

The Effect of the FASB-IASB convergence project on the rules-and principles-based nature of U.S. GAAP and IFRS

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May 2024

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Abstract

This paper investigates if the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) convergence project changed the underlying natures of both sets of accounting standards. Using the rules-based continuum score and a new principles-based continuum score, we find that before convergence, U.S. Generally Accepted Accounting Principles (U.S. GAAP) contained more rules-based standards, while International Financial Reporting Standards (IFRS) contained more principles-based standards. After the convergence project, U.S. GAAP became relatively more principles-based, while IFRS became relatively more rules-based, consistent with both standard-setters compromising in their approaches to standard setting in order to facilitate convergence. Overall, our results suggest that the convergence project achieved its goals of improving alignment between U.S. GAAP and IFRS. However, it appears to have had a possibly unintended consequence of making IFRS contain more rules-based characteristics.

Keywords: IFRS; U.S. GAAP; Rules-based standards; Principles-based standards; Convergence

JEL Classifications: M41, M48

1. Introduction

This study examines if the convergence project between the FASB and the IASB, which took place from 2002 to 2012,¹ improved the alignment between U.S. GAAP and IFRS and made both sets of standards more principles-based.² Although U.S. GAAP and IFRS contain both rules- and principles-based characteristics, it is widely believed that U.S. GAAP is situated toward the rules-based end of the spectrum, whereas IFRS is relatively more principles-based (e.g., FASB 2002; SEC 2002; Schipper 2003; Donelson et al. 2012, 2016; Folsom et al. 2017). The advantages and disadvantages of principles- and rules-based standards have been debated among academics, regulators, and practitioners over the past two decades (e.g., SEC 2003; FASB 2002; American Accounting Association 2003; Alexander and Jermakowicz 2006; Bennett et al. 2006; Lee 2006; DiPiazza et al., 2008). Moreover, there has been an increasing demand for more principles-based standards over the last two decades in the U.S. and worldwide (e.g., FASB 2002; Sarbanes Oxley Act 2002; SEC 2002; IASB, 2003; Kroeker 2010; Ball 2016; IASB 2016).³

In late 2002, the FASB and IASB (hereafter the Boards) jointly stated in the Norwalk Agreement (2002) their commitment to eliminating the major differences between U.S. GAAP and IFRS and developing high-quality and compatible accounting standards for both domestic and cross-border financial reporting. The Boards also pledged to establish financial reporting standards based on consistent principles (FASB/IASB 2006). The 2008 Memorandum of

¹ The project started with the Norwalk Agreement in 2002 and ended in 2012 when the SEC Staff Report (SEC 2012) highlighted the achievements of the convergence process and proposed no further timeline or roadmap for convergence beyond 2012. This study covers the formal convergence project period between 2002 and 2012 and an informal convergence period between 2012 and 2016 to capture the potential delayed impact of the convergence project.

² Before 2005, international standards were titled International Accounting Standards (IAS). Throughout this paper, for the sake of consistency, we use IFRS to refer to all international standards, including IFRS and IAS.

³ Financial reporting failures such as Enron, WorldCom, and Parmalat in the early 2000's and the Repo 105 accounting that led to the financial crisis of 2008 arguably heightened U.S. and international regulatory interest in principles-based standards (FASB 2002; SEC 2002; Kroeker 2010).

Understanding (MoU) states that the goal of the convergence project is to produce common principles-based standards.⁴ Hence, an objective assessment of the potential outcomes of the convergence project should be of interest to regulators, accounting standard-setters, financial market participants, and academics.

We follow Mergenthaler's (2011) approach to construct a rules-based continuum (*RBC*) score to measure the rules-based characteristics of both sets of accounting standards. Specifically, the *RBC* score is a summary measure of four rules-based characteristics: the use of bright-line thresholds, scope and legacy exceptions, voluminous implementation or interpretive guidance, and the level of detail.

