DOES THE CONVERGED REVENUE RECOGNITION STANDARD IMPROVE REVENUE RECOGNITION COMPARABILITY BETWEEN U.S. GAAP AND IFRS?

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Abstract: This study examines whether the new revenue recognition standard, converged between U.S. GAAP and IFRS (hereafter, New Standard), improves revenue recognition comparability between U.S. GAAP and IFRS. Using a difference-in-difference design to compare U.S. firms and IFRS foreign firms that report in the U.S. market, I find that post-adoption, revenue recognition comparability improves in key industries expected to be most-affected by the New Standard under the correlation comparability measure. Specifically, comparability improvement is evident in the telecommunication and computer software industries. However, I find earnings comparability, measured with a stock return-based proxy, decreases in non-key industries and industries with low pre-convergence comparability. Further, I find that comparability improves among U.S. firms, yet does not change among IFRS ADR firms. This study contributes to the literature by being the first to examine comparability improvement in the context of the converged New Standard's adoption, and benefits stakeholders interested in the comparability of financial information across seemingly converged standards in the global market.

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CHAPTER I

INTRODUCTION

"I believe that revenue recognition standard achieved its objective. It simplified GAAP. It replaced numerous disparate pieces of industry-specific guidance with a more consistent framework that ensured greater comparability in financial reporting across different industries; it improved IFRS by replacing two main revenue recognition standards that had limited implementation guidance and were difficult to understand and apply across the globe; and it improved both sets of standards by requiring enhanced disclosures that gave investors and other users a better understanding of the economics behind the numbers. Transition has gone smoothly, and costs have been lower than we had originally expected, but we continue to monitor the implementation and stand ready to address any issues that may arise."

- Russell Golden (2019), Former Chairman, FASB

Previously, U.S. GAAP and IFRS revenue recognition standards differed so dramatically that economically similar transactions were often accounted for quite differently between the two regimes (FASB 2014a, par. 2). However, this was not a case of either standard being superior as many believed that IFRS "lacked sufficient detail" while U.S. GAAP was "overly prescriptive and conflicting in certain areas" (FASB 2014a, para. 2). To respond to these challenges, the Financial Accounting Standards Board (FASB) and the International Accounting Standard Board (IASB) spent over a decade discussing, debating, and finally completing a joint project on revenue recognition.[1] On May 28, 2014, the FASB and the IASB jointly issued a new and fully converged revenue recognition standard (hereafter, New Standard), FASB Accounting Standard Codification (ASC) 606 - *Revenue from Contracts with Customers* (hereafter, ASC 606)

[1] The joint project on revenue recognition officially started in June 2002 and the final converged revenue recognition standard was issued in May 2014 (Gordon, Henry, and Hsu 2018).

in the U.S. and IFRS 15 - *Revenue from Contracts with Customers* (hereafter, IFRS 15), respectively. The New Standard became effective for annual reporting periods that began after December 15, 2017 (U.S. GAAP) or after December 31, 2017 (IFRS).

The purpose of this study is to provide evidence on the extent to which the New Standard achieved the overarching goal of comparability between U.S. GAAP and IFRS. Further, industry analyses provide evidence on where convergence was more successfully achieved. Specifically, I examine whether comparability improvement is realized primarily in industries most impacted by the New Standard.[2] I also examine whether comparability improvement is primarily concentrated in industries with lower comparability prior to the New Standard.

As one of the four qualitative characteristics in the conceptual framework, comparability is important for financial reporting quality to enhance the decision usefulness of information that is relevant and faithfully represented (FASB 2010; IASB 2010). The FASB (2014a) claims that one of the important benefits of the New Standard is that it improves comparability in the financial statements of companies reporting under U.S. GAAP and IFRS. In a 2019 speech, Russell Golden, Former Chairman of the FASB, also emphasized that the New Standard "replaced numerous disparate pieces of industry-specific guidance [*in U.S. GAAP*] with a more consistent framework that ensured greater comparability in financial reporting across different industries."[3]

After more than a decade's efforts to converge two revenue recognition standards into one, it is not surprising that the New Standard is expected to improve the comparability of revenue recognition between U.S. GAAP and IFRS. However, empirical research to test such comparability improvement is still limited. Alternatively, differences in implementation and subsequent guidance between ASC 606 and IFRS 15 could result in no significant change in comparability despite the

[2] Following Ciesielski and Weirich (2015) and Gordon et al. (2018), industries most impacted by the New Standard are referred to as key industries. These industries are computer technology, health care, and telecommunication.

[3] Russell Golden made this statement in his opening remarks at Baruch College's 18th Annual Financial Reporting Conference held on May 2, 2019. The edited transcript of the remark is published in the CPA Journal (Golden 2019).

seeming convergence of the original standard. For example, ASC 606 and IFRS 15 are not precisely the same standards. After the New Standard was issued, the FASB and the IASB both created Transition Resource Groups (hereafter, TRG) to support the implementation of the New Standard. The FASB's TRG issued five amendments of the New Standard in 2015 and 2016 (FASB n.d.a), whereas the IASB only issued one amendment in 2016 (ISAB n.d.a). Further, after six TRG meetings jointly held by both boards, the IASB TRG merely acted as an observer in the last two TRG meetings and made it clear that IFRS preparers are not required to consider the decisions of the FASB's TRG in applying IFRS 15 (FASB 2016; FASB 2017; KPMG 2017).

In addition, the New Standard's effect on comparability may only exist in certain industries. Prior literature theorizes that the New Standard will have the most impact on certain key industries such as computer technology, health care, and telecommunication, as it relaxes the timing restriction of revenue recognition (Ciesielski and Weirich 2015; Gordon et al. 2018). For example, these industries normally have more uncertainty since they engage in multi-period transactions with multiple performance obligations. Under the New Standard, firms in such industries can recognize revenue sooner under some arrangements as performance obligations are satisfied, instead of waiting for all uncertainties to be resolved (Ciesielski and Weirich 2015).[4] By contrast, industries with more certainty in their sales transactions may experience no change in revenue recognition comparability after adopting the New Standard. Also, the comparability improvement may only exist in industries with lower pre-convergence comparability, given the limited potential to realize improvement for industries with high pre-convergence comparability. Further, the financial statements of a U.S. GAAP firm and an IFRS firm listed in the same stock market may already be comparable before the adoption of the New Standard. For example, Eng, Sun, and Vichitsarawong (2014) find that after the SEC allowed foreign firms listed in the U.S. to adopt IFRS in 2007, IFRS-

[4] The New Standard requires firms recognize revenue when a performance obligation is satisfied. Under the New Standard, firms with a long-term contract can identify separate performance obligations, then recognize revenue based on each satisfied performance obligation. Under the old standard, such firms can recognize revenue only when all uncertainties are solved (Ciesielski and Weirich 2015).

based and U.S. GAAP-based accounting amounts were comparable. Thus, it is an empirical question whether the comparability between U.S. GAAP and IFRS improved after the adoption of the New Standard.

Moreover, the New Standard's adoption may lead to an increase in earnings management, since the standard allows managers discretion in the assessment of performance obligations (Rutledge, Karim, and Kim 2016). The increase in earnings management may offset any comparability improvement resulting from the New Standard. Lyons and Tarasovich (2018) state that the New Standard may have a greater effect on U.S. GAAP firms than IFRS firms due to the U.S. GAAP's shift from rules-based to principles-based in revenue recognition. This uneven effect may also decrease the likelihood of an improvement in comparability between U.S. GAAP and IFRS.

To isolate the incremental effect of the convergence of the New Standard, I match U.S. listed firms with foreign firms listed in the U.S. (American Depositary Receipts, hereafter, ADR firms) by size and industry. The SEC has allowed ADR firms to adopt either IFRS or U.S. GAAP since 2007, which provides natural matches of sample firms with different accounting standards but similar other features.[5] Further, as a single regulator, the SEC can enforce U.S. GAAP or IFRS in the U.S. market, controlling for the cross-country variability in litigation risk and enforcement.

I use a difference-in-difference method to test the change in revenue recognition comparability after the New Standard's effective date. My treatment group consists of pairs of U.S. firms and matched IFRS ADR firms; my control group consists of pairs of U.S. firms and matched U.S. GAAP ADR firms. I proxy for comparability with the stock return metric following Lin, Riccardi, and Wang (2019) and the correlation metric based on Francis, Pinnuck, and Watanabe (2014). For the overall sample of 1,728 quarterly firm-pair observations in the fiscal year 2012-

[5] Besides IFRS and U.S. GAAP, ADR firms can also use domestic accounting standards with reconciliation to U.S. GAAP.

2013 and 2018-2019, I find no significant change in revenue recognition comparability between the U.S. sample firms and IFRS ADR sample firms after the New Standard adoption.

One potential explanation for the overall result is that the New Standard adoption effect varies by industry. Using the key industries and the low pre-convergence industries defined by Gordon et al. (2018), I find that after the adoption of the New Standard, revenue recognition comparability between U.S. GAAP and IFRS only improves for firms in the key industries under the correlation metric. Specifically, using the correlation measure, I only find significant comparability improvement in the telecommunication and computer software industries. In contrast, I find no significant difference in the change of revenue recognition comparability between low and high pre-convergence comparability industries.

In additional analyses, I test whether earnings comparability improves between the two standards. I also test whether earnings comparability changes among U.S. firms and among IFRS ADR firms, respectively. Surprisingly, I find that earnings comparability decreases between U.S. firms and IFRS firms after the adoption of the New Standard adoption. Moreover, this comparability decrease occurs only in non-key industries and industries with low pre-convergence comparability under the stock return metric. In contrast, both revenue recognition and earnings comparability increase among U.S. firms after the New Standard adoption.[6] Finally, I find no significant change in comparability among IFRS ADR firms after adopting the New Standard. Taken together, there appears to be little overall change to comparability between US. GAAP and IFRS ADR firms except for revenues within two key industries. However, significant improvement in the comparability of both revenues and earnings is realized among U.S. GAAP firms.

This paper contributes to the literature in four aspects. First, it fills the literature gap by testing comparability improvement between U.S. GAAP and IFRS after the adoption of the new and converged revenue recognition standard. To my knowledge, this is the first paper to empirically

[6] The only exception is the insignificant result for earnings comparability under the stock return measure. See Table 8 column (3).

test whether revenue recognition comparability improves between U.S. GAAP and IFRS after firms adopted the New Standard. Most prior studies related to the New Standard are either surveys that predict its general impact or qualitative studies that focus on its early adoption (Rutledge et al. 2016; Jonick and Benson 2018; Lyons and Tarasovich 2018; Rao 2020). Moreover, most prior studies related to comparability across standards focus on comparability change after international firms mandatorily switch from their domestic accounting standards to IFRS (Barth et al. 2012; Eng et al. 2014), or after international firms converge their domestic accounting standard with IFRS (Lin et al. 2019). In addition, a concurrent working paper Ferreira (2020) finds that the U.S. GAAP firms' implementation of the New Standard increases liquidity through the improvement of precision and comparability across industries. This paper differs from Ferreira (2020) by focusing on intra-industry comparability improvement between two standards, U.S. GAAP and IFRS.

Second, this paper also responds to the recent call for timely comparability research related to the new revenue recognition standard. For example, in a discussion of Lin et al. (2019), IASB officer Gary Kabureck states that the sample period of Lin et al. (2019) is old and further expresses that "there have been a lot more converged standards since then, such as the revenue recognition standard, which are starting to go into operation. And so I think the study should be updated. (Kabureck 2019)" Since the New Standard has been effective for only three years, this paper provides timely analyses to test whether the New Standard achieves the goal of comparability.

Third, this paper contributes by utilizing the natural advantage of the U.S. market to disentangle the comparability effect puzzle. In investigating the impact of the New Standard, it is difficult to isolate changes in comparability across accounting standards from changes in comparability within one accounting standard. It is also hard to control for cross-country differences when comparing U.S. GAAP and IFRS. The U.S. market allows ADR firms to pick either U.S. GAAP or IFRS, making it possible to analyze two accounting standards within one market. With this natural advantage, I am able to use a difference-in-difference method to examine the incremental effect of the New Standard adoption between firms using U.S. GAAP and IFRS.

