 2003, p. 68)

After the development of De Franco et al. (2011) measure of financial statement comparability, the researchers respond to the call of Schipper (2003) for more research on accounting comparability. There are two streams of research on accounting comparability. One of the streams has investigated the impact of an event (e.g., IFRS adoption) on accounting comparability. Accounting amounts are comparable if, when two firms face the same economic outcomes, the firms report similar accounting amounts (Barth et al. 2012). One of the most important objectives of IFRS is to promote international comparability of financial reporting, which is the demand of capital market globalization (Nobes and Parker 1995). The IASB claims that IFRS is more likely to improve cross-country financial reporting comparability; however, some researchers (e.g., Ball et al. 2000, 2003; Leuz et al. 2003; Ball 2006; Holthausen 2009; Hail et al. 2010) highlight the significant role of institutional features (such as auditing, enforcement, institutions, market efficiency) in shaping the outcomes of IFRS implementation. Different application of IFRS is expected due to different institutional features; therefore, the comparability may not improve. Barth et al. (2012) add to this line and argue that because of inherent flexibility of IFRS, which is a principle-based accounting standard, financial reports based on IFRS are less likely to be comparable. Financial statement comparability research following IFRS is a response to this tension. The majority of studies (e.g., Cascino and Gassen 2010; Yip and Young 2012; Barth et al. 2013; Brochet et al. 2013) finds that the financial statement comparability has improved after IFRS adoption. Such findings are not surprising, since the most expectable consequence of a single set of accounting standards is the enhancement of

financial statements comparability. However, few studies (e.g., Callao et al. 2007; Carlin and Finch 2008) document that the comparability has not improved after IFRS adoption. Barth et al. (2012) find that greater accounting comparability is found to firms that are having strict enforcement and are from common law countries. Cascino and Gassen (2012) find that increased comparability is found for firms with incentives for greater accounting quality. Whatever maybe the research design, the main purpose of these studies was to find out whether accounting quality—comparability—has increased after the adoption of IFRS.

The other stream of research has examined the impact of accounting comparability on many financial and economic phenomena. Since comparability lowers information acquisition and processing cost, enhances the quality of information available to investors, allows meaningful comparison among firms, increases number of analysts following, enables analysts to sharper inferences about economic similarities and differences across comparable firms, researchers have shown the association between comparability and financial and economic variables. The existing literature, for example, documented a significant relation between financial statement comparability and (1) analyst following (De Franco et al. 2011) (2) audit fees (Zhang 2012) (3) IFRS adoption (Brochet et al. 2013) (4) Credit risk (Kim et al. 2013) (5) valuation of seasoned equity (Shane et al. 2014) (6) crash risk (Kim et al. 2016) (7) efficiency of acquisition decisions (Chen et al. 2016) (8) debt contracting (Fang et al. 2016) (9) accrual based and real earnings management (Sohn 2016) (10) informativeness of stock price about future earnings (Choi et al. 2017) (11) cost of equity capital (Imhof et al. 2017). Furthermore, because comparable firms become better benchmarks for each other, information transfer among them becomes easy and managers of comparable firms are less likely to alter core earnings that are highly deviated from the

peers. Higher comparability facilitates users to have more information about firms' financial performance with less efforts (Kim et al. 2013).

Classification Shifting

Classification shifting is an earnings management technique in which managers intentionally misclassify cost of goods sold and operating expenses as special items within the income statement to improve core earnings. In general term, classification shifting can be achieved by shifting expenses down from recurring items to non-recurring items and alter core earnings instead of bottom line net income. Unlike recurring expenses such as cost of goods sold, non-recurring expenses such as restructuring charges are infrequent or transitory in nature and less sophisticated investors appear not to understand their nature and weight individual categories within the income statement differently (e.g., Bradshaw and Sloan 2002; Zalata and Roberts 2015). Classification shifting gets less attention from auditors and regulators since GAAP net income does not change. These might motivate managers to shift recurring expenses down to the non-recurring expenses, and thus alter core earnings. After the initial evidence in McVay (2006) consistent with the misclassification of recurring expense as non-recurring expense by showing a positive relation between unexpected core earnings and the income-decreasing special items, there are two streams of research on classification shifting. One of the streams (e.g., Fan et al. 2010; Haw et al. 2011) provides additional evidence consistent with classification shifting. Using quarterly data and similar design, Fan et al. (2010) find that managers engage in classification shifting and the practice is more likely in the fourth quarter than in the interim quarter. They also provide evidence that classification shifting is more evidenced when managers' ability to manipulate accruals appear to be constrained. Based on sample from

East Asian countries, Haw et al. (2011) provide evidence that strong legal institution and Big4 auditors play role in mitigating the prevailing classification shifting. Analyzing U.K. firms, Athanasakou et al. (2009, 2011) find that firms use classification shifting to achieve analyst forecast. Other stream of research has investigated the factors affecting classification shifting (Zhao 2012; Behn et al. 2013; Zalata and Roberts 2016). Zhao (2012), for example, finds that when AEM and REM are constrained by increased external monitoring, they are more likely to engage in earnings management by classification shifting. However, using international sample of firms from 40 countries, Behn et al. (2013) find that higher financial analyst following mitigates classification shifting. Based on U.K. sample, Zalata and Roberts (2016) find that high quality internal governance in terms of overall quality of board and audit committee mitigates classification shifting. However, there is no evidence on how a firm's financial statement comparability, an enhanced qualitative characteristics of accounting information, is associated with classification shifting.

Hypothesis

Existing literature (e.g., Lipe 1986; Elliot and Hanna 1996; Fairfield et al. 1996) suggests that earnings components close to sales in the income statement receive more attention by analysts and investors. Lipe (1986), for example, finds that income statement line items closer to sales are more persistent. Collins et al. (1997) find that the value relevance of bottom line earnings has declined over the years. Investors' differential responses to earnings components suggest that these components have different implications for future profitability (Fairfield et al. 1996). Fan and Liu (2017) argue that

since earnings components closer to sales receive greater valuation multiples, managers may be incentivized to misclassify persistent expenses (COGS and/or SGA) as transitory income-decreasing special items to inflate their firms' persistent profitability measures such as gross margin and core earnings (p. 404). Fan et al. (2010) provide evidence consistent with misclassification of core expenses when doing so allows firms to report core earnings that just meet or beat the consensus analyst forecast. Managers are motivated to achieve the benchmarks of zero earnings or prior-period core earnings or analyst forecasts (e.g., Skinner and Sloan 2002; Dhaliwal et al. 2004; Lopez and Rees 2002).

Existing literature document that income increasing earnings management is negatively associated with a larger proportion of outside members (Marrakchi et al. 2001), board and audit committee members (Xie e tal. 2003), high corporate governance (Liu and Lu 2007), and number of audit committee meetings (Xie et al. 2003). However, using international sample of firms from 40 countries, Behn et al. (2013) find that higher financial analyst following mitigates classification shifting. Based on U.K. sample, Zalata and Roberts (2016) find that high quality internal governance in terms of overall quality of board and audit committee mitigates classification shifting. Studies on accounting comparability (e.g., Chen et al. 2016; Kim et al. 2014: Kim et al. 2016) assume that comparable firms are external monitors of each other.

After the theoretical evidence in Dye (1988) and Trueman and Titman (1988) consistence with the notion that information asymmetry between management and shareholders is a precondition for the practice of earnings management, Richardson (2000) provides empirical evidence that when information asymmetry is high stakeholders do not have sufficient resources, incentives, or access to relevant information to monitor

managers' actions, which gives rise to the practice of earnings management. Studies on accounting comparability provide evidence that financial statement comparability reduces information asymmetry (e.g., Kim et al. 2013; Naranjo et al. 2013; Fang et al. 2016; Kim et al. 2016). Kim et al. (2013) document that accounting comparability decreases information asymmetry by enabling less informed investors to conduct simple and standardized but still effective financial analyses. Using international data, Naranjo et al. (2013) conclude that International Financial Reporting Standards (IFRS) increased accounting comparability and ultimately reduces information asymmetry among capital market participants. Literature also provides evidence consistent with the notion that comparability reduces information asymmetry between lenders and borrowers (Fang et al. 2016) and between peer firms (Chen et al. 2016). Financial statement comparability also deters managers from bad news hoarding (Kim et al. 2016).

Existing literature in many disciplines has empirically provided evidence consistence with the view that individual and firm behavior is modified by peer effects (Manski 2000; Falk and Ichino 2006; Leary and Roberts 2014). Falk and Ichino (2006) and Beshears et al. (2015) document that individual behavior is affected by peer effects. Manski (2006) theoretically provides evidence that the action chosen by a firm can affect the constraints, expectation, and/or preferences of its economically related peers. Leary and Roberts (2014) find that a firm's financing decisions are responses to the financing decisions and characters of peer firms. De Franco et al. (2011) find that a one-standard-deviation increase in their comparability measure is associated with a 5% increase in the probability of being selected as a peer (p. 897). Peer companies are benchmarked against one another and against the target based on various financial metrics of performance (Chen

et al. 2016). Peer firm effect works very well. If firm A is a peer of firm B, firm A is more likely to follow firm B. Studies have document that peer firm effects are prominent in case of earnings management. Gleason et al. (2008), for example, find that firms with comparable peers with high accruals experience more pronounced share price decline than do low-accrual firms. Suppose firm A and B are highly comparable. If firm B reports core earnings of $100 million, firm A is more likely to show almost same core earnings since their economic situations are same. Since comparable firms are peers of each other and are better benchmarks, their financial decisions are also affected by peers' financial decisions.

Financial statement comparability measure is positively associated with analyst following (De Franco et al. 2011). De Franco et al. (2011) find that the likelihood of analyst using another firm in the industry (say, firm j) as benchmark when analyzing a particular firm (say, firm i) is increasing—albeit modestly—in the comparability between two firms (p. 897). Prior studies find that analysts play a role of information intermediaries in corporate governance and serve as external monitoring to managers. Based on multiple measures of earnings management, Yu (2008), for example, find that firms followed by more analysts are less likely to manage earnings.

When the accounting system and its outcomes are comparable with those of other firms, the outside market participants such as analysts, potential investors, peer firms, and regulators can assess the firm's true economic performance by comparing the accounting information of the firm and its peers (Sohn 2016). Comparable firms' accounting environment becomes more transparent to peer groups and to the outsiders at large leaving managers less room to manipulate core earnings. In short, due to decrease in information asymmetry, increase in external monitoring, increased peer effects, and increase in analyst

following, highly comparable firms are less likely to manipulate core earnings. Prior studies assumed that the ability for classification shifting is homogenous across firms and such practices are less likely to attract monitors' and regulators scrutiny (Zalata and Roberts 2016). After analyzing prior studies, I argue that the ability to classification shifting is not the same across all firms and accounting comparability may play a role in mitigating classification shifting. Based on the above discussion, my testable formal hypothesis (in alternative form) is as follows:

H1: Comparable firms are less likely to classification shift.

III. 3. Research Design

Financial Statement Comparability

I follow the De Franco et al. (2011) measure of financial statement comparability, which is based on the earnings-returns relationship of paired firms. De Franco et al. (2011) develop an empirical model based on the assumption that for a given set of economic events, two firms produce similar financial results. Following De Franco et al. (2011), I first estimate the following:

$$\text{Earnings}_{it} = \alpha_i + \beta_i \text{Return}_{it} + \varepsilon_{it} \qquad (2)$$

where Earnings is the quarterly net income before extraordinary items (IBQ) scaled by beginning of the period market value of equity (PRCC_F*CSHO), and Return is the respective quarter's stock return. I calculate $\hat{\alpha}_i$ and $\hat{\beta}_i$ for firm i and in the same way I estimate $\hat{\alpha}_j$ and $\hat{\beta}_j$ for firm j. I then use these parameters to estimate expected earnings of firm i and j. I use the Return of firm i and the parameters of i and j to compare the Earnings of firm i and j as follows:

$$\text{E(Earnings)}_{iit} = \hat{\alpha}_i + \hat{\beta}_i \text{Return}_{it} \qquad (3)$$

$$E(\text{Earnings})_{ijt} = \hat{\alpha}_j + \hat{\beta}_j \text{Return}_{ij} \quad (4)$$

Keeping the economic event, $Return_{it}$, constant, I calculate predicted earnings of firm i *and* j for the period t. Then I compute the accounting comparability between firm i and j ($FSCOMP4_{ijt}$) from the following:

$$FSCOMP_{ijt} = -\frac{1}{16} * \sum_{t-15}^{t} \left| E(Earnings_{iit}) - E(Earnings_{ijt}) \right| \quad (5)$$

The smaller the difference between the predicted earnings of i and j, the more comparable are the two firms' accounting systems. I estimate comparability for each firm i-firm j combination for J firms within the same two-digit SIC industry classification. Then I rank all J values of $FSCOMP_{ijt}$ for each firm i from the highest to lowest. Next I calculate $FSCOMP4_{it}$ as the average of highest four comparability score of firm i with firm j. I also compute FSCOMP10, COMP_INMDN, and COMP_INDMEAN. The detailed calculations of these measures are defined in Appendix A.