Accounting standards contain both principles- and rules-based characteristics. While a standard with a low *RBC* score may be relatively principles-based (Mergenthaler 2011; Donelson et al. 2012, 2016), no measure exists for the degree of principles-based standards. Hence, we follow the literature (e.g., FASB 2002; SEC 2003; Shorridge and Myring 2004; Nobes 2005; Maines et al. 2003; DiPiazza et al. 2008; Dennis 2008; Kothari et al. 2010; Bradbury and Schroder 2012) to construct a new measure, the principles-based continuum (*PBC*) score for both sets of accounting standards. Specifically, the *PBC* score is a summary measure of five principles-based characteristics: the number of accounting choices, use of professional judgment, reference to the conceptual framework, use of accounting disclosure, and number of examples.

We follow the same methods used to validate the *RBC* score in Donelson et al. (2012, 2016) to validate our *PBC* score. We first compare the *PBC* scores of a set of selected U. S.

⁴ Section 108(d) of the Sarbanes-Oxley Act required the SEC to conduct a study on the adoption by the U.S. financial reporting system of a principles-based accounting system no later than one year after the enactment of the Act. The study proposed an objective-oriented, principles-based standard-setting approach in the U. S. that emphasized the objectives of individual standards and allowed sufficiently detailed guidance. The study also noted that objective-oriented standard-setting is occasionally referred to as principles-based standard-setting.

GAAP and IFRS standards with the 2003 SEC classifications and find mostly consistent classifications.⁵ We then assess the correlations between these five input characteristics of the *PBC* score and find all are positive and significant. Finally, a factor analysis indicates that the 5 observable characteristics load on one factor, suggesting that all these characteristics measure the same underlying aspect of the standards.

To compare changes in the rules- and principles-based characteristics of U.S. GAAP and IFRS, all our empirical results are based on the *RBC* and *PBC* scores constructed using deciles for specific characteristics of *pooled* U.S. GAAP and IFRS. We find that the *RBC* scores for both sets of accounting standards increase over the convergence period. The mean difference tests show that only the increases in the *RBC* scores of IFRS are statistically significant. We also find that the mean differences in the *RBC* scores between U.S. GAAP and IFRS decline significantly over the convergence period, suggesting convergence between the two sets of accounting standards. After controlling for the upward time trend, we find that IFRS significantly increases its rules-based characteristics, whereas U.S. GAAP significantly decreases its rules-based characteristics during convergence. These findings suggest that the Boards likely compromised their approaches to standard-setting to enable convergence by increasing the rules-based characteristics in IFRS while deterring U.S. GAAP from becoming more rules-based.

We conduct three additional tests to confirm that the changes in the *RBC* scores are associated with the convergence project. First, we examine and find that the increase in average *RBC* score for U.S. GAAP slows down in the convergence period. There were fewer changes in the *RBC* scores for U.S. GAAP during the convergence period (2002-2012) relative to the pre-

⁵ The SEC (2003) classifications are simply based on a dichotomy between rules- and principles-based standards. Under this classification, Rules-based standards contain specific numeric bright-lines and legacy exceptions, while principles-based standards do not contain bright-line rules and exceptions.

convergence benchmark period (1991-2001). In contrast, for IFRS, more increases in the *RBC* scores occur during the convergence period. Second, we conduct a cross-sectional regression analysis to examine the effect of convergence across all standards in 2008 and 2016 while controlling for other factors that may affect the *RBC* scores. We find that only in the IFRS 2016 sample, standards involved in the convergence project are associated with higher *RBC* scores. Third, the results from the pre- and post- convergence tests provide evidence that IFRS standards involved in the convergence project experience significantly greater increases in rules-based characteristics than standards not involved in convergence.

Regarding principles-based characteristics, we find that both U.S. GAAP and IFRS increase principles-based characteristics during the convergence period. We also find that the mean differences in the *PBC* scores between U.S. GAAP and IFRS significantly decline over the convergence period and eventually disappear in 2016. After controlling for the upward time trend, both sets of accounting standards increase their principles-based characteristics, suggesting that in part, the convergence project converged both sets of accounting standards by increasing their principles-based characteristics. We find that more changes in the *PBC* scores for both U.S. GAAP and IFRS occur during the convergence period relative to the pre-convergence benchmark period. The cross-sectional regression analysis suggests that for 2008, both U.S. GAAP and IFRS standards involved in the convergence project are associated with higher *PBC* scores. Finally, the results from the pre- and post- convergence tests provide evidence that both U.S. GAAP and IFRS standards involved in convergence experience greater increases in *PBC* scores than standards not involved in convergence.