Finally, this paper contributes by addressing the research question of comparability across different accounting standards, which is important to stakeholders in the globalized financial reporting system. FASB (n.d.b) states that "investors, companies, auditors, and other participants of the U.S. financial reporting system benefit from the increased comparability that can result from the closer alignment of standards used internationally." Further, ADR stocks are a large component in the U.S. market.[7] It is important for investors to assess comparable information between firms using U.S. GAAP and IFRS. To enhance comparability, the FASB and the IASB spent over a decade to develop a converged revenue recognition standard. Whether the new revenue recognition standard achieves its crucial objective, namely improved comparability, is worth examining.

The remainder of this paper is organized as follows. Chapter II discusses the background and literature review. Chapter III presents the development of hypotheses. Chapter IV presents the empirical research design, including the research method, comparability metric, regression model design, and sample selection. Chapter V presents the descriptive statistics and empirical results. Chapter VI presents additional analyses. I conclude in Chapter VII.

[7] As of January 21, 2019, there are 433 ADR firms listed in the U.S. market with a market capitalization of $8.5 trillion, which is 14.25 percent of market capitalization in the total U.S. market (Stock Market MBA 2019).

CHAPTER II

BACKGROUND AND LITERATURE REVIEW

New Revenue Recognition Standard

On May 28, 2014, the FASB and the IASB jointly issued a converged standard on the recognition of revenue from contracts with customers, coded as ASU2014-09 Topic 606 (ASC 606) by the FASB and IFRS 15 by the IASB (FASB 2014a). Beginning in 2002, the FASB and the IASB expended considerable resources for over a decade in order to complete this convergence project. The New Standard had an initial effective date of 2017 for public firms. As many firms expressed concerns about the high cost of implementing the New Standard, the FASB and the IASB voted in 2015 to delay the effective date of the New Standard by one year. The final effective date of the New Standard is the annual reporting periods beginning after December 15, 2017 for public firms adopting U.S. GAAP, and after December 31, 2017 for public firms adopting IFRS. Moreover, IFRS permits early adoption of the New Standard, while U.S. GAAP only allows early adoption for firms with annual periods beginning after December 15, 2016 (FASB n.d.c; IASB n.d.a). The core principle of the New Standard is to "recognize revenue to depict the transfer of goods or services to customers in amounts that reflect the consideration (that is, payment) to which the company expects to be entitled in exchange for those goods or services (FASB 2014a)." The main difference between the New Standard and the old one is that the New Standard requires firms to identify performance Obligations and to allocate the transaction price to the performance obligations (Ciesielski and Weirich 2015). Revenue is recognized when a performance obligation is satisfied (FASB n.d.c.).

FASB (2014a) claims that the reason for issuing the New Standard is to respond to the following challenges of the previous standards. First, the previous standards of U.S. GAAP and IFRS were different and often resulted in different accounting for economically similar transactions (FASB 2014a, par. 2). Second, the previous revenue recognition requirements within both U.S. GAAP and IFRS needed improvement. The previous U.S. GAAP standard was "overly prescriptive," "conflicting in certain areas," and "comprised broad revenue recognition concepts together with numerous revenue requirements for particular industries or transactions (FASB 2014a; FASB 2014b)." In contrast, the previous IFRS standard "lacked sufficient detail," "provided limited guidance," and consequently "could be difficult to apply to complex transactions (FASB 2014a; FASB 2014b)." FASB (2014a) claims that the new and converged revenue recognition standard has made significant progress by providing substantial enhancement to the quality and consistency of how revenue is reported, guidance for transactions that were not previously addressed comprehensively (for example, service revenue and contract modifications), and improvement of guidance for multiple-element arrangements (FASB 2014a). Furthermore, the FASB states that the New Standard improves comparability in the financial statements of companies using IFRS and U.S. GAAP, as well as improves the comparability of revenue recognition practices across entities, industries, jurisdictions, and capital markets (FASB 2014a; FASB n.d.c).

Several qualitative studies have analyzed particular instances where the New Standard may result in the most significant impact on reporting. Ciesielski and Weirich (2015) expect the New Standard to have the most impact on certain key industries such as computer technology, health care, and telecommunication as it relaxes the timing restriction of revenue recognition. Rutledge et al. (2016) predict the possible effect of the New Standard on earnings quality, deferred taxes, management compensation, and industry-specific reporting. For instance, Rutledge et al. (2016) indicate that the New Standard requires companies to use greater judgment in the assessment of performance obligations, thus allowing for much more room for management judgment on earnings

quality from the adoption of the standard. Lyons and Tarasovich (2018) state that the New Standard may have a greater effect on U.S. GAAP than IFRS as the revenue recognition standard in U.S. GAAP creates a big shift from "rules-based" to "principles-based", whereas IFRS keeps its "principles-based" feature in revenue recognition.

In addition to qualitative literature, Jonick and Benson (2018) conduct a survey of chief accounting officers of Fortune 500 companies on how these firms prepare for the adoption of the New Standard and how they expect the New Standard impact their current operations. The results indicate that Fortune 500 firms expect to change internal policies and procedures, yet do not anticipate that the New Standard will impact product and services offerings (Jonick and Benson 2018). Rao (2020) finds that during the early adoption period for U.S. GAAP firms, only ten of the Standard and Poor's 1,500 companies chose to adopt the New Standard early.

As the New Standard has been effective for only three years, empirical research related to the New Standard is still limited. A concurrent paper Ferreira (2020) finds that the implementation of the New Standard enhances liquidity by improving the precision and comparability of the financial statements of U.S. GAAP firms. In addition, Gordon et al. (2018) examine the market reaction during the period surrounding the issuance of the New Standard and find that the market reactions to events leading to the New Standard are net negative for U.S. GAAP firms but net positive for IFRS firms.[8] Further, Gordon et al. (2018) find that such market reaction in certain key industries is positive for both U.S. GAAP and IFRS firms and that such reaction is higher in the key industries with lower pre-convergence comparability.[9]

[8] Gordon et al. (2018) focus on the period 1998-2015, which is from the year the New Standard joint project begins to the year after the issuance of the new standard.
[9] Key industries in Gordon et al. (2018) are defined as industries that are expected to be affected the most by the effect of the New Standard in Ciesielski and Weirich (2015), namely healthcare, communication, and technology industries.

Comparability

The conceptual framework defines comparability as "the qualitative characteristic that enables users to identify and understand similarities in, and differences among, items (FASB 2010; IASB 2010)." As one of the four qualitative characteristics, comparability is important for financial reporting quality since it enhances the decision usefulness of information that is relevant and faithfully represented (FASB 2010; IASB 2010). De Franco, Kothari, and Verdi (2011) find that financial statement comparability is positively related to analyst following and forecast accuracy, and negatively related to analysts' dispersion in earnings forecasts, suggesting that comparability lowers the cost of acquiring information and increases the overall quantity and quality of financial information.

Improving comparability is one of the main objectives of U.S. GAAP and IFRS convergence. The FASB (n.d.b) states that seeking more comparable global accounting standards is consistent with its core mission – to improve financial reporting for the benefit of investors and other users of financial information in U.S. capital markets. Also, more comparable standards "have the potential to reduce costs for both users and preparers of financial statements and make worldwide capital markets more efficient (FASB n.d.b)." The existence of IFRS shows the importance of comparability because IFRS enhances the comparability of financial reporting internationally by providing most countries of the world with one uniform accounting standard. So far, 144 out of the 166 jurisdictions under the purview of the IASB require IFRS standards for their public companies (IASB n.d.b). The IASB (n.d.c) stresses that "IFRS Standards bring transparency by enhancing the international comparability and quality of financial information, enabling investors and other market participants to make informed economic decisions." To achieve the goal of improving comparability between U.S. GAAP and IFRS, the FASB and the IASB have worked together for over a decade in order to issue converged standards for topics such as business combinations, fair value measurement, leases, and revenue recognition.

Prior literature on comparability across accounting standards focuses on the effect of mandatory IFRS adoption or on IFRS convergence with other domestic standards. Using a sample of firms listed in the U.K., Brochet, Jagolinzer, and Riedl (2013) find that mandatory IFRS adoption leads to capital market benefits associated with improvements in comparability. Further, Barth et al. (2012) find that comparability between IFRS firms and U.S. GAAP firms improves after IFRS firms switch from adopting domestic standards to IFRS. Lin et al. (2019) focus on the relative effects of IFRS adoption and IFRS convergence on comparability. They suggest that both adoption and convergence of IFRS lead to enhancement of comparability and further, that IFRS adoption does not lead to a significant incremental increase in comparability beyond IFRS convergence.[10] Eng et al. (2014) directly compare the IFRS and U.S. GAAP adoption of cross-listed companies and find that after 2007 (when SEC began to allow foreign listed firms to adopt IFRS for their financial report), the accounting amounts of IFRS ADR firms were not significantly different from those of U.S. GAAP ADR firms, suggesting that two systems are comparable. The New Standard's adoption is a unique setting to investigate changes in comparability as the standard focuses on a specific component of income rather than on overall accounting rules. Moreover, the standard may affect certain industries differently, which leads to the discussion of hypotheses below.

[10] Lin et al. (2019) use the unique setting of the German stock market, where firms were allowed to use either IFRS or U.S. GAAP before 2005 and were mandated to adopt IFRS after 2005. In Lin et al. (2019), IFRS adoption is proxied by German listed firms that switched from U.S. GAAP to IFRS after 2005; IFRS convergence is represented by German listed firms that kept adopting IFRS, since U.S. GAAP and IFRS are constantly converging.

CHAPTER III

HYPOTHESIS DEVELOPMENT

Intuitively, I conjecture that the New Standard improves the comparability of revenue recognition between U.S. GAAP and IFRS. The previous revenue recognition standards between U.S. GAAP and IFRS were so different that the FASB and the IASB were motivated to issue a converged standard (FASB 2014a). As a result, the new revenue recognition standards in U.S. GAAP and IFRS (ASC 606 and IFRS 15) are essentially uniform, consisting of the same revenue recognition principles and guidance. The uniformity of the New Standard helps firms record revenue following the same principles for transactions that are economically similar, regardless of adopting U.S. GAAP or IFRS, which should enhance the comparability of revenue recognition between U.S. GAAP firms and IFRS firms.

However, the New Standard may not significantly change the comparability between U.S. GAAP or IFRS due to differences in implementation and subsequent guidance between ASC 606 and IFRS 15. KPMG (2017) summarizes ten key differences between ASC 606 and IFRS 15 and finds that the U.S. GAAP version contains more detail than the IFRS version by providing more application guidance and additional practical expedients. Also, after the issuance of the New Standard, the FASB and the IASB both created a Transition Resource Group on Revenue Recognition (hereafter, TRG). The TRG of the two Boards held six meetings to discuss the implementation issues submitted by stakeholders. As a result, the FASB issued five amendments during 2015 and 2016, yet the IASB issued only one amendment in 2016 (FASB n.d.a; ISAB n.d.a).

Further, in January 2016 the IASB announced that it had completed its decision making on clarifications to IFRS. Subsequently, the IASB did not directly participate in the two last TRG meetings held in 2016, but only served as an observer. Moreover, the IASB made it clear that IFRS firms are not required to consider the FASB's TRG decisions in applying IFRS 15 (FASB 2016; FASB 2017; KPMG 2017).