Classification Shifter

To identify classification shifter firms, I follow core earnings level model developed in prior studies (e.g., (McVay 2006; Abernathy et al. 2014). I use the following model for each industry-year:

$$CE_t = \beta_0 + \beta_1 CE_{t-1} + \beta_2 ATO_t + \beta_3 WCA_{t-1} + \beta_4 WCA_t + \beta_5 SALE_t + \beta_6 NEG\_SALE_t + \varepsilon_t \quad (5)$$

Where CE_t is core earnings, which is equal to sales less COGS and selling, general, and administrative expenses, scaled by sales. ATO_t is asset turnover ratio, WCA is working capital accruals, which is equal to change in total current assets net of change in cash, minus change in current liabilities net of change in the current portion of long term debt, scaled

by total assets. $SALE_t$ is the percentage change in sales and NEG_SALE_t is the percentage change in sales when the change in sales is negative to allow for different slope coefficients for sales increases and decreases? The model is estimated cross-sectional by industry and fiscal year. Unexpected core earnings (U_CE) is determined for each firm-year by subtracting the predicted core earnings from the estimation of equation (5) from the actual core earnings reported. Prior studies (e.g, McVay 2006; Fan et al. 2010) suggest that for classification shifters, their unexpected core earnings (U_CE_{t+1}) are expected to be positively associated with special items (SPI_t). Therefore, following prior studies (McVay 2006; Fan et al. 2010; Abernathy et al. 2014; Athanasakou et al. 2011), I classify firms as income classification shifters if they have positive U_CE_{t+1} and positive change in income decreasing special items.

To identify cost of goods sold classification shifters, I follow Fan and Liu (2017) and use the following model:

$$COGS_t=\alpha_0+\alpha_1\left(\frac{1}{A_{t-1}}\right)+\alpha_2 COGS_{t-1}+\alpha_3 ACCR_t+\alpha_4 ACCR_{t-1}+\alpha_5 RET_t + \alpha_6 RET_{t-1}+\alpha_7 SALE_t+\alpha_8 \Delta SALE_t+\alpha_9 NEG\_SALE_t+\mu_t \quad (6)$$

where $COGS_t$ is cost of goods sold in year t scaled by A_{t-1}. ACCR is total accruals obtained from income before extraordinary (IB) items minus cash flows from operation scaled by beginning of the year total assets, and cash flows from operations (OANCF) is obtained from COMPUSTAT. RET is the market adjusted annual return calculated from monthly return from CRSP. ΔSALE is the change in sales from year t-1 to the year t. NEG_SALE is the change in sales if change is less than zero, and zero otherwise. I run the model by industry-fiscal year and unexpected cost of goods sold (U_COGS) is determined for each

firm-year by subtracting the predicted cost of goods sold from the estimation of equation (6) from the actual cost of goods sold reported. I classify firms as COSG_SHIFTER if the U_COGS is negative and change in special items is positive.

I also identify selling, general, and administrative expense classification shifting by following the following model:

$$XSGA_t=\alpha_0+\alpha_1\left(\frac{1}{A_{t-1}}\right)+\alpha_2 XSGA_{t-1}+\alpha_3 ACCR_t+\alpha_4 ACCR_{t-1}+\alpha_5 RET_t + \alpha_6 RET_{t-1}+\alpha_7 SALE_t+\alpha_8 \Delta SALE_t+\alpha_9 NEG\_SALE_t+\mu_t \quad (7)$$

where XSGA is selling, general, and administrative expense scaled by beginning of the year total assets. I run the model by industry-fiscal year and unexpected selling, general, and administrative expense (U_XSGA) is determined for each firm-year by subtracting the predicted XSGA from the estimation of equation (7) from the actual XSGA reported. I classify firms as XSGA_SHIFTER if the U_XSGA is negative and change in special items is positive.

Regression Specification

Following prior literature (Pan 2013; Abernathy et al. 2014), I use the following logit model to test the impact of accounting comparability on classification shifting:

$$\begin{aligned}(ProbCS_t=1) = {} & \alpha_0+\alpha_1 Comp\_Acct_t+\alpha_2 Assets_t+\alpha_3 LongTenure_t \\ & +\alpha_4 Inst\_hold_t+\alpha_5 Analyst_t+\alpha_6 Taxrate_t+\alpha_7 ROA_t \\ & +\alpha_8 HighNoa_t+\alpha_9 Regul_t+\alpha_{10} Litigation_t+\alpha_{11} SOX_t \\ & +\alpha_{12} CFO\_Forecast_t+\alpha_{13} MktShare_t+\alpha_{14} MTB_t+\alpha_{15} Op_{Cycle_t} \\ & +\alpha_{16} Big4_t+\alpha_{17} Stock_t+\alpha_{18} ROE_t+\alpha_{19} Leverage_t+\alpha_{20} Loss_t \\ & +\alpha_{21} CFOA_t+\alpha_{22} Z\_Score_t+\varepsilon_t \end{aligned} \quad (8)$$

where CS is equal to one if the unexpected core earnings (U_CE) is positive and change in special items is positive. *Comp_Acct* is either *Comp_Acct4*, which is the average firm i's four highest comparability score during year t, or *Comp_Ind*, which is the average of all firm i's comparability scores during year t. Appendix A explains other variables. I include Assets (Log of COMPUSTAT AT) in my model because prior studies (e.g., Warfield et al. 1995; Beasley et al. 2000; Francis and Yu 2009; Barton and Simko 2002; Mayers et al. 2007) suggest that firm size affect managers' earnings management behavior. Since auditor tenure at a firm is associated with opportunistic behavior of managers (e.g., Johnson et al. 2002; Myers et al. 2003; Chen et al. 2008; Davis et al. 2009; Jenkin and Velury 2008), I include LongTenure. Inst_hold is the percentage of institutional ownership, which has impact on earnings management (e.g., Chung et al. 2002; Velury and Jenkins 2006). Following prior studies, I include other control variables because they are associated with opportunistic behavior of managers. I use the following model to test whether financial statement comparability reduces CS_COGS:

$$
\begin{aligned}
(\text{ProbCS}_t=1) = {} & \alpha_0+\alpha_1\text{Comp\_Acct4}_t+\alpha_2\text{Assets}_t+\alpha_3\text{LongTenure}_t \\
& +\alpha_4\text{Inst\_hold}_t+\alpha_5\text{Analyst}_t+\alpha_6\text{Taxrate}_t+\alpha_7\text{ROA}_t \\
& +\alpha_8\text{HighNoa}_t+\alpha_9\text{Regul}_t+\alpha_{10}\text{Litigation}_t+\alpha_{11}\text{SOX}_t \\
& +\alpha_{12}\text{CFO\_Forecast}_t+\alpha_{13}\text{MktShare}_t+\alpha_{14}\text{MTB}_t+\alpha_{15}\text{Op\_Cycle}_t \\
& +\alpha_{16}\text{Big4}_t+\alpha_{17}\text{Stock}_t+\alpha_{18}\text{ROE}_t+\alpha_{19}\text{Leverage}_t+\alpha_{20}\text{Loss}_t
\end{aligned}
$$

$$+\alpha_{21}CFOA_t+\alpha_{22}Z\_Score_t+\varepsilon_t \quad (9)$$

To test the impact of financial statement comparability on CS_XSGA, I use the following logistic regression model:

$$\begin{aligned}(ProbCS_t=1) \quad =&\alpha_0+\alpha_1Lagged\_Comp\_Acct_t+\alpha_2Assets_t+\alpha_3LongTenure_t\\&+\alpha_4Inst\_hold_t+\alpha_5Analyst_t+\alpha_6Taxrate_t+\alpha_7ROA_t\\&+\alpha_8HighNoa_t+\alpha_9Regul_t+\alpha_{10}Litigation_t+\alpha_{11}SOX_t\\&+\alpha_{12}CFO\_Forecast_t+\alpha_{13}MktShare_t+\alpha_{14}MTB_t+\alpha_{15}Op\_Cycle_t\\&+\alpha_{16}Big4_t+\alpha_{17}Stock_t+\alpha_{18}ROE_t+\alpha_{19}Leverage_t+\alpha_{20}Loss_t\\&+\alpha_{21}CFOA_t+\alpha_{22}Z\_Score_t+\varepsilon_t \quad (10)\end{aligned}$$

Sample Selection

I started my analysis with 409,420 firm-year observations from COMPUSTAT. After matching with CRSP, IBES, and Thomson Reuters and deleting missing observations, my final sample consists of 34,686 firm-year observations. Following prior studies (McVay 2006; Abernathy et al. 2014; Athanasakou et al. 2011), I exclude financial firms, eliminate (1) observations with annual sales less than US$1 million, (2) change in fiscal year during the year, (3) total assets less than US$1 million, and (4) less than 15 observations within the industry-year. Table 1 explains the detailed of sample selection.

III. 4. Empirical Results

Figure 1 exhibits that accounting comparability of shifter firms are less than those of non-sifter firms. Table 2 provides descriptive statistics for the sample used for estimating regression in the analyses. The descriptive statistics are for the full sample of 34,686 firm-year observations from 1988-2015. The statistics shows that eighteen percent of my sample

firms are classification shifters (Shifter=0.18). The mean and median of firm-year level financial statement comparability, i.e., Comp_Acct4, are -0.44 and -0.24 respectively, with a standard deviation of 0.47, suggesting that Comp_Acct4 is normally distributed. The mean and median of industry level comparability, Comp_Ind, is -2.07 and -1.59 respectively. These values are consistent with prior studies (e.g., De Franco et al. 2011; Sohn 2015; Chen et al. 2016; Kim et al. 2016). 43% of my sample firm-year observations occurred during the post-SOX period (SOX=0.43). The average length of operating cycle (Op_Cycle) is 130.59 days, average size (log of total assets) is 6.34. Average number of analyst following of my sample firms is 9.91, 32% of the firms are litigation prone, and average Z-Score of my firm is 2.52, suggesting that most firms are in good health. Moreover, 36% of the firms are cost of goods sold classification shifters (CS_COGS=0.36) and 14% of the firms are selling, general, and administrative expense shifter (CS_XSGA=0.14).

Table 3 provides Pearson correlation among the variables used in the regression analysis. The negative and significant correlation coefficient between Shifter and Comp_Acct4 (-0.04) suggests that firms with higher accounting comparability are less likely to engage in earnings management by classification shifting. The negative and significant correlation coefficient (-0.04) between Shifter and Analyst indicates that firms with higher analyst following are less likely to classification shift. The negative correlation of *Shifter* with *Regul* (-0.02) and *litigation* (-0.01) are consistent with hypothesis that firms in regulated industry and litigation prone industry are less likely to classification shift. The positive correlation coefficient between *Assets* (*Log of Assets*) and *CFO_Forecast* suggests that larger firms are more likely to have cash flow forecast. Finally, the negative correlation

(-0.03) between *Shifter* and *Z-Score* indicates that financially strong firms are less likely to classification shift. Although the correlation coefficient between *Shifter* and *Comp_Acct4* indicate that they are negatively associated, the correlation between these two between these two variables does not consider other variables that might have impact on classification shifting. Therefore, we need multivariate regression analysis.

Multivariate Results

The results from my multivariate analysis to test my hypothesis are presented in Table 4. My hypothesis examines the impact of accounting comparability on classification shifting. Column (1) of Table 4 exhibits the results of the impact of *Comp_Acct4* on classification shifting, and column (2) presents the results of the impact of *Comp_Ind* on classification shifting. The coefficient of -0.500 on *Comp_Acct4* is negative and highly significant (*z=-13.62*) suggests that comparable firms are less likely to engage in classification shifting. The coefficient of -0.180 on *Comp_Ind* is also negatively significant (*z=-12.82*), confirms the prior findings. Other variables such as *Assets*, *LongTenure*, *Instl_hold*, *ROA, HIghNoa, SOX, MTB, Z-Score* are significant consistent with prior studies. The negative and significant coefficient of -0.263 on Z-Score (*z=-3.25*), for example, suggests that firms with poor financial condition are more likely to opportunistically misclassify core expenses as non-recurring expenses.

Endogeneity Issue

Firms' accounting comparability is the return-earnings relationship among the firms in each industry. Firms whose earnings attributes such as accruals quality, earnings predictability, and earnings smoothness are similar have similar accounting comparability (De Franco et al. 2011). Managers may alter the accruals quality by engaging them in

earnings management. It means that managers can apply different accounting methods and techniques that may affect the accounting comparability with other firms. As a result, earnings management by classification shifting may also affect accounting comparability. Managers who wish to manage earnings by classification shifting maybe involved in tempering accounting systems that can affect the return earning relationship, which ultimately move accounting comparability. From this critical analysis, it seems that classification shifting and accounting comparability are both endogenous.

To test whether classification shifting and accounting comparability are endogenous, I conduct two tests. First, I re-run the baseline regression in Table 4 using the lagged values of *Comp_Acct* (both Comp_Acct4 and Comp_Ind). The most common approach to test for endogeneity is to lag the independent variable (Ben Shepherd 2010). The argument is that although the current period value of *Comp_Acct* might be endogenous to classification shifting, it is unlikely that past period values of *Comp_Acct* are also subject to the same problem. The results are presented in Table 5. The results are consistent with the previous results both for *Comp_Acct4* and *Comp_Ind* and are significantly negative.