Taken together, this study provides evidence suggesting that the convergence project achieved its goals of making both sets of accounting standards more compatible in terms of their

rules- and principles-based characteristics. We find evidence suggesting that following the convergence project, IFRS contains significantly more rules-based characteristics, whereas convergence may have deterred U.S. GAAP from becoming more rules-based. We also show that both sets of accounting standards contain more principles-based characteristics following the convergence project.

This study contributes to the existing literature in several ways. First, to the best of our knowledge, this study is the first to investigate and provide evidence that the convergence project between the Boards converged the rules- and principles-based characteristics of U.S. GAAP and IFRS. Second, while many studies have either examined factors that influence national accounting standards (e.g., Berglof 1990; Choi and Mueller 1992; Mueller et al. 1994; Ali and Hwang 2000) or examined the economic consequences of IFRS adoption (see De George et al. 2016 for a review), this study is the first to provide insight into the factors, at the global level, that shape the development and evolution of IFRS as a single set of global accounting standards. Our evidence suggests that the political economy of the convergence project led IFRS to converge with U.S. GAAP by increasing rules-based characteristics in its standards. Since the U.S. is the world's largest capital market, the IASB might have been inclined to accommodate the demands of the FASB and SEC to make IFRS more attractive for adoption in the U.S. Consequently, the convergence project appears to have had the possibly unintended consequence of making IFRS more rules-based. Third, previous studies have provided evidence of increased comparability between the two accounting regimes using certain accounting numbers prepared under U.S. GAAP and IFRS (e.g., Henry et al. 2009; Barth et al. 2012; Lin et al. 2019).⁶ This study provides evidence suggesting that the convergence project helped U.S. GAAP and IFRS

⁶ These studies measure comparability by examining the accounting differences and different earnings attributes between U.S. GAAP and IFRS.

converge in terms of both rules- and principles-based characteristics. This finding illuminates a possible factor contributing to the enhanced comparability of financial statements prepared under both sets of accounting standards. Finally, this study is the first to develop a new measure of principles-based characteristics. Previous studies have used the *RBC* score to capture both rules- and principles-based characteristics. Our *PBC* score is constructed based on principles-based characteristics, such as the use of management judgment and number of accounting choices in a standard.

This study has several limitations. First, due to the nature of this study and the characteristics of accounting standards that we examine, some of our evidence is descriptive. Second, we cannot completely rule out other factors that could have affected the *RBC* and *PBC* scores during the convergence period. Furthermore, our pre- and post- convergence test results must be interpreted with caution, especially when it comes to inferring causality, because the standards involved in the convergence project are not randomly determined.

The remainder of this paper is organized as follows: Section 2 provides a brief history of the convergence project and predicted outcomes. Section 3 describes the research design, data, and sample. Section 4 provides graphical and univariate analyses of the *RBC* and *PBC* scores. Section 5 provides benchmark analysis, regression analysis, and pre- and post- convergence tests. The final section concludes.

2. The convergence project and potential outcomes

2.1 The FASB-IASB convergence project

The Boards formalized their commitment to developing high-quality and compatible accounting standards under the Norwalk Agreement (2002). The Boards released three MoUs in 2006, 2008, and 2011 to reaffirm their commitment. The 2008 MoU emphasized that the goal of joint projects was to produce common principles-based standards and agreed to develop

principles-based standards for revenue recognition, financial instruments, leasing, and insurance contracts by 2011 (FASB 2008). The Boards completed most short-term projects identified in the 2006 and 2008 MoUs by 2009.⁷ In February 2009, IASB Chairperson Tweedy explained that by the end of 2011, IFRS and U.S. GAAP would be virtually the same set of standards (Tsakumis et al. 2009). However, as the deadline for completing the remaining projects loomed, disagreements about the approaches to rules- and principles-based standard-setting surfaced. In July 2012, after a three-year delay, the SEC Staff Report (SEC 2012) highlighted the achievements of the convergence project and proposed no further timelines or roadmaps for convergence. The report explicitly notes that to function optimally, U.S. financial markets require specific guidance and exceptions not found in principles-based standards.⁸ The report also signaled the end of the formal convergence process; immediately after its release, IASB Chairperson Hans Hoogervorst issued a statement indicating that the era of convergence was coming to an end.