Also, the New Standard may affect comparability only in certain industries. For example, the New Standard is expected to have the most impact on certain key industries such as computer technology, health care, and telecommunication industries. These industries face more uncertainty in multiple-period transactions (Ciesielski and Weirich 2015).[11] In addition, comparability may improve only in industries with low pre-convergence comparability (Gordon et al. 2018).[12] Firms in non-key or in industries with high pre-convergence comparability may experience no change in revenue recognition comparability after adopting the New Standard. Further, the financial statements of U.S. GAAP firms and IFRS firms listed in the U.S. market may already be comparable prior to the New Standard's adoption, leaving relatively little room for financial statement comparability to improve. Eng et al. (2014) find that after the SEC allowed ADR firms to choose IFRS in the U.S. market, many accounting elements between U.S. GAAP and IFRS exhibited no significant difference.[13]

Moreover, Rutledge et al. (2016) indicate that the New Standard will allow more room for earnings management, since it requires companies to use greater judgment in the assessment of performance obligations. Lyons and Tarasovich (2018) state that the New Standard may have a greater effect on U.S. GAAP than IFRS based on U.S. GAAP's greater shift from "rules-based" to "principles-based" reporting. Earnings management related to the New Standard and the potentially

[11] See more discussion in hypothesis development for H2.
[12] See more discussion in hypothesis development for H3.
[13] Eng et al. (2014) compare the explanatory power of price, return, and cash flow models, timeliness in reporting, accrual quality, and predictive power of accounting between ADR firms using U.S. GAAP and IFRS.

uneven effect of the New Standard on U.S. GAAP and IFRS can also offset any comparability improvement resulting from a common standard.

Since it is unclear whether comparability between U.S. GAAP and IFRS is likely to improve under the New Standard, I state my first hypothesis in the null as follows:

H1: *The comparability of revenue recognition between U.S. GAAP and IFRS does not change following the adoption of the New Standard.*

The effect of the New Standard on the comparability improvement may vary across industries (Ciesielski and Weirich 2015; Gordon et al. 2018). Ciesielski and Weirich (2015) suggest that the New Standard will have the most impact on three key industries: technology, telecommunications, and health care. They expect that the New Standard is likely to drive a wider wedge between earnings and cash flows, and pro forma earnings reports are common in those sectors. For example, these industries normally have more uncertainty in long-time transactions with multiple performance obligations or deliverable arrangements. Based on the New Standard, firms in such industries can recognize revenue under some arrangements with certainties earlier instead of waiting for all uncertainties to be solved (Ciesielski and Weirich 2015).[14] Accordingly, Gordon et al. (2018) specifically identify key industries based on the Fama-French 49 industry definitions, finding that the market reactions to the New Standard in the pre-adoption-effective period is positive for both U.S. GAAP firms and IFRS firms listed in global markets. Furthermore, the impact in key industries adopting IFRS is even greater because the previous IFRS revenue recognition standard lacked guidance on accounting for multiple-element arrangements (Gordon et al. 2018). Thus, I state the second hypothesis in alternative form as follows:

[14] For example, when a software company grants its customers a right to upgrade to a new software version not yet developed, under the old U.S. GAAP standard, revenue recognition is deferred until the company can provide the relevant vendor-specific objective evidence (VSOE) or until all elements of the contract are delivered, whichever comes first. However, the New Standard eliminates VSOE requirements and requires the breakdown of a contract into performance obligations. Thus, under the New Standard, software companies can identify the upgrade right as a performance obligation with its stand-alone assigned price, then recognize its revenue when such obligation is completed (Ciesielski and Weirich 2015).

H2: *The improvement of revenue recognition comparability after firms' adoption of the New Standard is more pronounced in the key industries relative to non-key industries.*[15]

Finally, I explore whether any comparability improvement between U.S. GAAP and IFRS after the New Standard adoption is primarily concentrated in industries with lower comparability prior to the convergence. The New Standard is expected to significantly improve revenue recognition comparability between U.S. GAAP and IFRS only when the pre-convergence comparability is low. Gordon et al. (2018) find that during the period surrounding the New Standard issuance, firms in industries with lower pre-convergence comparability had a greater market reaction. I state the third hypothesis in the alternative form as follows:

H3: *The improvement of revenue recognition comparability after firms' adoption of the New Standard is more pronounced in low pre-convergence comparability industries relative to high pre-convergence comparability industries.*

[15] Following Gordon et al. (2018), key industries are provided by healthcare, communication, and technology Fama-French 49 industry portfolios.

CHAPTER IV

EMPIRICAL RESEARCH DESIGN

Difference-in-Difference Method

To isolate the incremental effect of the New Standard on both U.S. GAAP and IFRS, I use a difference-in-difference design to test the comparability change of firms in the U.S. market after the New Standard's effective date. The SEC has allowed ADR firms to use IFRS without reconciliation to U.S. GAAP since November 2007, whereas U.S. firms are only able to adopt U.S. GAAP. Thus, I pair U.S. listed firms with ADR firms based on their size and industries. The treatment group consists of pairs of U.S. firms and matched IFRS ADR firms, and the control group consists of pairs of U.S. firms and matched U.S. GAAP ADR firms. I use the matched pairs of U.S. firms and U.S. GAAP ADR firms as a control group because I assume that after the convergence, the change of comparability in this group is limited relative to the change of comparability between the matched pairs of firms using different accounting standards. The difference-in-difference design is presented in Figure 1.

Due to the slight difference of effective dates between ASC 606 and IFRS 15, I use the later effective date required in IFRS, January 1, 2018, as the effective date of the New Standard. I exclude the period 2014 – 2017 in order to exclude the early adoption of the New Standard for both U.S. GAAP and IFRS firms. To make consistent pre- and post- sample periods, I identify my pre-sample period as 2012 - 2013 and my post-sample period as 2018 - 2019.

The post-New-Standard firm years are fiscal years beginning on or after January 1, 2018 and ending no later than May 31, 2020. Correspondently, the pre-adoption firm years are fiscal years beginning on or after January 2012 and ending no later than May 31, 2014.[16]

Comparability Metric

Following the models modified from De Franco et al. (2011), I use two comparability measures: the stock return measure (Lin et al. 2019), a measure based on the similarity of the mapping of revenue to stock returns across firms; and the correlation measure (Francis et al. 2014), a measure based on the covariation in revenues across firms. Both measures are commonly used or developed by multiple comparability studies.[17] Unlike prior studies, this paper focuses on the comparability of revenue recognition rather than earnings. Thus, I replace all variables of earnings used in prior literature with variables of revenue.

In the stock return measure, De Franco et al. (2011) describe comparability as the degree to which accounting functions similarly translate the real underlying economic events (proxied by stock returns) into financial statement information (proxied by earnings).[18] Based on De Franco et al. (2011), Lin et al. (2019) develop a similar comparability metric by matching unique firms by industry and size.[19] First, following Lin et al. (2019), I estimate the following regressions:

$$\frac{REV}{MC_{iq}} = \alpha^i + \beta^i RET_{iq} + \varepsilon_{iq} \quad (1)$$

[16] To increase sample size, I use the FYEAR instead of the year of DATADATE in Compustat to proxy for fiscal year. A firm is in FYEAR *t* if its fiscal year-end month falls in June, year t through May, year *t*+1. Thus, my sample includes firms with fiscal year ending no later than May 2014 in the pre-adoption period, and no later than May 2020 in the post-adoption period.

[17] For example, Barth et al. (2012) and Lin et al. (2019) develop the stock return measure, whereas Francis et al. (2014) and Gordon et al. (2018) develop the correlation measure.

[18] The stock return measure is based on the distance between accounting earnings for two firms with identical economic events. Given a set of identical economic events, if the accounting between two firms is comparable, then one should observe identical financial statements (De Franco et al 2011; Hopkins 2019).

[19] The difference of comparability measures between De Franco et al. (2011) and Lin et al. (2019) is described below. De Franco et al. (2011) match firm *i* with all other firms in the same industry, then calculate the average comparability of the four firm-pairs with the highest comparability as to the final comparability of firm *i*. Lin et al (2019) match the unique firm-pairs *ij* based on industry and size and calculate the comparability for each firm-pair. I choose the stock return measure in Lin et al. (2019) for the consistent firm-pairs in pre- and post-adoption periods.

where for firm *i*, *REV/MC* is calculated as revenue in quarter *q* divided by market capitalization at the beginning of the quarter *q*. *RET* is the stock return adjusted for dividends and stock splits. The coefficients α^i and β^i represent the estimated accounting function of firm *i*. Second, I match firm *i* with firm *j* in the same industry based on firm size and estimate coefficients α^j and β^j based on the equation (1). Third, I calculate the expected values of *REV/MC* using firm *i* and firm *j*'s accounting functions (α^i, β^i, α^j and β^j), yielding $EREV/MC_{iq}^{i}$ and $EREV/MC_{iq}^{j}$. Fourth, I compute the absolute value of the difference between the two expected values as $|EREV/MC_{iq}^{i} - EREV/MC_{iq}^{j}|$. I then repeat this process to get the two expected *REV/MC* for firm *j* ($EREV/MC_{jq}^{j}$ and $EREV/MC_{jq}^{i}$) and calculate the absolute value of their difference as $|EREV/MC_{jq}^{j} - EREV/MC_{jq}^{i}|$. Finally, I compute the first revenue comparability metric $COMP\_RET_{ijq}$ as the mean of the two absolute values. I multiply $COMP\_RET_{ijq}$ by -1 so that the higher value of $COMP\_RET_{ijq}$ indicates the greater comparability.

The correlation measure of comparability is based on the degree to which revenues for firm-pairs in the same industry covary across time. Unlike the stock return measure, the correlation measure captures anything that creates revenue similarity, regardless of whether the underlying market pricing mechanisms are indeed similar (De Franco et al. 2011; Francis et al. 2014).[20] Following Francis et al. (2014), I first estimate the pair-wise historical correlation between the revenues of two firms from the following equation:[21]

$$REV_{iq} = \gamma_0 + \gamma_1 REV_{jq} + \upsilon_{ijq} \quad (2)$$

[20] For example, the correlation measure can capture the high comparability of two firms in which accounting earnings covary over time such that information about the earnings of one firm can be informative for an investor to forecast the earnings of another firm (De Franco et al. 2011). I replace the earnings with revenues due to my different focus.

[21] The difference between correlation measure in this paper and the one in Francis et al. (2014) is that I match unique firms by industry and size in order to be consistent with the stock return measure based on Lin et al. (2019), whereas Francis et al. (2014) only match firms by industry and calculate comparability for all unique firm-pairs. Matching firms by industry and size can ensure that firms with the closest size are matched and that each firm is only matched once in the sample, making more accurate comparability estimations.

where for the unique firm-pair *ij* in quarter *q*, REV_{iq} and REV_{jq} represent the respective net sales scaled by average total assets of each firm. Equation (2) is estimated over eight consecutive quarters for all unique pairs of firms in the same industry.[22] Then, I compute the firm-pair comparability of revenues as the adjusted R-squared from equation (2), which reflects the level of covariation between revenues of firms *i* and *j* (hereafter, $COMP\_COV_{ijq}$). The higher values of $COMP\_COV_{ijq}$ indicate the higher comparability between firms *i* and *j*.

I use both the stock return measure and the correlation measure because the two approaches can be complementary based on their respective strength and weakness. The stock return measure is closer to the comparability defined in De Franco et al. (2010) and provides a larger sample size for this study. However, it may be more biased because the original model of stock return measure is to estimate comparability of earnings, not revenue recognition (Lin et al. 2019). On the other hand, the correlation measure is a direct test of the revenue recognition comparability since it is based on the covariation in revenue across two firms, thereby capturing anything that creates similarity of the revenue (Francis et al. 2014). The correlation measure can also capture similarity regardless of whether the underlying market pricing mechanisms are indeed similar, which fits this study that compares revenues between U.S. firms and foreign firms with potentially greater difference. Nonetheless, the correlation measure has relatively low power in this study due to the smaller sample size provided.[23]

[22] I use eight consecutive quarters rather than sixteen consecutive quarters used in prior studies because my pre- and post-convergence periods are respectively two years.

[23] Observation number under the correlation measure is one eighth of that under the stock return measure, since a firm-pair only has one general comparability value estimated in the correlation measure in pre- or post-sample period.