Studies in econometrics (e.g., Larcker and Rusticus 2010; Miguel et al. 2004; Hamilton and Nickerson 2003) as well as in accounting (e.g., Anderson et al. 2004; Barton 2001; Beatty et al. 1995; Darrough and Rangan 2005; DeFond et al. 2002; Haw et al. 2004) suggest using instrumental variables or two-stage least squares (2SLS) regression to mitigate the biases caused by endogeneity of the predictor variables. I use 2SLS to alleviate the issue of endogeneity. In the first stage, I regress *Comp_Acct* on various instrumental variables and other variables that explain accounting comparability, and in the second stage, I use the predicted value of *Comp_Acct* for the main regression. Following prior

studies (e.g., Sohn 2016; Brown and Kimbrough 2011; Anderson et al. 2004), I use Assets, Loss, longTenure, Insl_hold, Analyst, Taxrate, ROA, HighNoa Regul, Litigation, SOX, MktShare, MTB, Operating Cycle, Big4, ROE, Leverage, and Z-Score because accounting comparability can vary with the variances of these variables. The adjusted R^2 is 25.86%, which is higher than prior studies (Sohn 2016; Brown and Kimbrough 2011), suggesting that the instruments are well selected, and the coefficients of the variables are consistent with them. The coefficient of SOX is -0.053 (t= -9.28) and significant at 1% level whereas Sohn (2016) finds -0.0449 (t= -2.81). Coefficient on Regul is -0.072 (t=-7.71) and is consistent. I run the main regression of Table 4 and report the results in Table 6 second column. The coefficients on *E(Comp_Acct)* are significantly negative {Comp_Acct4 (-5.109; t= -4.44) and Comp_Ind (-2.373; t= -4.44}, suggesting that firms having higher accounting comparability are less likely to classification shift.

Channel Through Which Comparability is Associated with Classification Shifting

In this section, I try to explain how financial statement comparability allows less room for managers to manipulate earnings through classification shifting. I provide evidence from prior literature that there is a link between the variables that directly affect earnings management.

Less Information Asymmetry for Comparable Firm

Prior studies (e.g., Kim et al. 2013; Naranjo et al. 2013; Fang et al. 2016; Kim et al. 2016; Chen et al. 2016) argue that financial statement comparability reduces information asymmetry; however, these studies do not provide empirical evidence of the association between accounting comparability and information asymmetry. Earnings management literature (e.g., Richardson 2000; Chu and Song 2010) provides empirical

evidence that higher information asymmetry does not allow stakeholders to have sufficient resources and incentives to access to the relevant information to monitor managers' actions, giving rise to the practice of opportunistic managerial behavior--earnings management.

To show empirical evidence on the association between information asymmetry and financial statement comparability, I calculate bid-ask spread from CRSP. I use only those firm-year observations that have fiscal year end on December 31. After matching with my sample data, I get only 18,636 firm-year observations. I use the following model for information asymmetry.

$$\begin{aligned} InfoAsym_t = \quad & \delta_0+\delta_1 Comp_{Acct4_t}+\delta_2 Big4_t+\delta_3 Inst_{hold_t}+\delta_4 Regul_t \\ & +\delta_5 Analyst_t+\delta_6 CFO\_Forecast_t+\delta_7 Lit_t+\delta_8 HighNoa_t \\ & +\delta_9 MktShare_t+\delta_{10} Specialist_t+\varepsilon_t \qquad (11) \end{aligned}$$

Where *InfoAsym* is the difference between bid and ask price (from CRSP). *Comp_Acct4* is the comparability measure. I have included Big4 because firms audited by Big4 firms are less likely to hoard information. *Inst_hold, Regul, Analyst, CFO_Forecast, Lit, HighNoa, MktShare,* and *Specialist* directly or indirectly affect the bid-ask price difference. My model is well fit because the adjusted R-squared is 54.75%. Table 7 exhibits the results of regression analysis of InfoAsym on accounting comparability measure. From Table 7, I find that the coefficient on *Comp_Acct4* is -.018, which is significantly negative (t=-6.67). The significantly negative coefficient suggests that information asymmetry decreases with the increase in accounting comparability. This finding suggests that earnings management through classification shifting decreases with the increase in accounting comparability.

Additional Analysis

Does Accounting Comparability Decrease Cost of Goods Sold Classification Shifting?

Table 8 reports the results of logistic regression of CS_COGS on the accounting comparability variable (*Comp_Acct4*) and control variables using equation (9) in column (1) and equation (10) in column, respectively. The coefficient on *Comp_Acct4* is -0.135 and significant at the 1% level (z-value=-4.48) in column (1), suggesting that managers are less likely to misclassify cost of goods sold as special items when their firms' accounting is more comparable with that of other firms operating in the same industry. The negative (-0.191) and significant (-4.79) coefficient of *Comp_Acct4* in column (2) indicates that managers of highly comparable firms reduce their general, administrative, and selling expense misclassification behavior. These findings suggest that financial statement comparability reduces overall classification shifting. I have also run both the regressions in equation (9) and (10) with lagged value of *Comp_Acct4* and found that the results persist (Table 9 presents the results of lagged value of *Comp_Acct4*). I have also used 2SLS to alleviate the issue of endogeneity and found that the results are consistent with the previous results both for CS_COGS and CS_XSGA (Table 10 exhibits the results of 2SLS).

Does SOX Act 2002 Play Moderating Role in the Association Between Comparability and Classification Shifting?

Studies on the pre-and post-SOX period (Pincus and Rego 2008; Cohen et al. 2008; Cook et al. 2008; Chan et al. 2008) provide evidence that Sarbanes-Oxley Act has impact on opportunistic behavior of management. Since there are mixed findings on the association between SOX and earnings management (Cohen et al. 2008), we need to know

the impact of SOX on the association between comparability and classification shifting. To check whether SOX plays a role, I use the following model:

$$
\begin{aligned}
(\mathrm{ProbCS_t} = 1) \quad &= \alpha_0 + \alpha_1 \mathrm{Comp_{Acct_t}} * \mathrm{SOX} + \alpha_2 \mathrm{Comp_{Acct4_t}} + \alpha_3 \mathrm{SOX_t} \\
&+ \alpha_4 \mathrm{Assets_t} + \alpha_5 \mathrm{LongTenure_t} + \alpha_6 \mathrm{Inst_{hold_t}} + \alpha_7 \mathrm{Analyst_t} \\
&+ \alpha_8 \mathrm{Taxrate_t} + \alpha_9 \mathrm{ROA_t} + \alpha_{10} \mathrm{HighNoa_t} + \alpha_{11} \mathrm{Regul_t} \\
&+ \alpha_{12} \mathrm{Litigation_t} + \alpha_{13} \mathrm{CFO_{Forecast_t}} + \alpha_{14} \mathrm{MktShare_t} \\
&+ \alpha_{15} \mathrm{MTB_t} + \alpha_{16} \mathrm{Op_{Cycle_t}} + \alpha_{17} \mathrm{Big4_t} + \alpha_{18} \mathrm{Stock_t} \\
&+ \alpha_{19} \mathrm{ROE_t} + \alpha_{20} \mathrm{Leverage_t} + \alpha_{21} \mathrm{Loss_t} \\
&+ \alpha_{22} \mathrm{CFOA_t} + \alpha_{22} \mathrm{Z\_Score_t} + \varepsilon_t \qquad (11)
\end{aligned}
$$

Table 11 presents the results of the logistic regression of the equation (11). The coefficient on *Comp_Acct4*SOX* is -0176 and is significant at the 5% level (z-value=-2.54) in column, suggesting that managers are incrementally less likely to misclassify recurring expenses as special items when their firms' accounting is more comparable with that of other firms operating in the same industry.

III. 5. Summary

I investigate whether firms' financial statement comparability with other firms affects earnings management through classification shifting. I argue that financial statement comparability decreases information asymmetry by enabling less informed investors to conduct simple and standardized but still effective financial analysis, increases external monitoring by increased number of analyst following. I also argue that high comparable firms become better benchmarks or peers for each other and the accounting environment becomes more transparent to peer groups and to the outsiders at large. Because of decreased information asymmetry, increased external monitoring, and

increased peer effects, managers have less room to manipulate core earnings. To find whether financial statement comparability mitigates classification shifting, I run logistic regression of three types of classification shifting—core expense shifting (*Shifter*), cost of goods sold shifting (*CS_COGS*), and selling, general, and administrative expense shifting (*CS_XSGA*), on accounting comparability. My results are consistent with my hypothesis that comparable firms are less likely to classification shift. To establish a channel between accounting comparability and classification shifting, I run regression of information asymmetry (*InfoAsym*) on accounting comparability (*Comp_Acct4*) and find that financial statement comparability reduces information asymmetry. To overcome endogeneity issue, I run the main regression using the lagged value of *Comp_Acct4* and use two-stage least square regression. I find that the main results remain same. I also find that SOX has a moderating role in the association between accounting comparability and classification shifting.

My findings have several implications for researchers as well as regulators. First, this study extends the study (Sohn 2016) that investigates the association between financial statement comparability and earnings management. Second, this study adds new evidence on the classification shifting literature that attempts to show the association between monitoring or governance and classification shifting. Third, this study expands the scope of accounting comparability literature. Finally, this study has implication for the regulators. The Statement of Financial Accounting Concepts No. 2 states, ". Information about an enterprise gains greatly in usefulness if it can be compared with similar information about other enterprises..., and the significance of information depends to a great extent on the user's ability to relate it to some benchmark." (FASB 1980, p. 26). The Statement of

Financial Accounting Concepts No. 8 states that "Comparability is a qualitative characteristic that enhances the usefulness of information that is relevant and faithfully represented", and "Users' decisions involve choosing between alternatives, for example, selling or holding an investment, or investing in one reporting entity or another. Consequently, information about a reporting entity is more useful if it can be compared with similar information about other entities and with similar information about the same entity for another period or another date." (FASB 2010, p.19). Extant literature finds many benefits of comparability (De Franco et al. 2011). However, while setting accounting standards to improve comparability between entity, the regulators need to know the effect of it on earnings management by classification shifting, which is also a concern of SEC, so that they can achieve the intended goals.

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Appendix A - Variable Definitions

Variable	Definition
Comp_Acct4	Firm-year level measure of financial statement comparability, calculated as the average of the largest four comparability combination for firm i and other firms in the same 2-digit SIC in a given year.
Comp_Ind	Firm-year level measure of financial statement comparability, calculated as the median of comparability combinations for firm i and other firms
Lagged Comp_acct	Lag values of Comparability measures.
E(Comp_Acct4)	Expected value of Comp_Acct4, which is the expected value from the first stage instrumental regression of Cop_Acct4
CE	Core Earnings (before Special Items and Depreciation): (Sales – Cost of Goods Sold – Selling, General and Administrative Expenses)/Sales, where Cost of Goods Sold and Selling, General and Administrative Expenses exclude Depreciation and Amortization.
U_CE	Unexpected Core Earnings is the difference between reported and predicted Core Earnings, where the predicted value is calculated using the coefficients from model (1) estimated by fiscal year and industry as follows: $\mathrm{CE_t} = \beta_0 + \beta_1 CE_{t-1} + \beta_2 ATO_t + \beta_3 WCA_{t-1} + \beta_4 WCA_t + \beta_5 SALE_t + \beta_6 NEG\_SALE_t + \varepsilon_t$, where *CE* is Core Earnings; *ATO* is the Asset Turnover Ratio (sales divided by average operating assets); *WCA* is working capital accruals scaled by lagged assets (the change in total current assets net of the change in cash, minus the change in current liabilities net of the change in the current portion of long-term debt, divided by lagged total assets; *Sales* is percent change in Sales from the previous year; *Neg_Sales* is the negative percent change in Sales if that change is negative and zero otherwise.

Big4	Is an indicator variable equal to one when the firm is audited by a Big4 firm.
CFO_Forecast	Cash Flow from Operations Forecast, which is an indicator variable equal to one when the firm has cash flow forecasts in IBES, and zero otherwise.
HighNOA	High Net Operating Assets, which is an indicator variable equal to one if the beginning of the year NOA is greater than the industry median and zero otherwise.
Inst_Hold	Institutional ownership, calculated as the number of shares held by institutions divided by total shares outstanding.
Assets	Log of Assets, calculated as log of total assets.
LongTenure	Long Tenured Auditor, an indicator variable equal to one when audit tenure is more than 8 years, and zero otherwise.
MktShare	Firm's percentage of its industry's sales, calculated as the firm's total sales divided by the industry total sales.
MTB	Market to book ratio.
OpCycle	Operating Cycle, calculated as the days receivable plus days in inventory at the beginning of the year.
ROA	Return on Assets, calculated as net income divided by total assets.
OX	Is an indicator variable equal to one if the fiscal year is greater than 2003, and zero otherwise.
Shifter	Is an indicator variable equal to one if U_CE is greater than zero and change in special items is greater than zero, and zero otherwise.
CS_COGS	Classification Shifter of Cost of Gods Sold, which is an indicator variable equal to one if unexpected cost of goods sold is negative and the change in special items is positive. Unexpected cost of goods sold is measured as the residual from the following model for the expected cost of goods sold, estimated by industry-year: $$COGS_t = \delta_0 + \delta_1(1/A_{t-1}) + \delta_2 COGS_{t-1} + \delta_3 ACCR_{t-1} + \delta_4 ACCR_t + \delta_5 RET_t + \delta_6 RET_{t-1} + \delta_7 SALE_t + \delta_8 \Delta SALE_t + \delta_9 NEG\_SALE_t + \varepsilon_t$$ where, ACCR is the total accruals obtained from income before extraordinary items (IB) minus cash flows from operations, scaled by lag of total assets. RET is the annual market adjusted returns for the year.
CS_XSGA	Classification shifter of selling, general, and administrative expenses (xsga), and is an indicator variable equal to one if unexpected expenses are negative and the change in special items is positive. Unexpected xsga is the residual from the following model for the expected xsga, estimated by industry-year:

$$XSGA_t = \delta_0 + \delta_1(1/A_{t-1}) + \delta_2 XSGA_{t-1} + \delta_3 ACCR_{t-1} + \delta_4 ACCR_t + \delta_5 RET_t + \delta_6 RET_{t-1} + \delta_7 SALE_t + \delta_8 \Delta SALE_t + \delta_9 NEG\_SALE_t + \varepsilon_t$$

Taxrate	Total taxes paid divided by pre-tax net income constrained between 0 and 1.00.
Regul	Is an indicator variable equal to one if the two digit SIC is in the 40-49 range.
Litigation	Is an indicator variable equal to one if the four-digit SIC is within: 2833-2836; 3570-3577; 7370-7374; 3600-3674; or 5200-5961.
Analyst	The natural logarithm of one plus the number of analysts following the firm.
Leverage	Ratio of long-term debt and debt in current liabilities to the book value of assets
Loss	An indicator variable equal to one if a firm reports negative net income during the year.
SPI	Special items divided by sales.
Stock	An indicator variable equal to one if stko is equal to zero.
ACCR	Total accruals calculated as net income before extraordinary item less cash flow from operations.
Z-Score	Altman's Z-Score, calculated: *ZSCORE* = 3.3 * earnings before interest and taxes / total assets + 1.0 * sales divided by total assets + 1.4 * retained earnings divided by total assets + 1.2 * working capital divided by total assets + 0.6 * market capitalization divided by total liabilities.
CFOA	Cash flow from operations divided by lagged total assets.
InfoAsym	Is the different between bid-ask price.