2.2 Literature review and potential convergence outcomes

We predict how the convergence project could affect both sets of accounting standards in this section. Although the extant literature acknowledges that U.S. GAAP skews toward the rules-based end of the spectrum (e.g., SEC 2003; FASB 2002; Schipper 2003; Nobes 2004; Bennet et al. 2006; Donelson et al. 2012, 2016; Folsom et al. 2017), we predict that during the convergence period, U.S. GAAP may reduce its rules-based characteristics for several reasons. First, there has been an increasing demand for more principles-based and fewer rules-based standards in the U.S. and worldwide (e.g., FASB 2002; Sarbanes-Oxley Act 2002; IASB 2003;

⁷ A list of successful, abandoned, and discontinued projects is also available in Lin et al. (2019): Appendix 1B. Summary of revisions to accounting standards over a sample period.

⁸ For more details about the Staff Report, please refer to <https://dart.deloitte.com/iGAAP/ov-resource/5ebd0126-3ba8-11e9-a7e6-d98c97855d96.html>

Ball 2016; Kabureck 2016). The Sarbanes-Oxley Act required the SEC to conduct a study on the adoption of a principles-based accounting system. Second, in the 2008 MoU, the Boards agreed that the goal of joint projects was to produce common principles-based standards. Moreover, the convergence project was suggested as a tool to move both U.S. GAAP and IFRS toward the more principles-based end of the spectrum (Melone 2003; SEC 2008; DiPiazza et al. 2008).

However, U.S. GAAP might contain even more details, rules, and guidance following convergence for several reasons. First, U.S. GAAP may contain more rules-based characteristics as standards age (Ehrlich and Posner 1974; Schipper, 2003; Donelson et al. 2016). Second, U.S. firms often face complex accounting issues that require detailed guidelines for specific situations (e.g., Benston et al. 2006; Kothari et al. 2010; Donelson et al. 2016; Folsom et al. 2017). Third, the litigious environment in the U.S. demands a rules-based system (Schipper 2003; Donelson et al. 2012, 2016; Folsom et al. 2017).

It is also possible that U.S. GAAP might have minimal changes in its rules-based characteristics. U.S. stakeholders continue to believe that limited choice, greater focus, and detailed rules improve U.S. GAAP's quality (Hail et al. 2010). U.S. GAAP standard-setting approach is independent of the international standard-setting process and U.S. GAAP is tailored to serve the U.S. capital markets. In addition, the political economy during the convergence period suggests that the FASB was reluctant to change its standards and that perhaps the IASB would change its standards to compromise with the demands for rules-based standards from U.S. investors and capital markets.

As for IFRS, the IASB might change its approach to standard-setting to compromise with the demand for rules-based standards from U.S. investors and capital markets. To persuade the U.S. to adopt IFRS and converge both IFRS and U.S. GAAP, the IASB allowed the FASB to

become more involved in the IFRS standard-setting process, which could potentially contribute to more rules-based characteristics in IFRS. In addition, principles-based standards can easily become more detailed and complex to achieve financial statement comparability (Schipper 2003; Kothari et al. 2010). Finally, principles-based standards are difficult to maintain in the long term because complex accounting issues eventually give rise to detailed guidelines that apply to specific situations (e.g., Benston et al. 2006; Kothari et al. 2010; Donelson et al. 2016). However, IFRS might not change its rules-based characteristics because the IASB may deem it important that IFRS continues to be based on broad principles and flexible in accounting choices and implementation (Nobes 2013; Ball 2016) for two reasons. First, IFRS has gained global acceptance and needs to consider the demands of global constituencies. For example, the IASB had separate convergence projects with several countries, such as Japan, China, New Zealand, Malaysia, and Indonesia, and thus needed to consider country-specific business practices in these countries (Camfferman and Zeff 2018). Second, the IASB has repeatedly claimed that IFRS is a set of principles-based standards and has consistently reaffirmed its commitment to a principles-based system (Hoogervost 2015; Kabureck 2016).