Model Design

To test H1, I develop the following OLS regression model:

$$COMP_{ijq} = \alpha_0 + \alpha_1 TREAT_{ijq} + \alpha_2 POST_{ijq} + \alpha_3 TREAT_{ijq} \times POST_{ijq} + \alpha_4 DIFF\_MV_{ijq} + \alpha_5 DIFF\_MTB_{ijq} + \alpha_6 DIFF\_LEV_{ijq} + \alpha_7 DIFF\_SALES\_GROWTH_{ijq} + Year\ FE + Industry\ FE + \varepsilon_{ijq} \quad (3)$$

where for firm-pair *ij* in quarter *q*, *COMP* denotes *COMP_RET* estimated from the stock return measure or *COMP_COV* estimated from the correlation measure. *TREAT* is a dummy variable equal to 1 for the treatment group consisting of pairs of U.S. firms and matched IFRS ADR firms, and 0 for the control group consisting of pairs of U.S. firms and matched U.S. GAAP ADR firms. *POST* is a dummy variable equal to 1 for a firm-pair's annual reporting period beginning on or after January 1, 2018, and 0 otherwise. Following Lin et al. (2019), I include controls for the difference of market value (*DIFF_MV*), market to book ratio (*DIFF_MTB*), leverage (*DIFF_LEV*), and sales growth (*DIFF_SALE_GROWTH*) between firms *i* and *j*. *Year FE* and *Industry FE* are fiscal year fixed effect and industry fixed effect, respectively.[24] I cluster standard errors at firm-pair levels. Variable definitions are provided in Appendix A.

Since the correlation measure requires eight consecutive quarters to estimate the comparability, I use firm-pair observations with non-overlapping eight-quarter periods to mitigate concerns over nonindependence of error terms.[25] Following Francis et al. (2014), when using the correlation measure, I define control variables *DIFF_MV*, *DIFF_MTB*, *DIFF_LEV*, and *DIFF_SALES_GROWTH* as the difference of the average *MV*, *MTB*, *LEV*, and *SALES_GROWTH* between firms *i* and *j* across the corresponding eight quarters, respectively.[26] The variable of

[24] I use two-digit SIC code for industry fixed effect.
[25] That is, I will compare the firm-pairs' comparability between pre-convergence period (fiscal years 2012 and 2013) and post-convergence period (fiscal years 2018 and 2019) using firm-pair observations rather than firm-pair-quarter observations. Thus, there is also no year fixed effects in all regressions when *COMP* equals *COMP_COV*.
[26] See Appendix A for a detailed listing of variable definitions. The definition of control variables in the correlation measure also applies to equations (4) and (5).

interest in equation (3) is the interaction term between $TREAT_{ijq}$ and $POST_{ijq}$. H1 is rejected if α_3 is significant.

To test H2, I add a variable *KEY_IND* into equation (3) and delete the variable of industry fixed effect.[27] I develop the equation (4) as follows:

$$\begin{aligned} COMP_{ijq} = {} & \beta_0 + \beta_1 TREAT_{ijq} + \beta_2 POST_{ijq} + \beta_3 KEY\_IND_{ijq} + \beta_4 TREAT_{ijq} \times POST_{ijq} \\ & + \beta_5 TREAT_{ijq} \times KEY\_IND_{ijq} + \beta_6 POST_{ijq} \times KEY\_IND_{ijq} + \beta_7 TREAT_{ijq} \times POST_{ijq} \\ & \times KEY\_IND_{ijq} + \beta_8 DIFF\_MV_{ijq} + \beta_9 DIFF\_MTB_{ijq} + \beta_{10} DIFF\_LEV_{ijq} \\ & + \beta_{11} DIFF\_SALES\_GROWTH_{ijq} + Year\ FE + \varepsilon_{ijq} \end{aligned} \quad (4)$$

where for firm-pair *ij* in quarter *q*, *KEY_IND* is an indicator variable equal to 1 if a firm-pair belongs to the key industries affected the most by the New Standard, and 0 otherwise. Following Gordon et al. (2018), I use the Fama-French 49 industry portfolios (Fama and French 1997) to identify the following key industries: telecommunications (FF32), health care (FF11 - FF13), and computer technology (FF35 - FF36). I match the Fama-French 49 codes with the SIC four-digit codes to identify sample firms in the above industries.[28]

The explanatory variable is the interaction term between $TREAT_{ijq}$, $POST_{ijq}$, and KEY_IND_{ijq}. If β_7 is positive and significant, then H2 is supported.

To test H3, I replace *KEY_IND* in equation (4) with a variable *LC_IND*, which equals 1 if a firm-pair belongs to industries with low pre-convergence comparability, and 0 otherwise. I develop the equation (5) as follows:

$$\begin{aligned} COMP_{ijq} = {} & \delta_0 + \delta_1 TREAT_{ijq} + \delta_2 POST_{ijq} + \delta_3 LC\_IND_{ijq} + \delta_4 TREAT_{ijq} \times POST_{ijq} \\ & + \delta_5 TREAT_{ijq} \times LC\_IND_{ijq} + \delta_6 POST_{ijq} \times LC\_IND_{ijq} + \delta_7 TREAT_{ijq} \times POST_{ijq} \\ & \times LC\_IND_{ijq} + \delta_8 DIFF\_MV_{ijq} + \delta_9 DIFF\_MTB_{ijq} + \delta_{10} DIFF\_LEV_{ijq} \\ & + \delta_{11} DIFF\_SALES\_GROWTH_{ijq} + Year\ FE + \varepsilon_{ijq} \end{aligned} \quad (5)$$

[27] I exclude industry fixed effect in equation (4) because the variable *KEY_IND* has direct relation to firms' industries.

[28] See Appendix B for the Identification of Key Industries and Fama-French/SIC Code Conversion Table.

Based on Gordon et al. (2018), I use the median *COMP_RET* or *COMP_COV* within each two-digit SIC industry to measure the industry level comparability of revenue recognition. If an industry shows comparability that is lower than or equal to the mean industry-level comparability during the pre-convergence period, I identify it as an industry with low pre-convergence comparability.[29] The identification of low pre-convergence comparability industries may vary due to the different comparability measures.

The variable of interest in equation (5) is the interaction term between $TREAT_{ijq}$, $POST_{ijq}$, and LC_IND_{ijq}. If δ_7 is positive and significant, then H3 is supported.

Sample Selection

My sample size consists of 1,728 quarterly firm-pair observations in the fiscal year 2012-2013 for the pre-convergence period and 2018-2019 for the post-convergence period obtained from Compustat Fundamentals Quarterly Database and CRSP.[30] The ADR firms are identified from directEDGAR 20-F filings.[31] Table 1 presents the construction of my final sample. Panel A shows the steps to obtain the pre-matched sample beginning with 85,696 firm- quarter observations of U.S. firms and 7,738 firm-quarter observations of ADR firms. I exclude the observations with missing or changing SIC code, missing stock returns, and any other missing variables in the main regression. I also exclude ADR firms that use domestic accounting standards or that change accounting standards during the sample period. Finally, I eliminate firms with missing data in any quarter within and across the pre- and post-sample period. I then have 2,080 ADR firm-quarter observations (130 ADR firms) and 23,520 U.S. firm-quarter observations (1,470 U.S. firms) to

[29] Following Gordon et al. (2019), I use mean industry-level comparability as a threshold to define low pre-convergence comparability industries. I also use median industry-level comparability as an alternative threshold and get the consistent results.

[30] I use FYEAR in Compustat to proxy for fiscal year to increase the sample size. My sample includes firms with fiscal year-end month no later than May 2014 for pre-sample period, and no later than May 2020 for post-sample period.

[31] ADR firms file 20-F instead of 10-K as annual report. I use directEDGAR, not Compustat, to identify ADR firms because the directEDGAR can directly and accurately identify more ADR firms in the U.S. market, whereas Compustat requires additional coding step to identify ADR firms, results in a lower number of ADR firms, and some delisted ADR firms.

match. Each sample firm exists during both pre- and post-sample periods and has eight consecutive quarters' data through pre- or post-sample period.

Table 1 panel B presents the matching process of the final sample. I match the U.S. firms and ADR firms based on industry and size in the fourth quarter of 2015, which is the middle point of my sample period.[32] I match each ADR firm with a unique U.S. firm.[33] From the potential 130 quarterly firm-pairs, I delete 13 ADR firms that cannot be matched with a U.S. firm based on industry. Following Lin et al. (2019), I exclude 9 firm-pairs with significant size differences.[34] The final sample consists of 108 firm-pairs with 1,728 quarterly firm-pair observations in the sample period. All firms in the final sample report their financial information in U.S. dollars (USD).

Table 1 panel C shows the accounting standards used by sample firms. Among 108 ADR firms, 57 firms (912 quarterly firm-pairs) use IFRS, and 51 firms (816 quarterly firm-pairs) use U.S. GAAP. The observation numbers in the treatment group and the control group show that two groups are comparable.

[32] I use the two-digit SIC code to proxy for industry and the natural logarithm of total assets to proxy for industry and size, respectively.
[33] If one U.S. firm is matched multiple times with different ADR firms, I keep only the firm-pair with the closest firm size, delete the U.S. firms that have been matched, then re-match the remaining ADR firms with the remaining U.S. firms.
[34] Specifically, I exclude firm-pairs with relative total asset ratio less than 0.50 or greater than 2 (Bath et al. 2012; Lin et al. 2019).

CHAPTER V

RESULTS

Descriptive Statistics

Table 2 panels A and B present descriptive statistics for the regression variables under the stock return measure and the correlation measure, respectively. To mitigate outlier effects, I winsorize all continuous variables at the 1 percent and the 99 percent levels. The mean (median) of *COMP_RET* is -0.25 (-0.14); the mean (median) of *COMP_COV* is 0.10 (-0.02). Untabulated, after the New Standard adoption, the mean of *COMP_RET* slightly decreases from -0.247 to -0.258; the median of *COMP_RET* increases from -0.146 to -0.134; the mean (median) of *COMP_COV* increase from 0.083 (-0.029) to 0.113 (-0.003). However, untabulated results show that the changes in mean and median of both comparability metrics are not significant.

Table 3 panels A and B present the Pearson correlation matrix related to the stock return measure and the correlation measure. Both *COMP_RET* and *COMP_COV* are not correlated with *POST*. *COMP_RET* is not correlated with *TREAT*, whereas *COMP_COV* is negatively correlated with *TREAT* at the 0.05 level. *COMP_RET* is negatively correlated with *DIFF_MV* at the 0.001 level. Consistent with Lin et al. (2019), the result indicates that comparability estimated by the stock return measure is lower when U.S. firms and ADR firms have greater difference in market value. Under both comparability measures, *KEY_IND* is negatively correlated with *LC_IND*, indicating that there is no overlap between the key industries and the pre-convergence low comparability industries. This result suggests that H2 and H3 should be tested separately.

Empirical Results

Table 4 columns (1) and (2) present the results of equation (3) related to *COMP_RET* and *COMP_COV*, respectively. The estimated coefficient on *TREAT* is not significant in either column, suggesting no comparability difference between the treatment group and the control group before the New Standard adoption. Also, the estimated coefficient on *POST* is not significant, indicating no comparability improvement for the control firm-pairs (the matched pairs of U.S. firms and U.S. GAAP ADR firms) after the New Standard adoption. Finally, the estimated coefficient on the *TREAT* × *POST* interaction term is not significant, showing evidence for no improvement of revenue recognition comparability between U.S. GAAP and IFRS after firms adopt the New Standard. The result fails to reject H1.

Table 5 presents the results of equation (4), examining the revenue recognition comparability improvement between U.S. GAAP and IFRS for firms in the key industries affected the most by the New Standard. Columns (1) and (2) present the results under the stock return comparability measure and the correlation comparability measure, respectively. In both columns (1) and (2), the coefficients on the *TREAT* × *POST* interaction terms are not significant. The coefficient on the *TREAT* × *POST* × *KEY_IND* interaction term is also not significant in column (1). However, in column (2), the coefficient of 0.306 on the interaction term *TREAT* × *POST* × *KEY_IND* is positive and significant (p-value < 0.10). The result indicates that using the correlation measure, revenue recognition comparability between U.S. GAAP and IFRS improves more in key industries relative to non-key industries. H2 is supported under the correlation comparability measure.[35]

[35] The insignificant result under the stock return measure may be because I directly replace earnings with revenue in the original Lin et al. (2019) estimation model, ignoring the potential association between stock return and expense. Doing so may generate biased comparability metric for revenue recognition.