Table 1 - Sample Selection

			Observations
Total observations available in COMPUSTAT - 1988 to 2015			409,420
Less: Missing data to estimate core earnings			(173,318)
Less: Firms in financial industries (SIC 6000-6799)			(83,245)
Less: Missing data to estimate control variables:			(118,171)
	Assets	39	
	ROA	5,911	
	Institutional_hold	25,318	
	Taxrate	49	
	Analyst	23,309	
	MktShare	5,891	
	MTB	6,030	
	Z-score	16,552	
	Operating Cycle	11,027	
	ROE	6,032	
	Leverage	693	
	CFOA	5,927	
	Tenure	11,393	
	Total	118,171	
Total observations used in the analysis			34,686

Table 2 - Descriptive Statistics

Variable	n	Mean	S.D.	Min	0.25	Mdn	0.75	Max
Shifter	34686	0.18	0.38	0.00	0.00	0.00	0.00	1.00
Comp_Acct4	34686	-0.44	0.47	-1.62	-0.55	-0.24	-0.11	-0.06
Comp_Ind	34686	-2.07	1.35	-5.52	-2.52	-1.59	-1.14	-0.67
Assets	34686	6.34	1.81	1.53	4.99	6.18	7.51	13.08
Loss	34686	0.25	0.43	0.00	0.00	0.00	0.00	1.00
longTenure	34686	0.04	0.20	0.00	0.00	0.00	0.00	1.00
Inst_hold	34686	0.54	0.23	0.00	0.37	0.59	0.77	0.79
Analyst	34686	9.91	1.64	6.78	8.94	10.41	11.27	11.62
Taxrate	34686	0.27	0.15	0.00	0.16	0.33	0.38	0.45
TOA	34686	0.02	0.12	-0.53	0.00	0.05	0.08	0.12
HighNoa	34686	0.12	0.32	0.00	0.00	0.00	0.00	1.00
Regul	34686	0.07	0.25	0.00	0.00	0.00	0.00	1.00
Litigation	34686	0.32	0.47	0.00	0.00	0.00	1.00	1.00
SOX	34686	0.43	0.50	0.00	0.00	0.00	1.00	1.00
CFO_forecas	34686	0.28	0.45	0.00	0.00	0.00	1.00	1.00
MktShare	34686	0.02	0.03	0.00	0.00	0.01	0.04	0.08
MTB	34686	2.54	1.63	0.29	1.31	2.08	3.39	6.02
Op_cycle	34686	130.59	75.82	0.00	74.13	117.06	170.61	342.25
Big4	34686	0.39	0.49	0.00	0.00	0.00	1.00	1.00
Stock	34686	0.91	0.29	0.00	1.00	1.00	1.00	1.00
ROE	34686	0.00	0.13	-0.50	0.00	0.04	0.07	0.12
Leverage	34686	0.32	0.30	0.00	0.02	0.25	0.57	0.86
CFOA	34686	0.16	0.16	0.00	0.03	0.09	0.24	0.53
Z-Score	33798	2.52	1.36	-0.53	1.66	2.59	3.61	4.40
CS_COGS	34686	0.36	0.48	0.00	0.00	0.00	1.00	1.00
CS_XSGA	34686	0.14	0.34	0.00	0.00	0.00	0.00	1.00
Core Earnings	34686	0.24	0.40	-11.49	0.10	0.24	0.38	1.90
UE_CE	34686	0.37	0.96	-0.82	-0.02	0.00	0.45	3.01

All continuous variables are winsorized at 1% and 99%. Appendix A defines all the variables.

Table 3 - Pearson Correlation Coefficients

Panel A: Correlation Variables (Shifter to Litigation)

		1	2	3	4	5	6	7	8	9	10	11	12
1	Shifter	1.00											
2	Comp_Acct4	-0.04	1.00										
3	Assets	-0.01	0.18	1.00									
4	Loss	-0.05	-0.44	-0.19	1.00								
5	longTenure	-0.01	0.02	0.08	-0.02	1.00							
6	Insti_Hold	-0.04	0.15	0.51	-0.15	0.04	1.00						
7	Analyst	-0.04	-0.13	0.06	0.06	0.00	0.24	1.00					
8	Taxrate	0.00	0.48	0.17	-0.48	0.01	0.09	-0.15	1.00				
9	ROA	0.08	0.50	0.21	-0.74	0.01	0.17	-0.07	0.48	1.00			
10	HighNoa	0.23	0.08	0.20	-0.05	0.03	0.04	-0.12	0.08	0.05	1.00		
11	Regul	-0.02	-0.02	0.15	0.00	0.01	-0.01	-0.01	0.05	0.00	0.01	1.00	
12	Litigation	-0.01	-0.14	-0.13	0.12	0.00	0.00	0.08	-0.22	-0.14	-0.06	-0.18	1.00
13	SOX	-0.06	-0.12	0.18	0.02	0.02	0.38	0.55	-0.16	-0.03	-0.14	-0.01	0.06
14	CFO_Forecast	-0.02	0.00	0.42	-0.03	0.05	0.37	0.30	-0.04	0.04	-0.03	0.04	-0.03
15	MktShare	0.00	0.22	0.55	-0.19	0.04	0.21	-0.11	0.23	0.19	0.20	-0.01	-0.35
16	MTB	-0.03	0.07	0.09	-0.13	0.01	0.14	0.07	-0.03	0.14	0.01	-0.04	0.16
17	Op_cycle	0.01	0.00	-0.13	0.01	0.01	-0.06	-0.03	-0.07	0.00	0.01	-0.23	0.04
18	Big4	0.00	0.03	0.01	-0.01	0.05	-0.05	-0.18	0.02	0.00	0.04	0.03	-0.04
19	Stock	0.00	0.13	0.16	-0.13	0.03	0.17	0.07	0.07	0.15	0.02	-0.01	0.00
20	ROE	0.06	0.48	0.17	-0.73	0.02	0.17	-0.05	0.43	0.82	0.04	0.00	-0.11
21	Leverage	0.01	0.07	0.82	-0.09	0.06	0.30	0.01	0.10	0.10	0.18	0.17	-0.17
22	CFOA	0.00	-0.17	-0.26	0.14	-0.01	0.06	0.19	-0.30	-0.15	-0.15	-0.12	0.40
23	Z-Score	-0.03	0.49	0.01	-0.52	0.01	0.10	-0.11	0.44	0.61	0.03	-0.14	-0.05

Table 3 (Continued) - Correlation Coefficients

Panel B: Correlation Variables (SOX to Z-Score)

		13	14	15	16	17	18	19	20	21	22	23
13	SOX	1.00										
14	CFO_Forecast	0.48	1.00									
15	MktShare	-0.05	0.12	1.00								
16	MTB	0.06	0.08	0.01	1.00							
17	Op_cycle	-0.06	-0.09	-0.12	0.02	1.00						
18	Big4	-0.22	-0.09	0.05	0.00	0.00	1.00					
19	Stock	0.12	0.10	0.05	0.10	-0.01	0.00	1.00				
20	ROE	-0.01	0.03	0.16	0.13	0.00	0.01	0.16	1.00			
21	Leverage	0.10	0.35	0.50	0.06	-0.13	0.02	0.09	0.08	1.00		
22	CFOA	0.19	0.01	-0.34	0.24	0.05	-0.04	0.06	-0.09	-0.32	1.00	
23	Z-Score	-0.12	-0.06	0.18	0.29	0.04	0.02	0.11	0.47	-0.14	-0.02	1.00

Table 4: Impact of Accounting Comparability on Classification Shifting

	Comp_Acct4		Ind_Comp	
	Coefficient	z-value	Coefficient	z-value
Comp_Acct	***-0.500******	***-13.62***	***-0.180******	***-12.82***
Assets	-0.122***	-6.49	-0.128***	-6.81
Loss	-0.078	-1.28	-0.066	-1.08
longTenure	-0.088	-1.12	-0.101	-1.28
Instl_hold	-0.191**	-2.16	-0.183**	-2.08
Analyst	0.005	0.38	0.005	0.37
Taxrate	-0.128	-1.04	-0.043	-0.34
ROA	5.953***	16.74	6.130***	17.34
HighNoa	1.636***	39.27	1.633***	39.24
Regul	-0.498***	-6.96	-0.476***	-6.65
Litigation	0.005	0.12	-0.058	-1.53
SOX	-0.828*	-1.82	-0.761	-1.67
CFO_Forecast	0.036	0.79	0.028	0.62
MktShare	-1.582**	-2.15	-0.689	-0.94
MTB	-0.036***	-3.26	-0.051***	-4.64
Op_Cycle	0.000	0.28	0.000	-1.33
Big4	-0.063*	-1.93	-0.062*	-1.90
Stock	0.074	1.34	0.060	1.08
ROE	-0.201	-0.82	-0.193	-0.79
Leverage	0.000***	4.19	0.000***	4.11
CFOA	0.926***	8.00	0.812***	7.02
Z-Score	-0.263***	-15.53	-0.249***	-14.49
Constant	-0.567***	-3.25	-0.629***	-3.56
Year Fixed Effects	Yes		Yes	
n	33,798		33,798	
Pseudo R-Squared	9.70%		9.63%	

*, **, *** indicate significance at the .05, .025, .01 levels, respectively. Variables are as defined in Appendix A.

Table 5: Impact of Lagged Comp_Acct on Classification Shifting

	Comp_Acct4		Ind_Comp	
	Coeff.	z-value	Coeff.	z-value
Lagged Comp_Acct	-0.467***	-14.24	-0.167***	-14.03
Assets	-0.117***	-6.22	-0.120***	-6.36
Loss	-0.080	-1.32	-0.083	-1.35
longTenure	-0.087	-1.10	-0.099	-1.26
Inst_hold	-0.222***	-2.53	-0.215***	-2.45
Analyst	0.004	0.30	0.004	0.34
Taxrate	-0.193	-1.57	-0.109	-0.88
ROA	5.995***	16.77	6.070***	17.07
HighNoa	1.639***	39.30	1.639***	39.32
Regul	-0.497***	-6.94	-0.480***	-6.69
Litigation	-0.008	-0.22	-0.061	-1.59
SOX	-0.556	-1.23	-0.591	-1.30
CFO_Forecast	0.034	0.75	0.027	0.60
MktShare	-1.461**	-1.99	-0.715	-0.98
MTB	-0.042***	-3.83	-0.055***	-4.94
Op_Cycle	0.000	0.09	0.000	-1.28
Big4	-0.061*	-1.88	-0.060*	-1.84
Stock	0.063	1.13	0.052	0.93
ROE	-0.556**	-2.29	-0.612***	-2.53
Leverage	0.000***	4.18	0.000***	4.08
CFOA	0.890***	7.69	0.779***	6.72
Z-Score	-0.261***	-15.40	-0.246***	-14.34
Constant	-0.643	-3.66	-0.743***	-4.17
Year Fixed Effects	Yes		Yes	
n	33,798		33,798	
Pseudo R-Squared	9.75%		9.73%	

*, **, *** indicate significance at the .05, .025, .01 levels, respectively. Variables are as defined in Appendix A

Table 6 - First Stage and Second Stage Regressions

First Stage		
	Dependent variable =Comp_Acct4	
	Coefficient	t-value
Assets	0.041***	15.96
Loss	-0.013	-1.61
longTenure	0.042***	3.88
Inst_hold	0.149***	12.35
Analyst	-0.005***	-3.34
Taxrate	0.434***	24.81
ROA	-0.364***	-9.71
HighNoa	0.019***	2.73
Regul	-0.072***	-7.71
Litigation	0.103***	19.81
SOX	-0.053***	-9.28
MktShare	-1.670***	-16.47
MTB	0.025***	17.32
Op_Cycle	0.001***	24.40
Big4	-0.001	-0.19
ROE	0.951***	30.82
Z-Score	0.061***	26.08
Constant	-1.085***	-52.15
Leverage	0.000***	-6.21
n	33,798	
Pseudo R-Squared	25.86	

*, **, *** indicate significance at the .05, .025, .01 levels, respectively. Variables are as defined in Appendix A.

Table 6 – (continued): Second Stage Regressions

	Second Stage			
	Dependent variable: Shifter			
	Comp_Acct4		Ind_Comp	
	Coefficient	*z*-vavalue	Coefficient	*z*-value
E(Comp_Acct)	*-5.109****	*-4.44*	*-2.373****	*-4.44*
Assets	0.070*	1.90	0.046	1.44
Loss	-0.128**	-2.04	0.065	0.97
longTenure	0.102	1.10	0.011	0.14
Inst_hold	0.499***	2.42	0.498***	2.42
Analyst	-0.022	-1.60	-0.085***	-3.57
Taxrate	1.849***	3.59	3.985***	4.03
ROA	4.335***	7.86	6.990***	17.50
HighNoa	1.718***	36.15	1.772***	32.54
Regul	-0.831***	-7.47	-0.594***	-7.60
Litigation	0.482***	3.87	-0.296***	-4.35
SOX	-0.980**	-2.14	-1.019**	-2.22
CFO_Forecast	0.008	0.18	0.008	0.18
MktShare	-9.331***	-4.38	0.283	0.38
MTB	0.081***	2.75	-0.109***	-5.75
Op_Cycle	0.003***	3.94	0.000	1.13
Big4	-0.063*	-1.93	-0.027	-0.82
Stock	0.023	0.41	0.023	0.41
ROE	4.232***	3.79	5.048***	3.89
CFOA	0.842***	7.32	0.842***	7.32
Z-Score	0.014	0.18	0.323**	2.24
Constant	-5.502***	-4.54	-8.033***	-4.52
Year Fixed	Yes		Yes	
n	33,798		33,798	
Pseudo R-	9.12%		9.12%	

*, **, *** indicate significance at the .05, .025, .01 levels, respectively. Variables are as defined in Appendix A.

Table 7: Channel Through Which Financial Statement Comparability is Associated with Classification Shifting

Dependent Variable: Information Asymmetry (Bid-Ask Spread)

	Coefficient	t-value
Comp_Acct4	-.018***	-6.67
Big4	0.000	-0.08
Inst_hold	-0.062***	-8.97
Regul	0.008	1.08
Anal1	0.000	-0.64
CFO_Forecast	0.015***	5.38
Lit	0.051***	12.89
HighNoa	-0.013***	-2.78
MktShare	-0.020	-1.47
Specialist	0.008***	2.46
Constant	-.356***	-32.75
Observations	18652	
Year Fixed Effect	Yes	
Firm Fixed Effect	Yes	
Adjusted R-Squared	54.75%	

*, **, *** indicate significance at the .05, .025, .01 levels, respectively. Variables are as defined in Appendix A.

Table 8 - Impact of Accounting Comparability on Cost of Goods Sold Classification Shifting

	COGS		XSGA	
	Coefficient	t-value	Coefficient	t-value
Comp_Acct4	-0.135***	-4.48	-0.191***	-4.79
Assets	0.069***	4.74	0.112***	5.61
Loss	-0.269***	-5.94	-0.277***	-4.14
longTenure	-0.027	-0.46	-0.067	-0.84
Inst_hold	0.351***	5.12	0.405***	4.24
Analyst	-0.005	-0.47	0.011	0.83
Taxrate	-0.209*	-2.13	-0.142	-1.05
ROA	2.623***	11.74	2.058***	5.51
HighNoa	0.157***	4.14	0.140***	2.85
Regul	-0.232***	-4.46	-0.811***	-10.17
Litigation	0.061*	2.05	-0.065	-1.57
SOX	1.030***	3.44	0.520	1.28
CFO_Forecast	-0.037	-1.10	-0.062	-1.35
MktShare	1.441***	2.57	0.798	1.10
MTB	0.029***	3.48	-0.098***	-8.00
Op_Cycle	0.002***	9.29	-0.001***	-4.30
Big4	-0.024	-0.95	0.010	0.30
Stock	0.030	0.68	-0.034	-0.57
ROE	0.611***	3.35	0.190	0.69
Leverage	0.000	-0.25	0.000*	-2.17
CFOA	0.662***	7.36	-0.828**	-6.25
Z-Score	-0.354***	-26.31	-0.096***	-5.28
Constant	-1.940***	-12.42	-2.476***	-12.25
Year Fixed Effect	Yes		Yes	
Observations	33,798		33,798	
Pseudo R-Squared	4.69%		3.48%	

*, **, *** indicate significance at the .05, .025, .01 levels, respectively. Variables are as defined in Appendix A.

Table 9 - Impact of Lagged Comp_Acct4 on COGS_Shifter and XSGA_Shifter

	COGS		XSGA	
	Coefficient	t-value	Coefficient	t-value
l_comp4	-0.088***	-3.23	-0.153***	-4.22
Assets	0.066***	6.26	0.112***	5.62
Loss	-0.269***	-5.96	-0.277***	-4.14
longTenure	-0.028	-0.48	-0.068	-0.85
Inst_hold	0.344***	5.09	0.393***	4.12
Analyst	-0.005	-0.49	0.011	0.81
Taxrate	-0.236***	-2.43	-0.175	-1.30
ROA	2.638***	11.80	2.072***	5.54
HighNoa	0.157***	4.14	0.140***	2.85
Regul	-0.228***	-4.40	-0.809***	-10.13
Litigation	0.055*	1.86	-0.070*	-1.70
SOX	1.084***	3.63	0.607	1.49
CFO_Forecast	-0.040	-1.19	-0.064	-1.40
MktShare	1.509***	2.71	0.871	1.20
MTB	0.027***	3.26	-0.101***	-8.24
Op_Cycle	0.002***	9.10	-0.001***	-4.43
Big4	-0.023	-0.93	0.011	0.33
Stock	0.024	0.55	-0.041	-0.67
ROE	0.503***	2.78	0.048	0.17
CFOA	0.651***	7.32	-0.844***	-6.37
Z-score	-0.354***	-26.99	-0.097***	-5.28
Constant	-1.899***	-12.43	-2.469***	-12.12
Year Fixed Effect	Yes		Yes	
Observation	33,798		33,798	
Pseudo R-Squared	4.67%		3.46%	

*, **, *** indicate significance at the .05, .025, .01 levels, respectively. Variables are as defined in Appendix A.

Table 10 – Second Stage Regressions of Classification Shifting on Comparability

	COGS		XSGA	
	Coefficient	z-value	Coefficient	z-value
E(Comp_Acct4)	-5.946***	-27.16	-1.778***	-5.97
Assets	0.308***	18.00	0.176***	7.58
Loss	-0.342***	-7.50	-0.292***	-4.34
longTenure	0.215***	3.62	-0.002	-0.03
Inst_hold	1.221***	15.76	0.641***	6.02
Analyst	-0.036***	-3.69	0.002	0.12
Taxrate	2.315***	15.39	0.540**	2.61
ROA	0.514**	2.50	1.482***	4.22
HighNoa	0.270***	7.07	0.173***	3.49
Regul	-0.653***	-11.66	-0.928***	-10.93
Litigation	0.658***	17.55	0.101*	1.94
SOX	0.747**	2.50	0.468	1.15
CFO_Forecast	-0.044	-1.31	-0.072	-1.57
MktShare	-8.281***	-13.78	-1.885**	-2.41
MTB	0.174***	15.64	-0.059***	-3.67
Op_Cycle	0.006***	24.70	0.000	0.43
Big4	-0.028	-1.10	0.012	0.34
Stock	0.016	0.37	-0.054	-0.89
ROE	6.143***	23.92	1.727***	4.69
Leverage	0.000***	-6.34	0.000***	-3.24
CFOA	0.641***	7.14	-0.853***	-6.44
Constant	-8.229***	-30.62	-4.169***	-11.70
Year Fixed Effect	Yes		Yes	
Observations	33,798		33,798	
Pseudo R-Squared	3.40%		4.65%	

*, **, *** indicate significance at the .05, .025, .01 levels, respectively. Variables are as defined in Appendix A.

Table 11: Impact of Comparability on Classification After the Passage of SOX

Dependent Variable: Shifter

	Coefficient	z-value
Comp_Acct4*SOX	-0.176***	-2.54
Comp_Acct4	-0.418***	-7.71
SOX	-0.920*	-1.97
Assets	-0.121***	-5.48
longTenure	-0.088	-1.05
Loss	-0.083	-1.24
Inst_hold	-0.200*	-2.00
Analyst	0.005	0.37
Taxrate	-0.137	-1.03
ROA	5.984***	15.36
Regul	-0.497***	-5.18
Lit	0.006	0.14
CFO_Forecast	0.043	0.92
HighNoa	1.633***	32.85
MktShare	-1.556*	-1.84
MTB	-0.037***	-3.00
OperCycle	0.000	0.22
Big4	-0.063*	-1.70
Stock	0.070	1.15
ROE	-0.239	-0.96
Z-Score	-0.263***	-13.44
Leverage	0.000***	3.56
CFOA	0.924***	7.23
Constant	-.526***	-2.83
Year Fixed Effect	Yes	
Firm Fixed Effect	Yes	
Observations	33798	
Pseudo R-Squared	9.72%	

*, **, *** indicate significance at the .05, .025, .01 levels, respectively. Variables are as defined in Appendix A.

Figure 1: Shifter and Non-Shifter's Comparability

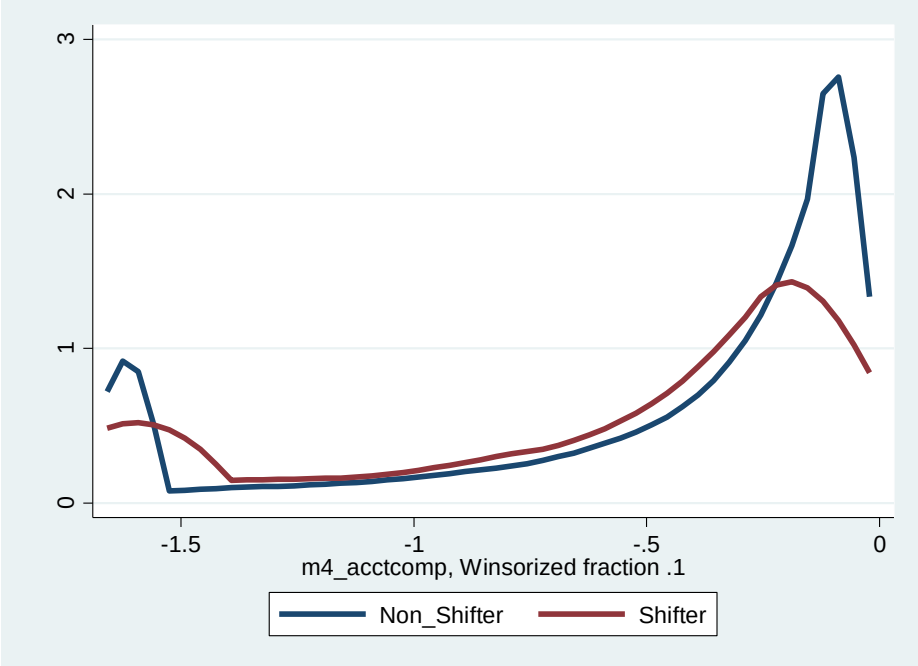

Figure 1: I created the graph to compare the comparability between shifter and non-shifter firms. The graph indicates that shifter firms' comparability is less than those of non-shifter firms.

IV. ESSAY 3: BIG4, NON-BIG4 AUDITORS AND COMPARABILITY

IV.1. Motivation

The benefits to auditors of developing a comparable client base, and the benefits to clients of having comparable peers, have been the subject recent research (e.g., Zhang 2018; Cairney and Stewart 2015). When compared to other variables affecting audit fees, client comparability has received little attention. Using the financial statement comparability measure developed by De Franco, Kothari, and Verdi (2011), Zhang (2018) shows that auditors charge lower audit fees for auditing highly comparable firms. Using partial correlation (homogeneity) of client operating expense, Cariney and Stewart (2015) find that audit fees are negatively associated with homogeneity. These findings are intuitive in the sense that auditors pursue a lower average cost per client by applying the learned and developed audit processes from one client to other, comparable clients. Indeed, the fundamental assumption of audit firm specialization is that auditors can transfer the designed audit processes and knowledge gathered by auditing similar clients. This, in turn, suggests that maintaining a client base of comparable firms yields economic benefits.

While most of the audit market research (e.g., Casterella, Francis, Lewis, and Walker 2004; Hay, Knechel, and Wogn 2006) presents evidence of higher audit fees for industry specialist auditors, Bills, Jeter, and Stein (2015) find that industry specialists charge incrementally lower audit fees in industries with homogenous operations. No study has yet investigated, however, whether Big4 and non-Big4 auditors respond to client comparability in the same way. The Big4 auditors are associated with higher quality of audit (e.g., Francis and Yu 2009; Choi, Kim, Kim, Zang 2010), suggesting higher audit fees. They also achieve economies of scale by auditing more comparable clients,

suggesting lower audit fees. Conversely, non-Big4 auditors are perceived to be associated with lower quality of audit, which should lead to lower audit fees. They also audit fewer, or less comparable clients, which should lead to higher audit fees. This is because when non-Big4 auditors audit less comparable clients, they they are unable to transfer the same audit processes and acquired knowledge to other clients. In turn, this would lead to fewer economies of scale and higher audit fees.