Further, using the correlation measure, when I replace the *KEY_IND* with the specific key industry indicator variables identified with Fama-French 49 codes, I find that the revenue recognition comparability only improves significantly in telecommunication (FF32) and computer software (FF36) industries (untabulated). Using the stock return measure, I find no significant result related to any specific key industry.

The results from estimating equation (5) are presented in Table 6. Columns (1) and (2) present results under two comparability measures, respectively. In both columns (1) and (2), the coefficients on the *TREAT* × *POST* and *TREAT* × *POST* × *LC_IND* interaction terms are not significant. The results suggest no significant difference in the change of revenue recognition comparability between industries with low and high pre-convergence comparability. H3 is therefore rejected.

Overall, the main regression results suggest that after firms adopt the New Standard, the revenue recognition comparability between U.S. GAAP and IFRS improves only for firms in the key industries expected to be affected the most by the New Standard.

CHAPTER VI

ADDITIONAL ANALYSES

Change of Earnings Comparability

Most prior studies related to the financial statement comparability have typically focused on comparability of earnings (De Franco et al. 2011; Francis et al. 2014; Lin et al. 2019, etc.). Following the prior literature, I also investigate change of earnings comparability between U.S. GAAP and IFRS after the New Standard adoption. Similar to my revenue recognition comparability metrics, I use the stock return measure and the correlation measure to estimate firms' earnings comparability based on Lin et al. (2019) and Francis et al. (2014), respectively. I replace the variable *REV* in equations (1) and (2) with variable *NI*, where *NI* is net income before extraordinary items in the stock return measure, and net income before extraordinary items scaled by average total assets of each firm in the correlation measure. In the main regression models, I create variable *EARN_COMP_RET* to replace *COMP_RET* and variable *EARN_COMP_COV* to replace *COMP_COV*, representing earnings comparability estimated by the stock return measure and the correlation measure, respectively.

Table 7 panel A shows the change of earnings comparability between US. GAAP and IFRS. Surprisingly, panel A column (1) shows that the coefficient on the *TREAT* × *POST* interaction term is significantly negative at the 0.01 level, suggesting that earnings comparability between U.S. GAAP and IFRS decreases after the New Standard adoption under the stock return

comparability measure. Column (2) shows that the coefficient on the *TREAT* × *POST* interaction term is not significant under the correlation measure.

Table 7 panels B and C further show the change of the earnings comparability within key industries and low pre-convergence comparability industries, respectively. In panel B, when the stock return measure is used, the coefficient on the *TREAT* × *POST* interaction term is significantly negative (p-value < 0.05) whereas the coefficient on the *TREAT* × *POST* × *KEY_IND* interaction term is not significant, suggesting that the earnings comparability between U.S. GAAP and IFRS only decreases in the non-key industries after the New Standard adoption under the stock return measure.[36] Table 7 panel C shows that, under the stock return comparability measure, the coefficient on the *TREAT* × *POST* interaction term is not significant whereas the coefficient on the *TREAT* × *POST* × *LC_IND* interaction term is negative and significant (p-value < 0.10), indicating that the decrease of earnings comparability between U.S. GAAP and IFRS only happens in the low pre-convergence comparability industries. When the correlation measure is used, there is no significant result for the earnings comparability change related to either key industries or pre-convergence comparability industries.

Comparability Change among U.S. Firms

Ferreira (2020) finds that U.S. GAAP firms' revenue recognition comparability improves across industries after the New Standard adoption. To extend the finding of Ferreira (2020) and the research question of this paper, I test whether the financial statement comparability improves among U.S. firms within industries.

Using the same matching criteria from the main research design (see Chapter IV, Sample Selection section), I develop 707 unique firm-pairs by matching 1,470 U.S. firms based on industry

[36] When I split the sample into key-/non-key industry subsamples, untabulated results show that after the New Standard's adoption, earnings comparability between U.S. GAAP and IFRS only decreases in non-key industries under the stock return measure, whereas earnings comparability across standards does not change in the key industries.

and size.[37] The final sample consists of 11,312 quarterly firm-pair observations of U.S. firms. Since there is no control group when I compare U.S. firms, the regression models for U.S. firms' comparability are similar to equations (3) – (5) except that the variable *TREAT* is excluded.

Table 8 panel A presents the results of the comparability improvement among U.S. firms. Columns (1) and (2) present the results of revenue recognition comparability; columns (3) and (4) show the change of earnings comparability. The estimated coefficients on *POST* are positive and significant across all columns except for column (3), indicating that after U.S. firms adopt the New Standard, their revenue recognition comparability improves using both comparability measures, whereas their earnings comparability only improves with the correlation measure.

Table 8 panels B and C present the results of comparability change in key industries and low pre-convergence comparability industries, respectively. In panel B, the coefficients on the *POST* × *KEY_IND* interaction terms are not significant in columns (1) and (2), suggesting that after the New Standard adoption, the improvement of U.S. firms' revenue recognition comparability within industry does not vary between key industries and non-key industries. In panel B column (3), the coefficient on the *POST* × *KEY_IND* interaction term is significantly negative at the 0.10 level, whereas the coefficient on the *POST* × *KEY_IND* interaction term is not significant in panel B column (4). The results indicate that U.S. firms' earnings comparability within the key industries decreases only under the stock return measure. In panel C, the coefficients on the *POST* × *LC_IND* interaction terms are positive and significant only under the correlation measure (coefficient = 0.058, p-value < 0.10 in column (2); coefficient = 0.214, p-value < 0.01 in column (4)), implying that after the New Standard adoption, U.S. firms' financial statement comparability improves in industries with low pre-convergence comparability under the correlation comparability measure.

[37] Since I match two firms from the same group of U.S. firms, I impose the requirement of not having a mutual match, meaning if one U.S. firm *i* is matched with the other U.S. firm *j* to become firm-pair *ij*, firm *j* is not allowed to be matched with firm i to become firm-pair *ji* or to be matched with any other U.S. firms. The requirement is also imposed when I match two firms from the same group of IFRS ADR firms.

Comparability Change among IFRS ADR Firms

Finally, I test whether the financial statement comparability improves within industries among IFRS ADR firms. Using the same matching criteria of matching U.S. firms, I develop 16 unique firm-pairs by matching 65 IFRS ADR firms based on industry and size.[38] The final sample consists of 256 quarterly firm-pair observations of ADR firms that use IFRS. Consistent with the comparability test among U.S. firms, the regression models for the comparability among IFRS firms are the same as equations (3) – (5) without the variable *TREAT*.

Table 9 panel A presents the results of the comparability change among IFRS ADR firms, while panels B and C show the results among IFRS ADR firms in the key industries and the pre-convergence low comparability industries, respectively. Across panels A, B, and C, the estimated coefficients on *POST* and on all interaction terms with *POST* are not significant, showing no evidence for comparability change among IFRS ADR firms after the New Standard adoptions. The results in Table 8 and Table 9 are consistent with Lyons and Tarasovich (2018), suggesting that the New Standard has a greater effect on comparability improvement of U.S. GAAP firms than IFRS firms.

[38] Among 130 matchable ADR firms, 65 ADR firms use IFRS.

CHAPTER VII

CONCLUSION

In this study, I examine whether the overarching goal of improving comparability between U.S. GAAP and IFRS was achieved by implementing the new and converged revenue recognition standard. Using a difference-in-difference design to compare U.S. firms and IFRS ADR firms in the U.S. market, I find that after firms adopt the New Standard, revenue recognition comparability between U.S. GAAP and IFRS measured using the correlation metric improves only in the key industries that are expected to be affected the most by the New Standard. Specifically, comparability improvement is only evident in the telecommunication and computer software industries. Surprisingly, I also find that after the New Standard's adoption, earnings comparability across two standards, measured using the stock return metric, decreases in the non-key industries and in industries with low pre-convergence comparability. I further find that the New Standard plays a greater role in the comparability improvement among U.S. firms than among IFRS ADR firms.

This paper contributes to the literature by being the first study to examine the New Standard's effect on comparability between U.S. GAAP and IFRS. It also responds to the recent call for timely comparability research related to the New Standard. Utilizing a setting of the U.S. market, this paper isolates the effect of the convergence of the New Standard on comparability

across standards. Finally, my results inform all stakeholders who care about the comparability of financial information across standards in the globalized market and information environment.

As a caveat, the study is limited by the relatively small sample size and the comparability measures' inherent weakness. It also only focuses on the U.S. market. Future research may seek to develop more valid comparability metrics, extend the sample period, or focus on the comparability of firms listed in the international market where IFRS is dominant.

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APPENDICES

APPENDIX A

Variable Definitions

Variable	Definition
COMP_RET	Revenue recognition comparability estimated from the stock return measure.
COMP_COV	Revenue recognition comparability estimated from the correlation measure.
EARN_COMP_RET	Earnings comparability estimated from the stock return measure.
EARN_COMP_COV	Earnings comparability estimated from the correlation measure.
TREAT	An indicator variable equal to 1 for the treatment group consisting of pairs of U.S. firms and matched IFRS ADR firms based on size and industry, and 0 for the control group consisting of pairs of U.S. firms and matched U.S. GAAP ADR firms based on size and industry.
POST	An indicator variable equal to 1 for a firm-pair's annual reporting period beginning on or after January 1, 2018, and 0 otherwise.
KEY_IND	An indicator variable equal to 1 if a firm-pair belongs to the key industries that are expected to be most affected by the New Standard, and 0 otherwise. See Appendix B for the identification of key industries.
LC_IND	An indicator variable equal to 1 if a firm-pair belongs to the low pre-convergence comparability industries, and 0 otherwise. Low pre-convergence comparability is defined as the median comparability in each industry that is lower than or equal to the mean industry-level comparability during the pre-convergence period.
DIFF_MV	The difference of the market value between a matched pair of firms, calculated as the absolute value of ($MV_{iq} - MV_{jq}$). *MV* is calculated as nature logarithm of the market capitalization [PRCCQ*CSHOQ] under the stock return measure. When the correlation measure is used, *MV* is the mean nature logarithm of the market capitalization of each firm across the 8 quarters of pre- or post-convergence period.

DIFF_MTB	The difference of the market to book ratio between a matched pair of firms, calculated as the absolute value of ($MTB_{iq} - MTB_{jq}$). *MTB* is calculated as the market capitalization scaled by the book value of equity [(CSHOQ*PRCCQ)/CEQQ] under the stock return measure. When the correlation measure is used, *MTB* is the mean market to book ratio of each firm across the 8 quarters of pre- or post-convergence period.
DIFF_LEV	The difference of the leverage ratio between a matched pair of firms, calculated as the absolute value of ($LEV_{iq} - LEV_{jq}$). *LEV* is calculated as total debt over total assets [(DLTTQ+DLCQ)/ATQ] under the stock return measure. When the correlation measure is used, *LEV* is the mean leverage ratio of each firm across the 8 quarters of pre- or post-convergence period.
DIFF_SALES_GROWTH	The difference of the quarterly sales growth ratio between a matched pair of firms, calculated as the absolute value of ($SALES\_GROWTH_{iq} - SALES\_GROWTH_{jq}$). When the correlation measure is used, *SALES_GROWTH* is the mean sales growth ratio of each firm across the 8 quarters of pre- or post-convergence period.
RET	Stock return adjusted for dividends and stock splits.
REV	Revenue [SALEQ]. In the correlation method, *REV* is calculated as revenue scaled by average total assets of each firm in a firm-pair.
MC	Market capitalization [PRCCQ*CSHOQ].
NI	Net income before extraordinary items [IBQ]. In the correlation method, *NI* is calculated as net income before extraordinary items scaled by average total assets of each firm in a firm-pair.

APPENDIX B

Indentification of Key Industries and Fama-French/SIC Code Conversion Table

Key Industries	Fama-French	SIC Code
Healthcare		
Healthcare	11	8000-8099 Services – Health
Medical Equipment	12	3693-3693 X-ray, electro medical app
		3840-3849 Surgery and medical instruments
		3850-3851 Ophthalmic goods
Drugs	13	2830-2830 Drugs
		2831-2831 Biological products
		2833-2833 Medicinal chemicals
		2834-2834 Pharmaceutical preparations
		2835-2835 In vitro, in vivo diagnostics
		2836-2836 Biological products, except diagnostics
Communication		
Telecommunication	32	4800-4800 Communications
		4810-4813 Telephone communications
		4820-4822 Telegraph and other message communication
		4830-4839 Radio-TV Broadcasters
		4840-4841 Cable and other pay TV services
		4880-4889 Communications
		4890-4890 Communication services (Comsat)
		4891-4891 Cable TV operators
		4892-4892 Telephone interconnect
		4899-4899 Communication services
Technology		
Computer Hardware	35	3570-3579 Office computers
		3680-3680 Computers
		3681-3681 Computers - mini
		3682-3682 Computers - mainframe
		3683-3683 Computers - terminals

		3684-3684 Computers - disk & tape drives 3685-3685 Computers - optical scanners 3686-3686 Computers - graphics 3687-3687 Computers - office automation systems 3688-3688 Computers - peripherals 3689-3689 Computers - equipment 3695-3695 Magnetic and optical recording media
Computer Software	36	7370-7372 Services - computer programming and data processing 7373-7373 Computer integrated systems design 7375-7375 Services - information retrieval services

Appendix B presents industires expected to be affected the most by the New Standard (Ciesielski and Weirich 2015; Gordon et al. 2018). The industry code conversion is based on Fama and French (1997) and Gordon et al. (2018).

FIGURE 1
Difference-in-Difference Design to Test Comparability Improvement

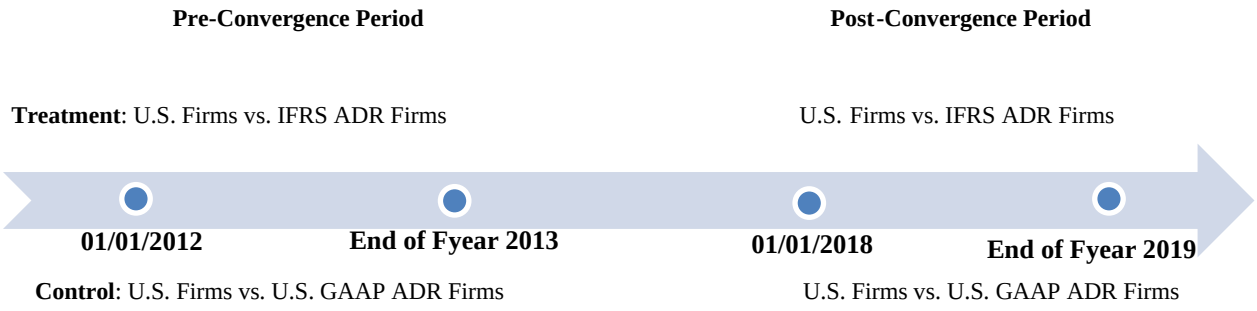

TABLE 1
Sample Selection

Panel A: Pre-Matched Sample

	US Firms	ADR Firms
Firm-quarter observations in fiscal years 2012, 2013, 2018, and 2019 collected from Compustat	85,696	7,738
Exclude:		
Observations with missing data of SIC code	3,047	78
Observations with missing stock returns	22,528	1,092
Observations with missing other variables	7,712	1,523
ADR Observations with the domestic accounting standard	-	188
Observations without sixteen quarters	27,673	2,617
ADR observations with changing accounting standard	-	80
Observations with changing SIC code	1,216	80
Observations before matching	23,520	2,080
Number of firms before matching	1,470	130
Panel B: Matched-Sample		
Potential firm-pairs based on industry and size in fiscal year 2015 Q4		130
Exclude:		
Unmatchable ADR firms		13
Firm-pairs with significant size differences		9
Final firm-pairs		108
Final sample of firm-pair-quarter observations		1,728
Panel C: Accounting Standards of ADR firms		
IFRS ADR firms		57
U.S. GAAP ADR firms		51
Total ADR firms		108

TABLE 2
Descriptive Statistics

Panel A: Under the Stock Return Measure

Variables	n	Mean	SD	Min	P25	Median	P75	Max
COMP_RET	1,728	-0.25	0.32	1.65	0.32	-0.14	0.06	0.00
TREAT	1,728	0.53	0.50	0.00	0.00	1.00	1.00	1.00
POST	1,728	0.50	0.50	0.00	0.00	0.50	1.00	1.00
KEY_IND	1,728	0.33	0.47	0.00	0.00	0.00	1.00	1.00
LC_IND	1,728	0.35	0.48	0.00	0.00	0.00	1.00	1.00
DIFF_MV	1,728	0.92	0.75	0.02	0.36	0.76	1.27	3.81
DIFF_MTB	1,728	4.46	13.95	0.02	0.48	1.14	2.62	111.59
DIFF_LEV	1,728	0.18	0.17	0.00	0.05	0.13	0.27	0.70
DIFF_SALES_GROWTH	1,728	0.19	0.24	0.00	0.05	0.12	0.22	1.65

Panel B: Under the Correlation Measure

Variables	n	Mean	SD	Min	P25	Median	P75	Max
COMP_COV	216	0.10	0.28	-0.17	0.12	-0.02	0.25	0.92
TREAT	216	0.53	0.50	0.00	0.00	1.00	1.00	1.00
POST	216	0.50	0.50	0.00	0.00	0.50	1.00	1.00
KEY_IND	216	0.33	0.47	0.00	0.00	0.00	1.00	1.00
LC_IND	216	0.49	0.50	0.00	0.00	0.00	1.00	1.00
DIFF_MV	216	0.89	0.72	0.03	0.36	0.73	1.19	3.52
DIFF_MTB	216	5.31	16.88	0.02	0.44	1.15	2.64	120.27
DIFF_LEV	216	0.18	0.17	0.00	0.05	0.13	0.27	0.68
DIFF_SALES_GROWTH	216	0.07	0.17	0.00	0.01	0.03	0.07	1.27

Table 2 provides descriptive statistics for sample of quarterly firm-pair observations in fiscal years 2012, 2013, 2018, and 2019. Panels A and B present descriptive statistics of the variables related to the stock return measure and the correlation measure, respectively. All continuous variables are winsorized at the top and bottom 1 percent of their distribution. See Appendix A for variable definition.

TABLE 3
Pearson Correlation Matrix for Main Variables

Panel A: Under the Stock Return Measure

	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1)	*COMP_RET*	1								
(2)	*TREAT*	0.027	1							
(3)	*POST*	-0.017	0	1						
(4)	*LC_IND*	-0.336***	-0.002	0	1					
(5)	*KEY_IND*	0.112***	0.039	0	-0.480***	1				
(6)	*DIFF_MV*	-0.444***	-0.077**	0.150***	0.009	0.034	1			
(7)	*DIFF_MTB*	0.090***	-0.041	-0.018	-0.094***	0.097***	0.016	1		
(8)	*DIFF_LEV*	0.009	-0.126***	0.093***	-0.180***	0.135***	0.111***	0.289***	1	
(9)	*DIFF_SALES_GROWTH*	0.005	-0.031	0.097***	0.037	-0.038	0.050*	0.073**	0.059*	1

Panel B: Under the Correlation Measure

	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1)	*COMP_COV*	1								
(2)	*TREAT*	-0.154*	1							
(3)	*POST*	0.054	0	1						
(4)	*LC_IND*	-0.188**	0.075	0	1					
(5)	*KEY_IND*	0.02	0.039	0	-0.419***	1				
(6)	*DIFF_MV*	-0.071	-0.073	0.163*	-0.074	0.04	1			
(7)	*DIFF_MTB*	0.064	0.01	0.017	0.025	0.154*	-0.023	1		
(8)	*DIFF_LEV*	-0.001	-0.129	0.098	-0.096	0.156*	0.137*	0.246***	1	
(9)	*DIFF_SALES_GROWTH*	0.063	-0.134	0.01	-0.036	0.064	0.066	0.106	0.122	1

Table 3 presents the Pearson correlations for sample of quarterly firm-pair observations in fiscal years 2012, 2013, 2018, and 2019. Panels A and B present correlations of the variables related to the stock return measure and the correlation measure, respectively. All continuous variables are winsorized at the top and bottom 1 percent of their distribution. *, **, and *** represent significance levels of 0.050, 0.010, and 0.001, respectively. See Appendix A for variable definitions.

TABLE 4
Revenue Recongintion Comparability
between U.S. GAAP and IFRS

VARIABLES	(1) *COMP_RET*	(2) *COMP_COV*
TREAT	-0.074	-0.076
	(-1.140)	(-0.914)
POST	0.017	0.010
	(0.362)	(0.178)
TREAT × POST	**0.003**	**0.063**
	(0.050)	**(0.828)**
DIFF_MV	-0.176***	-0.057*
	(-4.093)	(-1.689)
DIFF_MTB	0.002	0.001
	(1.656)	(0.533)
DIFF_LEV	-0.010	-0.011
	(-0.078)	(-0.071)
DIFF_SALES_GROWTH	0.023	-0.046
	(0.662)	(-0.303)
Intercept	0.214**	0.001
	(2.401)	(0.012)
Year	Yes	No
Industry	Yes	Yes
N	1,728	216
Adjusted R^2	0.380	0.073

Table 4 reports the results of the following regression:

$$COMP_{ijq} = \alpha_0 + \alpha_1 TREAT_{ijq} + \alpha_2 POST_{ijq} + \alpha_3 TREAT_{ijq} \times POST_{ijq} + \alpha_4 DIFF\_MV_{ijq} + \alpha_5 DIFF\_MTB_{ijq} + \alpha_6 DIFF\_LEV_{ijq} + \alpha_7 DIFF\_SALES\_GROWTH_{ijq} + Year\ FE + Industry\ FE + \varepsilon_{ijq} \quad (3)$$

Columns (1) and (2) present the results related to the stock return measure and the correlation measure, respectively. All continuous variables are winsorized at the top and bottom 1 percent of their distribution. Standard errors are clustered at firm-pair levels. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. See Appendix A for variable definitions.

TABLE 5
Revenue Recongintion Comparability
between U.S. GAAP and IFRS in Key Industries

VARIABLES	(1) *COMP_RET*	(2) *COMP_COV*
TREAT	0.004	-0.085
	(0.064)	(-1.314)
POST	0.019	0.073
	(0.346)	(1.160)
TREAT × POST	0.041	-0.036
	(0.626)	(-0.465)
KEY_IND	0.123*	0.105
	(1.840)	(1.186)
TREAT × KEY_IND	-0.029	-0.120
	(-0.319)	(-1.111)
POST × KEY_IND	0.004	-0.213*
	(0.062)	(-1.875)
TREAT × POST × KEY_IND	**-0.116**	**0.306***
	(-1.277)	**(1.967)**
DIFF_MV	-0.193***	-0.033
	(-4.908)	(-1.013)
DIFF_MTB	0.002*	0.001
	(1.926)	(0.520)
DIFF_LEV	0.051	-0.066
	(0.425)	(-0.507)
DIFF_SALES_GROWTH	0.019	0.038
	(0.386)	(0.539)
Intercept	-0.139**	0.143**
	(-2.215)	(2.261)
Year	Yes	No
Industry	No	No
N	1,728	216
Adjusted R^2	0.226	0.013

Table 5 reports the results of the following regression:

$$COMP_{ijq} = \beta_0 + \beta_1 TREAT_{ijq} + \beta_2 POST_{ijq} + \beta_3 KEY\_IND_{ijq} + \beta_4 TREAT_{ijq} \times POST_{ijq} + \beta_5 TREAT_{ijq} \times KEY\_IND_{ijq} + \beta_6 POST_{ijq} \times KEY\_IND_{ijq} + \beta_7 TREAT_{ijq} \times POST_{ijq} \times KEY\_IND_{ijq} + \beta_8 DIFF\_MV_{ijq} + \beta_9 DIFF\_MTB_{ijq} + \beta_{10} DIFF\_LEV_{ijq} + \beta_{11} DIFF\_SALES\_GROWTH_{ijq} + Year\ FE + \varepsilon_{ijq} \quad (4)$$

Columns (1) and (2) present the results related to the stock return measure and the correlation measure, respectively. All continuous variables are winsorized at the top and bottom 1 percent of their distribution. Standard errors are clustered at firm-pair levels. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. See Appendix A for variable definitions.