Previous studies (Eichenseher and Danos 1981; Danos and Eichenseher 1982; Hogan and Jeter 1999; Cairney and Young 2006) document that auditors are more likely to be concentrated in regulated industries and to be specialists in homogenous industries. Auditors can transfer their learned knowledge to other similar clients in regulated and homogenous industries. This study, however, differs from previous studies in several ways. First, previous studies define industry homogeneity based on regulation and operating expense correlation. I use financial statement comparability, which is a robust measure and is recognized by researchers (e.g., De Franco et al. 2011; Kim et al. 2016; Imhof et al. 2017; Chen et al. 2018; Zhang 2018). Second, previous studies investigate whether auditors specialize in homogenous industries. I examine whether non-Big4 auditors, mostly ignored in the audit literature, audit less comparable firms and charge higher audit fees (as conjectured above). Third, the proxies used for industry specialist in previous studies have limitations. Audousset-Coulier, Jeny, and Jiang (2015) document that the empirical results regarding specialization exhibit inconsistencies and uncertainties. The Big4 and non-Big4 specification does suffer from such limitations.

Using the financial statement comparability measure developed by De Franco et al. (2011), I find that comparability and non-Big4 auditors are negatively associated,

suggesting that client firms audited by non-Big4 auditors are less comparable than clients audited by Big4 auditors. The results hold after controlling for firm specific characteristics, endogeneity, and for alternative measures of comparability. I also find that non-Big4 auditors charge incrementally higher audit fees for comparable firms, whereas Big4 auditors charge lower audit fees. These findings are consistent with prior audit fee studies (Bills et al. 2015; Zhang 2018) and suggest that Big4 auditors have achieved economies of scale that non-Big4 have not.

This study contributes to the auditing literature in several ways. First, prior studies (e.g., Zhang 2018) document that auditors charge lower audit fees for comparable firms; however, there is no evidence whether non-Big4 and Big4 auditors follow the same pattern in charging audit fees. This study fills this gap by investigating the association between comparability and non-Big4 auditors and documenting whether or not the conclusions of Zhang (2018) can be applied to non-Big4 auditors. Second, the existing audit fee literature is dominated by Big4 auditors. My study extends the understanding of audit fees by investigating whether non-Big4 auditors charge lower or higher fees to comparable firms. Third, the study contributes to the literature on mandatory rotation by showing Big4 auditors are able to achieve economies of scale by auditing comparable firms, and that this translates into lower incremental audit fees. Fourth, I contribute to the literature on financial statement comparability and audit effort. Zhang (2018) investigates the impact of comparability on audit fees and finds that comparability and audit fees are negatively associated. I find that this only holds for Big4 auditors. Finally, this study responds to the call of Schipper (2003) who asks for more research on accounting comparability.

The structure of the study is as follows: Section 2 discusses prior literature and develops the hypotheses. Section 3 explains the research design and describes the sample selection process. Section 4 presents the empirical results, and Section 5 concludes the paper.

IV.2. Literature and Hypothesis Development

Studies into whether CPA firms concentrate in industries began with Zeff and Fossum (1967), who present a narrative regarding the sales, assets, and (net) income numbers of The Fortune Directory, rearranged based on the CPA firms' opinions. Zeff and Fossum (1967) document that Big8 auditors audit companies having 95.5 percent of total sales and 92.7 percent of the 639 companies they examine. Rhode et al. (1974) confirm that Big8 auditors audit more than 90 percent of companies whereas non-Big8 auditors audit about 7 percent of companies with a market share of 3.55 percent. Hogan and Jeter (1999) investigate industry specialization and market share during the 1976 to 1993 period, and find that auditor concentration is: higher in regulated industries and industries with higher growth, but lower in industries with a high risk of litigation. They also find that market leader auditors' market share increased over the period.

Studies (e.g., Craswell, Francis, Taylor 1995; Carcello and Nagy 2004; Dunn, Mayhew, Morsfield 2004) document that specialist auditors are associated with higher audit quality and higher audit fees. Other studies (Ettredge and Greenberg 1990; Hay and Jeter 2011; Palmrose 1986; Ferguson and Stokes 2002) report, however, that auditor industry specialization leads to audit fee discounts and does not have significant association with audit fees. Auditors develop specialization in unique industries (e.g., healthcare) so that they can earn fee premiums (Mayhew and Wilkins 2003). Auditors not only

concentrate on fee-based but also on the cost side because having specialized knowledge on an industry will also help curb costs as auditors can easily transfer their learned knowledge to other clients in the same industry (Cullinan 1998). In an experimental study (Low 2004) reports that the knowledge and information gathered by specialist auditors during the audit of clients can be transferred to clients in the same industry but not necessarily to clients in other industries. Auditing similar clients also enhances auditor efficiency. When auditors become efficient, the can complete an audit with less time and effort, which should result in audit fees discounts. Recent studies (Cariney and Young 2006; Bills et al. 2015; Stewart et al. 2015) find that auditors are more likely to specialize in industries having higher operating expense correlation among members of industries. The evidence of audit fees is also mixed in the homogeneity literature. Bills et al. (2015) and Stewart et al. (2015), for example, document that industry homogeneity and audit fees are negatively associated. In contrast, Cahan et al. (2008) report a positive association between audit fees and homogeneity.

Using discretionary accruals, ex ante cost of equity capital, and analyst forecasts as proxies for audit quality, Lawrence, Minutti-Meza, and Zhang (2011), find that the effect of Big4 auditors are no different from those of non-Big4 auditors. Law (2008) finds that Big4 and non-Big4 auditors are not significantly different in their perceptions regarding the influence of non-audit services and competition on independence. Khurana and Raman (2004) find, however, that Big4 auditors are associated with a lower ex ante cost of equity capital, and report that litigation exposure rather than brand name reputation drives perceived audit quality. Louis (2005) explores the effect of auditor choice on acquirer firms' market values around merger announcements. Louis finds that acquirers audited by

non-Big4 auditors outperform those audited by Big4 auditors. This suggests that smaller firms have a comparative advantage in assisting their clients' merger transactions.

The structure of the market for public accounting services has received scrutiny from regulators, practitioners, and researchers. Supplier size (the audit firm size) has become of subject of many studies (e.g., Simunic 1980; Francis 1984; Palmrose 1986; Niemi 2004). These studies find that Big N auditors charge higher than warranted audit fees. If Big8 auditors enjoy economies of scale, Simunic (1980) finds that they charge lower audit fees than the non-Big8. He also finds, however, that one of the Big8 auditors charges higher audit fees because of higher audit quality. Francis (1984) conducts his study on Australian data and reports that Big8 accounting firms have significantly higher audit fees than non-Big8 firms. This result holds for both large and small clients. Francis and Simon (1987) report that Big8 auditors charge premium audit fees and these results exist when compared to both second-tier national firms and local/regional firms. Using data on hourly billing rates and the auditor characteristics from 103 small Finnish audit firms, Neimi (2007) documents a positive association between auditor size and audit pricing.

Recent studies (e.g., Bills et al. 2015; Zhang 2018) find that auditors charge lower audit fees for comparable clients. Zhang (2018), for example, finds that audit effort is negatively associated with financial statement comparability, suggesting that auditors enjoy economies of scale. Because auditors' cost per unit of audit is less for comparable firms, they charge lower audit fees. Bills et al. (2015) find that specialist auditors charge incrementally lower audit fees for homogenous clients. Since most companies (almost 80%) are audited by Big4 auditors, the overall findings are likely driven by the impact of

Big4 auditors. No study has yet investigated whether non-Big4 auditors follow a similar pattern when auditing comparable clients.

Because Big4 auditors audit such a large percentage of companies, it is likely they have more comparable clients. If follows, that if their audits are more efficient, they can charge lower audit fees for comparable firms. On the other hand, client companies audited by non-Big4 auditors are more likely to be less comparable; therefore, they are thus less likely to be able to transfer learned knowledge and audit processes to other clients. Consequently, they are more likely to charge higher audit fees for comparable clients. This leads to my first and second hypotheses:

Ha: *Clients audited by Big4 auditors are more comparable than clients audited by non-Big4 auditors.*

Hb: *Non-Big4 auditors are more likely to charge higher audit fees to comparable firms than do Big4 firms.*

IV.3. Research Design

Sample Selection

My sample selection procedure begins with all firms listed in the annual COMPUSTAT industrial file from 2000 through 2015[20]. I merge CRSP with COMPUSTAT and drop utilities (SIC codes: 4000 to 4999) and financial firms (SIC codes: 6000 to 6999). After calculating the comparability score, I merged the comparability measure with AUDITANALYTICS data. I delete firm-year observations that have missing data for financial statement comparability, audit fees, and missing control variables. To deal with outliers, I winsorize all continuous variables at the 1st and 99th percentile levels. My final sample comprises 26,373 firm-year observations.

[20] My sample year starts from 2000 because Audit Analytics data are available from 2000.

Model Specification

Following prior studies (e.g., Cairney and Young 2006), I use the following model to test my hypotheses:

$$(\text{ProbBig4}=1)=\beta_0+\beta_1 \text{COMP4}_t+\sum_{j=2}^{15}\beta_j \text{CONTROLS}_t+\text{Ind}_i+\text{Yr}_t+\varepsilon_{it} \quad (1)$$

where Big4 is a dichotomous variable taking the value of 1 if the auditor is one of the Bi4 auditors. Following prior studies (e.g., Hogan and Jeter 1999; Cairney and Young 2006), I include LITIGATION, REG, GROWTH, CR4, and LNOX as control variables. LITIGATION is a dummy variable that takes value 1 if the industry is one with high litigation risk.[21] I include this because audit firms are less likely to audit firms in the litigious industries. Studies (e.g., Hogan and Jeter 1999; Eichenseher and Danos 1981) find that audit firms enjoy economies of scale if they audit firms in regulated industries. I include *REG*, which is an indicator variable equal to 1 if the firm operates in a regulated industry[22]. The third control variable is GROWTH, which is a dummy variable equal to 1 if the industry is in the top third of the industries' growth measures, and 0 otherwise. GROWTH is calculated as the difference between sales in year t and t-1, divided by sales in t-1. I also control for four-firm industry concentration, CR4, which is the proportion of assets owned by the four largest firms in each industry k in year t. I calculate the ratio as the square root each firm's asset divided by the sum of the square roots of all firms' assets

[21] Following prior studies (e.g., Bohn and Choi 1996; O'Brien 1997; Hogan and Jeter 1999; Cairney and Young 2006), I include firms in the list of relatively high litigation risk industries if the two-digit SIC codes are in any one of 28, 35, 36, 38, 60, 67, or 73.

[22] Following prior studies (e.g., Weis and Klass 1986; Hogan and Jeter 1999), I classify the following two-digit SIC codes as regulated industries 10, 12, 14, 20, 29, 40, 41, 42, 45, 46, 48, 49, 61, 62, 63, 64, and 67.

in the same industry for each year. I control for LNOX (log of the number of industry members) because auditors are less likely to audit firms in an industry that has fewer members. I also control for firm SIZE (log of total assets), audit fees (log of audit fees, LAF), and auditor change (AUDCH) because these variables affect whether auditors are more likely to be Big4 or not. I have also controlled for internal control effectiveness (INEFFIC), RESTATEMENTs, non-audit fees ratio (NAFRATIO), and return on assets (ROA) because these variables can also affect whether the auditor is among the Big4 (Francis and Yu 2009; Boone, Khurana, and Raman 2010; Francis, Michas, and Yu 2013).

Measuring Comparability

I follow the De Franco et al. (2011) measure of financial statement comparability, which is based on the earnings-returns relationship of paired firms. De Franco et al. (2011) develop an empirical model based on the assumption that for a given set of economic events, two firms should produce similar financial statements. Following De Franco et al. (2011), I first estimate the following equation and use the previous 16 quarters of earnings (the proxy for financial statements) and returns (the proxy for economic-event data).

$$Earnings_{it}=\alpha_i+\beta_i Return_{it}+\varepsilon_{it} \quad (2)$$

where *Earnings* is the quarterly net income before extraordinary items (*IBQ*) scaled by beginning of the period market value of equity (*PRCC_F*CSHO*), and *Return* is the respective quarter's stock price. I calculate $\hat{\alpha}_i$ and $\hat{\beta}_i$ for firm i and in the same way I estimate $\hat{\alpha}_j$ and $\hat{\beta}_j$ for firm j. I then use these parameters to estimate expected earnings of firm i and j. I use the *Return* of firm i and the parameters of i and j to compare the *Earnings* of firm i and j as follows:

$$E(Earnings)_{iit}=\hat{\alpha}_i+\hat{\beta}_i Return_{it} \quad (3)$$

$$E(Earnings)_{ijt}=\hat{\alpha}_j+\hat{\beta}_j Return_{it} \quad (4)$$

Keeping the economic event, $Return_{it}$, constant, I calculate predicted earnings of firm i *and* j for the period t. I then compute accounting comparability between firm i and j $(COMP4_{ijt})$ from the following equation:

$$COMP_{ijt}=-\frac{1}{16}*\sum_{t-15}^{t}\left|E(Earnings_{iit})-E(Earnings_{ijt})\right| \quad (5)$$

The less the difference between the predicted earnings of i and j, the more comparable two firms' accounting systems are. I estimate comparability for each firm i-firm j combination for J firms within the same two-digit SIC industry classification. Then I rank all J values of $COMP_{ijt}$ for each firm i from the highest to lowest. I then calculate $COMP4_{it}$ as the average of the highest four comparability scores of firm i with firm j. I also compute alternative measures of comparability: COMP10, COMPINMDN, and COMPINDMEAN. The detailed calculations of these measures are presented in Appendix A.

IV.4. Empirical Results

Summary Statistics

In Table 1, I report the industry profile for my sample. After deleting industries with less than 10 observations (SIC 2100-2199, 5800-7213, 4950-4991), banking (6000-6099), insurance (6300-6411), real estate (6500-6611), and financial trading (6200-6799), my sample covers 40 industries out of the Fama and French 48. The business services industry represents 15.46 percent of the sample and the pharmaceutical industry represents

10.43 percent. Most of the industries account for less than 5 percent. The industry profile data suggest that my sample is widely distributed. Table 2 presents the number of companies audited by the Big4 and non-Big4. Big4 auditors audit most of the companies (75.44 percent) with PwC auditing the greatest number (24.03 percent of the entire sample firms). Non-big4 auditors audit only 24.56 percent of the firms. Table 3 presents the descriptive statistics for the variables used in the main empirical model. The mean (median) of the comparability score is -0.56 (-0.30), which is consistent with recent studies (e.g., Imholf et al. 2017; Chen et al. 2017; Zhang et al. 2018). The means and median of all control variables are consistent with those presented by Cairney and Young (2006).

Table 4 presents the Pearson correlation matrix. The matrix shows that Big4 and financial statement comparability are significantly, negatively correlated but the correlation coefficient is only 0.13 (p-value < 0.000). The correlation between non-Big4 and comparability is just the opposite. The correlation coefficient suggests that Big4 auditors are more likely to audit comparable firms and non-Big4 auditors are less likely to audit comparable firms. Three of my control variables have correlation coefficients more than 0.50, however, the variance inflation factor (VIF) of ordinary least squares (OLS) for any control variable is less than 10 and the mean VIF of the entire sample is 1.80, suggesting that multicollinearity is not a serious concern[23].

Multivariate results

Table 5 reports the main results of my tests. The results provide evidence supporting my hypothesis that financial statement comparability is less associated with

[23] Studies in econometrics (e.g., Carlsson and Lundström 2002; O'brien 2007) suggest that VIF less than 10, 20, and 30 indicate that there is not a problem with multicollinearity.

non-Big4 auditors, and more associated with Big4 auditors. In the first column, the coefficient of COMP4 is positive and significant (β_1 = 0.09, *t*-value = 5.22), suggesting that companies audited by Big4 auditors are more comparable than the companies audited by non-Big4 auditors. The negative coefficient on COMP4 in column (2) supports the hypothesis that companies audited by non-Big4 auditors are less comparable.

Controlling for Potential Endogeneity Problems

The relation between financial statement comparability and Big4 and Non-Big4 auditor may be biased because of endogeneity related to omitted variables and reverse causality. For example, the financial statements are more comparable because they are audited by Big4 auditors and less comparable because they are audited by non-Big4 auditors. To address the endogeneity issue, I use a 2-stage least squares (2SLS) approach (Coles, Daniel, and Naveen 2006; Larcker and Rusticus 2010; Gassell et al. 2012; Anderson, Duru, and Reeb 2012; Anantharaman, Fang, and Gong 2013). In the first stage, I regress COMP4 on various instrumental variables (IV) and other variables explaining accounting comparability, and then the predicted value of COMP4 is used for the main regressions in the second stage. Econometric theories on 2SLS state that we need at least one exogenous (instrumental) variable for estimating the endogenous variable. In my case, the ideal instruments should correlate with financial statement comparability but not with Big4 auditors or Non-Big4 auditors. I identify four IVs that are more likely to be correlated with financial statement comparability and yet unlikely to be associated with auditor type. Following prior studies (e.g., Brown and Kimbrough 2011; Sohn 2016), I use labor intensity (LABORINT), capital intensity (CAPINT), the book to market ratio (BM), and post 2005 (POST2005) as instrumental variables because financial statement comparability

may vary across these business characteristics. I perform several post estimations of endogeneity.[24] The 2SLS models are specified as follows:

First stage:

$$COMP4=\beta_0+\beta_1 LABORINT_{t-1}+\beta_2 CAPINT_{t-1}+\beta_3 BM_{t-1}+\beta_3 POST2005_{t-1}$$
$$+\sum \beta_j CONTROLS_t+Ind_i+Y_t+\varepsilon_{it} \quad (5)$$

Second stage:

$$PROB\_BIG4/NON\text{-}BIG4=\beta_0++\beta_1 Predicted(OPSIM)$$
$$+\sum \beta_j CONTROLS_t+Ind_i+Y_t+\varepsilon_{it} \quad (6)$$

Following Larcker and Rusticus (2010), I include the same set of control variables from the second stage model in the first stage model plus industry and year fixed effects. The results of both the first-stage and second stage regression are reported in the Table 6. The column (1) reports the results of Eq. (5), which show that my instruments are associated with the endogenous variable, COMP4. The coefficients of LABORINT, CAPINT, BM, and POST2005 are significant. This suggests that my instruments are associated with COMP4. Column (2) presents the results of Eq. (6), which shows the impact of the predicted value of COMP4 on Big4 or Non-Big4. Column (2) of Table 6 reports the results of the association between Big4 auditors and financial statement comparability. The coefficient on Predicted(COMP4) is positive (*t*-value=5.73) and significant at 1% level (*t*-value =5.73), suggesting that firms audited by Big4 auditors are

[24] I test whether the instruments are weak. The partial R^2 of 0.201, which is the correlation between my instruments and the endogenous variables, rejects the null hypothesis that the instruments are weak. The F-statistic (*F*= 1544.88) is also greater than all the critical values of 2SLS Wald tests. This suggests that my instruments are not weak. I also test for over-identification of my instruments and find that the Sargan Chi-Square and Basmann Chi-Square are insignificant (*p*=0.3200), accepting the null hypothesis that my instruments are not over-identified.

comparable. Column (3) presents the results of the relation between Non-Big4 auditors and comparability, and the coefficient on Predicted(COMP4) is negative (-0.541) and significant at 1% level (*t*-value = 5.73), suggesting that clients audited by Non-big4 auditors are less comparable.

Alternative measures of comparability

My main regression analysis is based on the most commonly used financial statement comparability measure (COMP4). To control for industry effects and as a robustness check, I employ three additional measures of comparability: (1) COMP10, computed as the average of top-10 firms' COMP scores (De Franco et al. 2011 p.901); (2) COMP_INDMEAN, which is the average FSCOMP of all firm i's FSCOMP scores in the same two-digit SIC industry; and (3) COMP_INDMDN, which is the median FSCOMP scores for all firms j in the same two-digit SIC industry as firm i. The results for these alternative measures are reported in columns (1), (2), and (3) of Table 7. The coefficients of all comparability measures are significantly negative, indicating that financial statement comparability is negatively associated with trade credit. In summary, the results from the main regression presented in Table 3 are robust to these alternative measures of comparability.

Big4, non-Big4, and Audit Fees

Prior studies (e.g., Zhang 2018; Cairney and Stewart 2015; Bills et al. 2015) find that auditors charge lower audit fees for comparable clients. Even though their findings may be driven by the impact of Big4 firms, they do not show whether non-Big4 auditors follow a similar pattern. Table 8 presents the results of my tests. Column (1) shows that the coefficient on BIG4×COMP4 is negative *(β_1=-0.031)* and significant (*t*-value = -2.54).

This suggests that Big4 auditors charge lower audit fees when client firms are comparable. In column (2), the coefficient on NON-BIG4×COMP4 is positive (β_1=*-0.031*) and significant (*t*-value = 2.54). In contrast, this suggests that non-Big4 auditors charge higher audit fees to comparable clients. These higher audit fees can be explained based on audit effort. Since non-big4 auditors audit fewer and less comparable clients, they are likely not able to enjoy the economies of scale possessed by the Big4.

IV.5. Summary

While previous studies document an association between comparability and audit fees, questions about the comparability of companies audited by Big4 and non-Big4 auditors have not previously been answered. My study provides evidence that companies audited by Big4 auditors are more comparable than companies audited by the non-Big4. I further find that Big4 auditors charge lower audit fees for comparable firms whereas non-Big4 auditors charge incrementally higher audit fees. My conjecture is that Big4 auditors can transfer their learned skills and same audit processes to many clients, but non-Big4 auditors are less likely to have this advantage. My findings are robust after controlling for firm characteristics and potential endogeneity. The findings are also robust to using alternative measures of comparability.

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Appendix A: Variable definition

Definition of variables

Variable	Definition
COMP4	Financial statement comparability score (FSC) computed as in De Franco et al. (2011).
COMPINDMEAN	The average FSC of all firm $i's$ comparability scores in the same two-digit SIC industry during year *t*.
COMPINMDN	The median FSC for all firms *j* in the same two-digit SIC industry as firm *i* during period t.
COMP10	The average FSC of the top-10 firms.
CR4	The proportion of assets owned by the four largest firms in each industry *k* in year *t*.
LNOX	Log of the number of industry members.
LITIGATION	A dummy variable equal to 1 if the industry is among those with high litigation risk and 0 otherwise: SIC codes 28, 35, 36, 38, 60, 67, 73.
REGUL	An indicator variable equal to 1 if the firm operates in a regulated industry, and 0 otherwise: SIC codes 10, 12, 14, 20, 29, 40, 41, 42, 45, 46, 48, 49, 61, 62, 63, 64, 67
GROWTH	A dummy variable equal to 1 if the industry is in the top third of industrial growth, and 0 otherwise. *GROWTH* is calculated as the difference between sales in year *t* and *t*-1 divided by sales of *t*-1.

ROA	Return on Assets, calculated as net income divided by beginning total assets.
G1 G2 G3 G4	Four indicator variables based on the revised version of the governance index constructed by Gompers et al. (2003). Smaller values mean shareholders have greater rights. The G1 equals 1 if the governance index is less than or equal to 6, and 0 otherwise. The G2 equals 1 if the index is more than 6 and less than or equal to 9, and 0 otherwise. The G3 equals 1 if the index is more than 9 and less than or equal to 12, and 0 otherwise. The G4 equals 1 if the index is more than 13, and 0 otherwise. As in Bergstresser and Philippon (2006) and Jha and Chen (2015) when the G-index is not available, it is replaced with the previous year's value.
SIZE	Size of firm, computed as log of total assets (AT)
CRISIS	Equal to 1 if the fiscal year is 2008, 0 otherwise.
SOX	Equal to 1 if fiscal year is after 2002, otherwise.
BIG4	Equal to 1 if auditor is one of the big4 auditors, 0 otherwise.
NON-BIG4	Equal to 1 if auditor is not one of the Big4 auditors, 0 otherwise.
GC	Equal to 1 if the auditor issues a going concern opinion, 0 otherwise.
AUDC	Equal to 1 if there is an auditor change, 0 otherwise.
UNQUALOP	This indicator variable equals 1 if the auditor issues an unqualified opinion without any additional language (Compustat data item AUOP=1), 0 otherwise.
QUICK	Ratio of (current assets-inventory) to current liabilities.
SQRTSEGMENT	Square root of (the number of geographic segments+1).
INVREC	Sum of inventory and receivables divided by total assets.
LOGTIME	Time lag between the signature date of the audit opinion and fiscal year-end.
FORGN	Equal to 1 if the firm reports foreign sales, 0 otherwise.
NAFRATIO	Ratio of non-audit fees to audit fees.
INEFFIC	Equal to 1 if internal control is ineffective, 0 otherwise.
DIVSTATUS	Equal to 1 if firm declared a dividend, 0 otherwise.
SPECIALIST	Equal to 1 if the auditor is an industry specialist, 0 otherwise.
RESTATEMENT	Equal to 1 if the firm reports a restatement in a fiscal year, 0 otherwise.
LEVERAGE	Ratio of total debt (DLTT) to total assets.
LAF	Log of audit fees.

Table 1

Number of sample firms by industry[a]

FF48	n	%	Cum %	FF48	n	%	Cum%
1	12	0.05	0.05	22	605	2.29	41.97
2	470	1.78	1.83	23	457	1.73	43.7
3	64	0.24	2.07	24	214	0.81	44.52
4	133	0.5	2.57	25	75	0.28	44.8
6	283	1.07	3.65	26	83	0.31	45.11
7	334	1.27	4.91	27	73	0.28	45.39
8	198	0.75	5.66	28	90	0.34	45.73
9	474	1.8	7.46	29	10	0.03	45.77
10	290	1.1	8.56	30	1,543	5.85	51.62
11	669	2.54	11.1	32	863	3.27	54.89
12	1,351	5.12	16.22	33	69	0.26	55.15
13	2,750	10.43	26.65	34	4,078	15.46	70.61
14	675	2.56	29.21	35	1,352	5.13	75.74
15	244	0.93	30.13	36	2,300	8.72	84.46
16	27	0.1	30.24	37	873	3.31	87.77
17	588	2.23	32.47	38	440	1.67	89.44
18	167	0.63	33.1	39	66	0.25	89.69
19	411	1.56	34.66	40	523	1.98	91.67
20	72	0.27	34.93	41	1,080	4.1	95.77
21	1,252	4.75	39.68	42	553	2.1	97.87
		Total			26,373	100	100

[a]Fama-French (1997) industry classifications.

Table 2

Number of firms by auditor type: Big4 vs Non-Big4[a]

Auditor_Key	n	%	Cum%
D&T	5,434	20.37	20.37
PWC	6,410	24.03	44.39
EY	3,934	14.75	59.14
KPMG	4,345	16.29	75.43
Big4 total	20,123	75.44	75.44
Non-Big4	6,250	24.56	100.00
Total	26,373	100	

[a] Big4 is an indicator variable equal to 1 if the auditor is Deloitte, PwC, EY, or KPMG, and otherwise zero. Non-Big4 is an indicator variable equal to 1 if the auditor is not Deloitte, PwC, EY, or KPMG, and otherwise zero.