TABLE 6
Revenue Recongintion Comparability between U.S. GAAP and IFRS in Low Pre-Convergence Comparability Industries

VARIABLES	(1) *COMP_RET*	(2) *COMP_COV*
TREAT	-0.033	-0.145*
	(-0.846)	(-1.862)
POST	0.025	-0.059
	(0.701)	(-0.779)
TREAT × POST	-0.046	0.036
	(-0.918)	(0.357)
LC_IND	-0.290***	-0.226***
	(-3.190)	(-3.037)
TREAT × LC_IND	0.079	0.075
	(0.696)	(0.778)
POST × LC_IND	-0.008	0.146
	(-0.084)	(1.407)
TREAT × POST × LC_IND	**0.128**	**0.027**
	(1.070)	**(0.190)**
DIFF_MV	-0.186***	-0.029
	(-5.227)	(-0.988)
DIFF_MTB	0.002*	0.001
	(1.758)	(0.687)
DIFF_LEV	-0.053	-0.096
	(-0.468)	(-0.797)
DIFF_SALES_GROWTH	0.025	0.056
	(0.575)	(0.638)
Intercept	0.014	0.277***
	(0.332)	(3.878)
Year	Yes	No
Industry	No	No
N	1,728	216
Adjusted R^2	0.327	0.058

Table 6 reports the results of the following regression:

$$COMP_{ijq} = \delta_0 + \delta_1 TREAT_{ijq} + \delta_2 POST_{ijq} + \delta_3 LC\_IND_{ijq} + \delta_4 TREAT_{ijq} \times POST_{ijq} + \delta_5 TREAT_{ijq} \times LC\_IND_{ijq} + \delta_6 POST_{ijq} \times LC\_IND_{ijq} + \delta_7 TREAT_{ijq} \times POST_{ijq} \times LC\_IND_{ijq} + \delta_8 DIFF\_MV_{ijq} + \delta_9 DIFF\_MTB_{ijq} + \delta_{10} DIFF\_LEV_{ijq} + \delta_{11} DIFF\_SALES\_GROWTH_{ijq} + Year\ FE + \varepsilon_{ijq} \quad (5)$$

Columns (1) and (2) present the results related to the stock return measure and the correlation measure, respectively. All continuous variables are winsorized at the top and bottom 1 percent of their distribution. Standard errors are clustered at firm-pair levels. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. See Appendix A for variable definitions.

TABLE 7
Earnings Comparability between U.S. GAAP and IFRS

Panel A: Earnings Comparability across Standards

VARIABLES	(1) *EARN_COMP_RET*	(2) *EARN_COMP_COV*
TREAT	0.032***	-0.072
	(2.659)	(-1.228)
POST	0.027**	0.031
	(2.160)	(0.620)
TREAT × POST	**-0.041*** **	**-0.019**
	(-2.691)	**(-0.280)**
DIFF_MV	-0.032***	-0.020
	(-3.039)	(-0.938)
DIFF_MTB	0.000	0.002
	(1.226)	(1.656)
DIFF_LEV	-0.001	-0.122
	(-0.043)	(-1.084)
DIFF_SALES_GROWTH	-0.009	0.085
	(-1.124)	(0.695)
Intercept	0.001	0.028
	(0.035)	(0.479)
Year	Yes	No
Industry	Yes	Yes
N	1,728	216
Adjusted R^2	0.285	0.075

Table 7 panel A reports the results of the following regression:

$$COMP_{ijq} = \alpha_0 + \alpha_1 TREAT_{ijq} + \alpha_2 POST_{ijq} + \alpha_3 TREAT_{ijq} \times POST_{ijq} + \alpha_4 DIFF\_MV_{ijq} + \alpha_5 DIFF\_MTB_{ijq} + \alpha_6 DIFF\_LEV_{ijq} + \alpha_7 DIFF\_SALES\_GROWTH_{ijq} + Year\ FE + Industry\ FE + \varepsilon_{ijq}$$

where *COMP* denotes earnings comparability of quarterly firm-pair *ij*. Columns (1) and (2) present the results related to the stock return measure and the correlation measure, respectively. All continuous variables are winsorized at the top and bottom 1 percent of their distribution. Standard errors are clustered at firm-pair levels. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. See Appendix A for variable definitions.

TABLE 7 (Continued)

Panel B: Earnings Comparability across Standards in Key Industries

VARIABLES	(1) *EARN_COMP_RET*	(2) *EARN_COMP_COV*
TREAT	0.045***	-0.068
	(3.010)	(-1.155)
POST	0.035**	0.031
	(2.321)	(0.637)
TREAT × POST	-0.041**	-0.010
	(-2.562)	(-0.141)
KEY_IND	0.038**	-0.044
	(2.303)	(-0.563)
TREAT × KEY_IND	-0.037*	0.044
	(-1.947)	(0.449)
POST × KEY_IND	-0.035*	-0.030
	(-1.775)	(-0.260)
TREAT × POST × KEY_IND	**0.010**	**0.006**
	(0.357)	**(0.042)**
DIFF_MV	-0.027***	-0.006
	(-3.043)	(-0.241)
DIFF_MTB	0.000	0.001
	(1.280)	(0.891)
DIFF_LEV	0.011	-0.071
	(0.415)	(-0.704)
DIFF_SALES_GROWTH	-0.017*	0.067
	(-1.948)	(0.736)
Intercept	-0.041**	0.079
	(-2.529)	(1.612)
Year	Yes	No
Industry	No	No
N	1,728	216
Adjusted R^2	0.170	-0.015

Table 7 panel B reports the results of the following regression:

$$COMP_{ijq} = \beta_0 + \beta_1 TREAT_{ijq} + \beta_2 POST_{ijq} + \beta_3 KEY\_IND_{ijq} + \beta_4 TREAT_{ijq} \times POST_{ijq} + \beta_5 TREAT_{ijq} \times KEY\_IND_{ijq} + \beta_6 POST_{ijq} \times KEY\_IND_{ijq} + \beta_7 TREAT_{ijq} \times POST_{ijq} \times KEY\_IND_{ijq} + \beta_8 DIFF\_MV_{ijq} + \beta_9 DIFF\_MTB_{ijq} + \beta_{10} DIFF\_LEV_{ijq} + \beta_{11} DIFF\_SALES\_GROWTH_{ijq} + Year\ FE + \varepsilon_{ijq}$$

where *COMP* denotes earnings comparability of quarterly firm-pair *ij*. Columns (1) and (2) present the results related to the stock return measure and the correlation measure, respectively. All continuous variables are winsorized at the top and bottom 1 percent of their distribution. Standard errors are clustered at firm-pair levels. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. See Appendix A for variable definitions.

TABLE 7 (Continued)

Panel C: Earnings Comparability across Standards in Low Pre-Convergence Comparability Industries

VARIABLES	(1) *EARN_COMP_RET*	(2) *EARN_COMP_COV*
TREAT	0.005	0.006
	(0.847)	(0.044)
POST	-0.003	0.028
	(-0.277)	(0.284)
TREAT × POST	-0.012	-0.113
	(-0.863)	(-0.633)
LC_IND	-0.097***	-0.163*
	(-3.796)	(-1.951)
TREAT × LC_IND	0.087***	-0.046
	(3.098)	(-0.308)
POST × LC_IND	0.091***	-0.013
	(3.322)	(-0.114)
TREAT × POST × LC_IND	**-0.082***	**0.123**
	(-1.750)	**(0.649)**
DIFF_MV	-0.023**	0.001
	(-2.375)	(0.032)
DIFF_MTB	0.000	0.002
	(0.868)	(1.160)
DIFF_LEV	-0.013	-0.092
	(-0.500)	(-1.015)
DIFF_SALES_GROWTH	-0.017*	0.009
	(-1.755)	(0.090)
Intercept	0.001	0.190**
	(0.074)	(2.299)
Year	Yes	No
Industry	No	No
N	1,728	216
Adjusted R^2	0.261	0.049

Table 7 panel C reports the results of the following regression:

$$COMP_{ijq} = \delta_0 + \delta_1 TREAT_{ijq} + \delta_2 POST_{ijq} + \delta_3 LC\_IND_{ijq} + \delta_4 TREAT_{ijq} \times POST_{ijq} + \delta_5 TREAT_{ijq} \times LC\_IND_{ijq} + \delta_6 POST_{ijq} \times LC\_IND_{ijq} + \delta_7 TREAT_{ijq} \times POST_{ijq} \times LC\_IND_{ijq} + \delta_8 DIFF\_MV_{ijq} + \delta_9 DIFF\_MTB_{ijq} + \delta_{10} DIFF\_LEV_{ijq} + \delta_{11} DIFF\_SALES\_GROWTH_{ijq} + Year\ FE + \varepsilon_{ijq}$$

where *COMP* denotes earnings comparability of quarterly firm-pair *ij*. Columns (1) and (2) present the results related to the stock return measure and the correlation measure, respectively. All continuous variables are winsorized at the top and bottom 1 percent of their distribution. Standard errors are clustered at firm-pair levels. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. See Appendix A for variable definitions.

TABLE 8
Comparability among U.S. Firms

Panel A: Revenue Recognition and Earnings Comparability among U.S. Firms

	(1)	(2)	(3)	(4)
VARIABLES	*COMP_RET*	*COMP_COV*	*EARN_COMP_RET*	*EARN_COMP_COV*
POST	**0.055****	**0.052*****	**-0.003**	**0.024***
	(2.284)	**(3.278)**	**(-1.060)**	**(1.856)**
DIFF_MV	-0.337***	0.010	-0.025***	-0.004
	(-8.281)	(0.815)	(-7.016)	(-0.479)
DIFF_MTB	0.003***	0.000	0.000***	0.000
	(5.193)	(0.496)	(3.579)	(0.284)
DIFF_LEV	-0.255**	-0.086*	-0.029**	-0.010
	(-2.085)	(-1.703)	(-2.391)	(-0.271)
DIFF_SALES_GROWTH	0.080**	-0.038**	-0.018***	0.022
	(2.022)	(-2.326)	(-4.144)	(1.170)
Intercept	0.043*	0.199***	-0.020	0.112
	(1.683)	(11.205)	(-1.286)	(0.563)
Year	Yes	No	Yes	No
Industry	Yes	Yes	Yes	Yes
N	11,312	1,414	11,312	1,414
Adjusted R^2	0.375	0.081	0.191	0.045

Table 8 panel A reports the results of the following regression:

$$COMP_{ijq} = \alpha_0 + \alpha_1 POST_{ijq} + \alpha_2 DIFF\_MV_{ijq} + \alpha_3 DIFF\_MTB_{ijq} + \alpha_4 DIFF\_LEV_{ijq} + \alpha_5 DIFF\_SALES\_GROWTH_{ijq} + Year\ FE + Industry\ FE + \varepsilon_{ijq}$$

where *COMP* denotes comparability of quarterly U.S. firm-pair *ij*. Columns (1) and (2) present the change of revenue recognition comparability related to the stock return measure and the correlation measure, respectively. Columns (3) and (4) show the change of earnings comparability related to the stock return measure and the correlation measure, respectively. All continuous variables are winsorized at the top and bottom 1 percent of their distribution. Standard errors are clustered at firm-pair levels. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. See Appendix A for variable definitions.