Table 3

Descriptive Statistics[a]

Variable	n	Mean	S.D.	Min	0.25	Mdn	0.75	Max
Big4	26,373	0.75	0.43	0.00	1.00	1.00	1.00	1.00
Non-Big4	26,373	0.25	0.43	0.00	0.00	0.00	0.00	1.00
COMP4	26,373	-0.56	0.59	-1.90	-0.75	-0.30	-0.13	-0.07
CR4	26,373	0.78	0.41	0.00	1.00	1.00	1.00	1.00
LITIGATION	26,373	0.37	0.48	0.00	0.00	0.00	1.00	1.00
REGU	26,373	0.09	0.28	0.00	0.00	0.00	0.00	1.00
LNOX	26,373	7.03	0.96	2.20	6.33	7.21	7.92	8.31
SIZE	26,373	5.94	2.06	0.50	4.4	5.85	7.34	12.76
INEFFIC	26,373	0.04	0.20	0.00	0.00	0.00	0.00	1.00
RESTATEMENT	26,373	0.13	0.30	0.00	0.00	0.00	0.00	1.00
NAFRATIO	26,373	0.46	1.00	0.00	0.06	0.20	0.49	64.44
ROA	26,373	-0.05	0.36	-17.06	-0.05	0.03	0.07	0.43
AUDCH	26,373	0.07	0.26	0.00	0.00	0.00	0.00	1.00
LAF	26,373	13.39	1.32	9.21	12.39	13.36	14.28	16.85

[a]All continuous variables are winsorized at the 1st and 99th percentile levels. Variable definitions are in Appendix A

Table 4 - Correlation Matrix

		1	2	3	4	5	6	7	8	9	10	12	13	14	15	16
1	Big4	1.00														
2	Non-Big4	-1.00	1.00													
3	COMP4	0.13	-0.13	1.00												
4	CR4	-0.20	0.20	-0.04	1.00											
5	LITIGATION	0.00	0.00	0.09	0.23	1.00										
6	REGU	0.03	-0.03	-0.07	-0.11	-0.23	1.00									
7	LNOX	-0.01	0.01	0.15	0.51	0.49	-0.26	1.00								
8	SIZE	0.44	-0.44	0.22	-0.55	-0.18	0.16	-0.16	1.00							
9	INEFFIC	-0.05	0.05	-0.02	0.05	0.03	0.00	0.03	-0.04	1.00						
10	RESTATEMENT	0.03	-0.03	-0.01	0.00	-0.02	0.00	-0.02	-0.02	0.03	1.00					
11	SPECIALIST	0.28	-0.28	0.04	-0.14	-0.04	0.02	-0.05	0.20	-0.02	0.01	1.00				
12	NAFRATIO	0.04	-0.04	0.06	-0.09	0.00	0.01	-0.01	0.10	-0.06	0.01	0.04	1.00			
13	ROA	0.08	-0.08	0.22	-0.15	-0.18	0.05	-0.15	0.34	-0.02	-0.01	0.05	0.03	1.00		
14	AUDCH	-0.12	0.12	-0.07	0.05	-0.01	-0.01	0.01	-0.11	0.06	0.06	-0.04	-0.03	-0.04	1.00	
15	LAF	0.43	-0.43	0.17	-0.46	-0.09	0.07	-0.07	0.84	0.07	-0.03	0.19	-0.07	0.20	-0.13	1.00

Table 5

Financial Statement Comparability: Big4 and Non-Big4 auditors[a]

	Dependent variable = *Big4*		Dependent variable = *Non-Big4*	
	(1)		(2)	
	Coeff.	*t*-value	Coeff.	*t*-value
COMP4	0.091***	5.22	-0.091***	-5.22
CR4	0.338**	2.13	-0.016	-0.40
LITIGATION	0.065	0.39	-0.213***	-8.89
REGU	0.002	0.01	0.007	0.19
LNOX	-0.262	-0.81	-0.017	-1.17
SIZE	0.302***	6.24	-0.243***	-22.44
INEFFIC	-0.827***	-8.27	0.480***	10.15
RESTATEMENT	0.046	0.73	-0.245***	-7.99
NAFRATIO	-0.073**	-1.96	-0.014	-1.42
ROA	-0.340***	-3.58	0.288***	9.90
AUDCH	-0.778***	-11.30	0.281***	8.15
LAF	1.211***	15.82	-0.301***	-19.96
Constant	-16.600***	-6.27	4.883***	27.83
Year FE	Yes		Yes	
Industry FE	Yes		Yes	
Pseudo R^2	0.3268		0.2949	
n	26,373		26,373	

[a]This table presents the regression results for the base regression (Eq. 1). Column 1 presents the association between client firm comparability and Big4 auditor. Column 2 presents the association between Non-Big4 auditor and financial statement comparability. All continuous variables are winsorized at the 1st and 99th percentiles. Standard errors are clustered by firm. Variables are defined in Appendix A. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 6

Results of First and Second Stage Regressions of 2SLS[a]

	First Stage		Second Stage			
	(1)		(2)		(3)	
Dependent variable	*COMP4*		*Big4*		*Non-Big4*	
	Coeff.	*t*-value	Coeff.	*t*-value	Coeff.	*t*-value
LABORINT	2.676**	2.48				
CAPINT	-0.323***	-15.69				
BM	-0.262***	-25.62				
POST2005	0.016**	2.13				
Predicted(COMP4)			0.541***	5.73	-0.541***	-5.73
CR4	0.002	0.14	0.033	0.82	-0.033	-0.82
LITIGATION	0.042***	5.20	0.172***	6.87	-0.172***	-6.87
REGUL	-0.098***	-7.63	0.035	0.83	-0.035	-0.83
LNOX	0.088***	17.99	-0.032*	-1.82	0.032*	1.82
SIZE	0.090***	22.64	0.217***	17.46	-0.217***	-17.46
INEFFIC	0.002	0.12	-0.451***	-9.43	0.451***	9.43
RESTATEMENT	-0.004	-0.38	0.248***	8.06	-0.248***	-8.06
SPECIALIST	0.002	0.26	1.420***	33.96	-1.420***	-33.96
NAFRATIO	0.005	1.24	0.008	0.83	-0.008	-0.83
ROA	0.317***	31.68	-0.425***	-10.50	0.425***	10.50
AUDCH	-0.090***	-6.98	-0.237***	-6.63	0.237***	6.63
LAF	-0.068***	-11.80	0.309***	20.13	-0.309***	-20.13
CONSTANT	-0.604***	-9.17	-4.258***	-19.68	4.258***	19.68
Year FE	Yes		Yes		Yes	
Industry FE	Yes		Yes		Yes	
Adjusted R^2	0.154					
Pseudo R^2			0.294		0.294	
n	26,468		26,468		26,468	

[a]Column 1 presents the first-stage results for financial statement comparability (Eq. 5). Labor intensity (*LABORINT*), capital intensity (*CAPINT*), book to market ratio (*BM*), and post 2005 (*POST2005*) are instrumental variables. Columns 2 (*BIG4*) and 3 (*NON-BIG4*) report results from the second stage regressions (where *COMP4* is replaced by the predicted value of *COMP4* from the first stage regression). All continuous variables are winsorized at the 1st and 99th percentiles. Standard errors are clustered by firm. Variables are defined in Appendix A. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 7

Alternative Measures of Comparability: Big4 and Non-Big4[a]

	Dependent variable = Big4 Auditor					
	COMPINDMEAN		COMPINMDN		COMP10	
	Coeff.	*t*-value	Coeff.	*t*-value	Coeff.	*t*-value
COMP	0.021***	3.16	0.034***	4.14	0.058***	4.23
CR4	0.276***	5.89	0.275***	5.88	0.279***	5.96
LITIGATION	0.060	1.56	0.060	1.56	0.049	1.26
REGUL	-0.003	-0.03	0.006	0.05	0.004	0.03
LNOX	-0.226**	-1.96	-0.229**	-1.98	-0.218*	-1.90
SIZE	0.176***	13.24	0.175***	13.27	0.175***	13.26
INEFFIC	-0.445***	-8.68	-0.445***	-8.68	-0.444***	-8.66
RESTATEMENT	0.025	0.73	0.025	0.74	0.026	0.77
SPECIALIST	1.365***	31.80	1.367***	31.80	1.364***	31.77
NAFRATIO	-0.061***	-4.86	-0.061***	-4.86	-0.061***	-4.87
ROA	-0.177***	-5.46	-0.180***	-5.62	-0.175***	-5.52
AUDCH	-0.450***	-11.93	-0.449***	-11.89	-0.449***	-11.88
LAF	0.616***	30.34	0.616***	30.41	0.617***	30.43
Constant	-8.108	-8.65	-8.049***	-8.57	-8.131***	-8.70
Year FE	Yes		Yes		Yes	
Industry FE	Yes		Yes		Yes	
Pseudo R^2	0.369		0.369		0.369	
n	26,363		26,363		26,363	

[a]All continuous variables are winsorized at the 1st and 99th percentiles. Standard errors are clustered by firm. Variables are defined in Appendix A. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 7 (Continued)

Alternative Measures of Comparability: Big4 and Non-Big4[a]

	Dependent variable = Non-Big4 Auditor					
	COMPINDMEAN		COMPINMDN		COMP10	
	Coeff.	*t*-value	Coeff.	*t*-value	Coeff.	*t*-value
COMP	-0.021***	-3.16	-0.034***	-4.14	-0.058***	-4.23
CR4	-0.276***	-5.89	-0.275***	-5.88	-0.279***	-5.96
LITIGATION	-0.060	-1.56	-0.060	-1.56	-0.049	-1.26
REGUL	0.003	0.03	-0.006	-0.05	-0.004	-0.03
LNOX	0.226**	1.96	0.229**	1.98	0.218*	1.90
SIZE	-0.176***	-13.24	-0.175***	-13.27	-0.175***	-13.26
INEFFIC	0.445***	8.68	0.445***	8.68	0.444***	8.66
RESTATEMENT	-0.025	-0.73	-0.025	-0.74	-0.026	-0.77
SPECIALIST	-1.365***	-31.80	-1.367***	-31.80	-1.364***	-31.77
NAFRATIO	0.061***	4.86	0.061***	4.86	0.061***	4.87
ROA	0.177***	5.46	0.180***	5.62	0.175***	5.52
AUDCH	0.450***	11.93	0.449***	11.89	0.449***	11.88
LAF	-0.616***	-30.34	-0.616***	-30.41	-0.617***	-30.43
Constant	8.108***	8.65	8.049***	8.57	8.131***	8.70
Year FE	Yes		Yes		Yes	
Industry FE	Yes		Yes		Yes	
Pseudo R^2	0.400		0.369		0.396	
n			26,363		26,363	

[a]All continuous variables are winsorized at the 1st and 99th percentiles. Standard errors are clustered by firm. Variables are defined in Appendix A. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 8

Audit fees, non-Big4 and Big4 Auditors[a]

	Dependent variable = Log of Audit Fees			
	(1)		*(2)*	
	Coeff.	*t*-value	*Coeff.*	*t*-value
BIG4×COMP4	-0.031**	-2.54		
COMP4	-0.054***	-5.14	-0.085***	-11.88
BIG4	0.253***	21.83		
N0N-BIG4×COMP4			0.031**	2.54
NON-BIG4			-0.253***	-21.83
SIZE	0.546***	222.47	0.546***	222.47
ROA	-0.262***	-23.22	-0.262***	-23.22
CRISIS	0.061	1.06	0.061	1.06
SOX	0.720***	2.82	0.720***	2.82
BUSY	0.069***	8.82	0.069***	8.82
GC	0.062***	2.93	0.062***	2.93
AUDCH	-0.114***	-9.33	-0.114***	-9.33
UNQUALOP	-0.083***	-10.26	-0.083***	-10.26
QUICK	-0.027***	-20.34	-0.027***	-20.34
SQRTSEGMENT	0.026	1.22	0.026	1.22
INVREC	0.361***	15.09	0.361***	15.09
GROWTH	0.014***	7.01	0.014***	7.01
LOGTIME	0.235***	21.43	0.235***	21.43
FORGN	0.099***	9.97	0.099***	9.97
NAFRATIO	-0.104***	-21.69	-0.104***	-21.69
INEFFIC	0.290***	18.02	0.290***	18.02
DIVSTATUS	0.022***	2.78	0.022***	2.78
SPECIALIST	0.048***	6.06	0.048***	6.06
RESTATEMENT	-0.037***	-3.79	-0.037***	-3.79
LEV	0.049***	4.12	0.049***	4.12
Constant	8.048***	27.38	8.301***	28.22
Year FE	Yes		Yes	
Industry FE	Yes		Yes	
Adjusted R^2	0.859		0.859	
Observation	25,458		25,458	

[a] This table presents the regression results whether Big4 and non-Big4 auditors charge higher or lower audit fees for comparable firms. Column (1) presents the association between audit fees and Big4 auditors and column (2) presents the association between non-Big4 auditors and audit fees. All continuous variables are winsorized at the 1st and 99th percentiles. Standard errors are clustered by firm. Variables are defined in Appendix A. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

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RESEARCH PAPER PRESENTATIONS

Islam, M.N. and C. Wheatley. 2017. *Client Operating Similarity and Audit Outcome.* (Working paper presented at Spring 2017 FIU School of Accounting Research Workshop).

Islam, M.N. 2015. *CFO Gender and Investment Efficiency*. (Working paper presented at Graduate Student Appreciation Week (GSAW) 2015).