TABLE 8 (Continued)

Panel B: Comparability among U.S. Firms in Key Industries

VARIABLES	(1) *COMP_RET*	(2) *COMP_COV*	(3) *EARN_COMP_RET*	(4) *EARN_COMP_COV*
POST	0.050**	0.046***	-0.001	0.030**
	(2.108)	(2.714)	(-0.193)	(2.085)
KEY_IND	0.093*	-0.009	-0.003	-0.008
	(1.671)	(-0.306)	(-0.597)	(-0.389)
POST × KEY_IND	**0.053**	**0.037**	**-0.014***	**-0.032**
	(0.722)	**(0.893)**	**(-1.842)**	**(-1.104)**
DIFF_MV	-0.357***	0.004	-0.025***	-0.003
	(-7.726)	(0.316)	(-6.728)	(-0.419)
DIFF_MTB	0.003***	0.000	0.000***	0.000
	(4.767)	(0.813)	(4.385)	(0.095)
DIFF_LEV	-0.396***	-0.070	-0.030**	-0.018
	(-2.772)	(-1.388)	(-2.387)	(-0.493)
DIFF_SALES_GROWTH	0.105**	-0.051***	-0.023***	0.021
	(2.245)	(-3.015)	(-4.283)	(1.211)
Intercept	-0.023	0.172***	-0.001	0.046***
	(-0.657)	(10.402)	(-0.403)	(3.416)
Year	Yes	No	Yes	No
Industry	No	No	No	No
N	11,312	1,414	11,312	1,414
Adjusted R^2	0.176	0.009	0.126	0.000

Table 8 panel B reports the results of the following regression:

$$COMP_{ijq} = \beta_0 + \beta_1 POST_{ijq} + \beta_2 KEY\_IND_{ijq} + \beta_3 POST_{ijq} \times KEY\_IND_{ijq} + \beta_4 DIFF\_MV_{ijq} + \beta_5 DIFF\_MTB_{ijq} + \beta_6 DIFF\_LEV_{ijq} + \beta_7 DIFF\_SALES\_GROWTH_{ijq} + Year\ FE + \varepsilon_{ijq}$$

where *COMP* denotes comparability of quarterly U.S. firm-pair *ij*. Columns (1) and (2) present the change of revenue recognition comparability related to the stock return measure and the correlation measure, respectively. Columns (3) and (4) show the change of earnings comparability related to the stock return measure and the correlation measure, respectively. All continuous variables are winsorized at the top and bottom 1 percent of their distribution. Standard errors are clustered at firm-pair levels. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. See Appendix A for variable definitions.

TABLE 8 (Continued)

Panel C: Comparability among U.S. Firms in Low Pre-Convergence Comparability Industries

VARIABLES	(1) *COMP_RET*	(2) *COMP_COV*	(3) *EARN_COMP_RET*	(4) *EARN_COMP_COV*
POST	0.063***	0.010	-0.004	-0.172***
	(3.215)	(0.351)	(-1.322)	(-3.755)
LC_IND	-0.691***	-0.135***	-0.019***	-0.227***
	(-5.845)	(-5.039)	(-3.525)	(-5.440)
POST × LC_IND	**-0.096**	**0.058***	**0.003**	**0.214*****
	(-0.780)	**(1.711)**	**(0.341)**	**(4.507)**
DIFF_MV	-0.321***	0.009	-0.025***	-0.005
	(-7.579)	(0.746)	(-6.817)	(-0.624)
DIFF_MTB	0.003***	0.000	0.000***	-0.000
	(4.793)	(0.684)	(4.326)	(-0.183)
DIFF_LEV	-0.273**	-0.091*	-0.028**	-0.025
	(-2.352)	(-1.816)	(-2.302)	(-0.704)
DIFF_SALES_GROWTH	0.047	-0.043***	-0.019***	0.023
	(1.132)	(-2.805)	(-3.663)	(1.317)
Intercept	0.049	0.268***	0.002	0.256***
	(1.517)	(9.821)	(0.728)	(6.111)
Year	Yes	No	Yes	No
Industry	No	No	No	No
N	11,312	1,414	11,312	1,414
Adjusted R^2	0.285	0.032	0.134	0.031

Table 8 panel C reports the results of the following regression:

$$COMP_{ijq} = \delta_0 + \delta_1 POST_{ijq} + \delta_2 LC\_IND_{ijq} + \delta_3 POST_{ijq} \times LC\_IND_{ijq} + \delta_4 DIFF\_MV_{ijq} + \delta_5 DIFF\_MTB_{ijq} + \delta_6 DIFF\_LEV_{ijq} + \delta_7 DIFF\_SALES\_GROWTH_{ijq} + Year\ FE + \varepsilon_{ijq}$$

where *COMP* denotes comparability of quarterly U.S. firm-pair *ij*. Columns (1) and (2) present the change of revenue recognition comparability related to the stock return measure and the correlation measure, respectively. Columns (3) and (4) show the change of earnings comparability related to the stock return measure and the correlation measure, respectively. All continuous variables are winsorized at the top and bottom 1 percent of their distribution. Standard errors are clustered at firm-pair levels. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. See Appendix A for variable definitions.

TABLE 9
Comparability among IFRS ADR Firms

Panel A: Revenue Recognition and Earnings Comparability among IFRS ADR Firms

	(1)	(2)	(3)	(4)
VARIABLES	*COMP_RET*	*COMP_COV*	*EARN_COMP_RET*	*EARN_COMP_COV*
POST	**-0.063**	**0.151**	**-0.076**	**-0.104**
	(-1.485)	**(0.991)**	**(-0.789)**	**(-0.900)**
DIFF_MV	-0.185***	0.037	-0.268	-0.063
	(-2.971)	(0.215)	(-1.640)	(-0.620)
DIFF_MTB	0.011	-0.000	0.025	-0.002
	(1.134)	(-0.139)	(1.061)	(-0.749)
DIFF_LEV	0.514*	0.932	0.856	0.455
	(2.088)	(1.282)	(1.410)	(0.944)
DIFF_SALES_GROWTH	0.089	-1.568	0.162	0.601
	(1.308)	(-0.633)	(0.884)	(0.668)
Intercept	-0.134**	-0.032	0.087	0.009
	(-2.782)	(-0.123)	(0.912)	(0.058)
Year	Yes	No	Yes	No
Industry	Yes	Yes	Yes	Yes
N	256	32	256	32
Adjusted R^2	0.557	-0.129	0.216	0.156

Table 9 panel A reports the results of the following regression:

$$COMP_{ijq} = \alpha_0 + \alpha_1 POST_{ijq} + \alpha_2 DIFF\_MV_{ijq} + \alpha_3 DIFF\_MTB_{ijq} + \alpha_4 DIFF\_LEV_{ijq} + \alpha_5 DIFF\_SALES\_GROWTH_{ijq} + Year\ FE + Industry\ FE + \varepsilon_{ijq}$$

where *COMP* denotes comparability of quarterly IFRS ADR firm-pair *ij*. Columns (1) and (2) present the change of revenue recognition comparability related to the stock return measure and the correlation measure, respectively. Columns (3) and (4) show the change of earnings comparability related to the stock return measure and the correlation measure, respectively. All continuous variables are winsorized at the top and bottom 1 percent of their distribution. Standard errors are clustered at firm-pair levels. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. See Appendix A for variable definitions.

TABLE 9 (Continued)

Panel B: Comparability among IFRS ADR Firms in Key Industries

VARIABLES	(1) *COMP_RET*	(2) *COMP_COV*	(3) *EARN_COMP_RET*	(4) *EARN_COMP_COV*
POST	-0.019	0.149	0.042	-0.049
	(-0.425)	(0.741)	(0.813)	(-0.354)
KEY_IND	0.043	0.040	-0.104	0.075
	(1.079)	(0.231)	(-1.731)	(0.456)
POST × KEY_IND	**-0.080**	**0.028**	**-0.260**	**-0.168**
	(-0.895)	**(0.131)**	**(-1.170)**	**(-0.768)**
DIFF_MV	-0.213***	0.074	-0.262	0.062
	(-3.361)	(0.534)	(-1.689)	(0.373)
DIFF_MTB	0.017*	-0.003	0.027	-0.001
	(1.812)	(-1.388)	(1.288)	(-0.953)
DIFF_LEV	0.407**	-0.010	0.576	0.105
	(2.244)	(-0.025)	(1.396)	(0.326)
DIFF_SALES_GROWTH	0.106	-0.842	0.135	-0.207
	(1.461)	(-0.421)	(0.988)	(-0.225)
Intercept	-0.133***	0.003	0.032	0.149
	(-3.933)	(0.018)	(0.787)	(0.908)
Year	Yes	No	Yes	No
Industry	No	No	No	No
N	256	32	256	32
Adjusted R^2	0.429	-0.166	0.249	-0.166

Table 9 panel B reports the results of the following regression:

$$COMP_{ijq} = \beta_0 + \beta_1 POST_{ijq} + \beta_2 KEY\_IND_{ijq} + \beta_3 POST_{ijq} \times KEY\_IND_{ijq} + \beta_4 DIFF\_MV_{ijq} + \beta_5 DIFF\_MTB_{ijq} + \beta_6 DIFF\_LEV_{ijq} + \beta_7 DIFF\_SALES\_GROWTH_{ijq} + Year\ FE + \varepsilon_{ijq}$$

where *COMP* denotes comparability of quarterly IFRS ADR firm-pair *ij*. Columns (1) and (2) present the change of revenue recognition comparability related to the stock return measure and the correlation measure, respectively. Columns (3) and (4) show the change of earnings comparability related to the stock return measure and the correlation measure, respectively. All continuous variables are winsorized at the top and bottom 1 percent of their distribution. Standard errors are clustered at firm-pair levels. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. See Appendix A for variable definitions.

TABLE 9 (Continued)

Panel C: Comparability among IFRS ADR Firms in Low Pre-Convergence Comparability Industries

VARIABLES	(1) *COMP_RET*	(2) *COMP_COV*	(3) *EARN_COMP_RET*	(4) *EARN_COMP_COV*
POST	-0.097	-0.011	-0.095	-0.139
	(-1.489)	(-0.058)	(-0.959)	(-0.907)
LC_IND	-0.080*	-0.344**	0.026	-0.288**
	(-1.990)	(-2.285)	(0.380)	(-2.281)
POST × LC_IND	**0.083**	**0.288**	**0.218**	**0.097**
	(0.914)	**(1.274)**	**(1.118)**	**(0.578)**
DIFF_MV	-0.205***	0.074	-0.214	0.044
	(-2.953)	(0.530)	(-1.274)	(0.318)
DIFF_MTB	0.015	-0.002	0.018	-0.002
	(1.564)	(-1.156)	(0.893)	(-1.365)
DIFF_LEV	0.401**	0.104	0.469	-0.030
	(2.193)	(0.291)	(1.117)	(-0.090)
DIFF_SALES_GROWTH	0.101	-0.753	0.154	-0.080
	(1.362)	(-0.408)	(1.091)	(-0.086)
Intercept	-0.075**	0.194	-0.015	0.297
	(-2.201)	(0.962)	(-0.380)	(1.732)
Year	Yes	No	Yes	No
Industry	No	No	No	No
N	256	32	256	32
Adjusted R^2	0.439	0.001	0.118	0.005

Table 9 panel C reports the results of the following regression:

$$COMP_{ijq} = \delta_0 + \delta_1 POST_{ijq} + \delta_2 LC\_IND_{ijq} + \delta_3 POST_{ijq} \times LC\_IND_{ijq} + \delta_4 DIFF\_MV_{ijq} + \delta_5 DIFF\_MTB_{ijq} + \delta_6 DIFF\_LEV_{ijq} + \delta_7 DIFF\_SALES\_GROWTH_{ijq} + Year\ FE + \varepsilon_{ijq}$$

where *COMP* denotes comparability of quarterly IFRS ADR firm-pair *ij*. Columns (1) and (2) present the change of revenue recognition comparability related to the stock return measure and the correlation measure, respectively. Columns (3) and (4) show the change of earnings comparability related to the stock return measure and the correlation measure, respectively. All continuous variables are winsorized at the top and bottom 1 percent of their distribution. Standard errors are clustered at firm-pair levels. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. See Appendix A for variable definitions.

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