Given the possible pathways to convergence that U.S. GAAP and IFRS can follow, we believe whether both sets of accounting standards converge and how they converge is an empirical issue.

3. Data and research design

3.1 Accounting standards data

We examine all the sources of authoritative standards in U.S. GAAP and IFRS via the FASB (www.fasb.org) and IASB webpages (www.ifrs.org).⁹ Authoritative standards in U.S.

⁹ Since the FASB codified U.S. GAAP by topic starting in 2009, we map the codified topics to the original numeric standards in U.S. GAAP for the period from 2009 to 2016.

GAAP include Statements of Financial Accounting Standards (FAS), Accounting Research Bulletins (ARBs), Accounting Principles Board Opinions (APBs), Statement of Financial Accounting Concepts (SFAC), SEC Staff Accounting Bulletin (SAB) 101, and pronouncements (EITFs, SOPs, and DIGs) with authoritative power.¹⁰ Table 1 Panel A provides a list of U.S. GAAP standards, consisting of 26 authoritative standards in 1953, 93 standards in 2002, 95 standards in 2005, and 93 standards in 2016. Table 1 Panel B provides a list of IFRS. Authoritative standards include International Accounting Standards (IAS), IFRS, and interpretations (IFRIC and SIC) with authoritative power. IFRS consists of only 5 standards in 1976, 23 standards in 1985, 29 standards in 1995, 64 standards in 2002, 49 standards in 2005,¹¹ 64 standards in 2012, and 65 standards in 2016. We observe that the total number of U.S. GAAP and IFRS standards did not change much over the convergence period, and that U.S. GAAP continues to contain more standards than IFRS even after the convergence project.¹²

[Insert Table 1 here]

3.2 Rules-based continuum (RBC) score

Mergenthaler (2011) constructs *RBC* scores for U.S. GAAP using four rules-based characteristics: the use of bright-line thresholds, scope and legacy exceptions, voluminous implementation or interpretive guidance, and the level of detail. We follow the approaches used

¹⁰ EITF are statements issued by the Emerging Issues Task Force of the SEC; SOP are FASB Statements of Position; and DIG is the Derivative Implementation Group.

¹¹ In the 3-year period between 2002-2005, IFRS Standards added 1 new IAS (IAS 41), 5 new IFRS (IFRS 1-5), added 2 new IFRIC, and removed 2 IAS (IAS 15 and IAS 22). In addition, 21 SIC were removed or rolled into existing or new standards.

¹² This can be explained by several factors. U.S. GAAP developed decades before IFRS thus has accumulated more standards. The breadth and diversity of the U.S. economy needs comprehensive and flexible standards to address the complexity of financial reporting requirements across different sectors. The complex legal and regulatory environment in the U.S. has led to the development of numerous specific accounting standards tailored to the needs of various stakeholders and industries. For example, ASC 926 is specific to the entertainment industry while ASC 944 is for insurance companies.

in previous studies (e.g., Mergenthaler 2011; Donelson et al. 2012, 2016) to construct our *RBC* scores. We construct the *RBC* score for standard j at time t as follows:

$$RBC_{jt} = BrightLine_{jt} + Except_{jt} + Guide_{jt} + Detail_{jt} \quad (1)$$

where *BrightLine* equals 1 if a standard includes numeric bright-line thresholds, and 0 otherwise. *Except* equals 1 if a standard includes any scope and legacy exceptions, and 0 otherwise. *Guide* equals 1 if the number of interpretive guidance for a standard is in the top decile of interpretive guidance in pooled U.S. GAAP and IFRS standards, and 0 otherwise. *Detail* equals 1 if the total number of words in a standard is in the top decile of words in pooled U.S. GAAP and IFRS standards, and 0 otherwise. The *RBC* score for an accounting standard ranges between 0 and 4, with a higher score indicating a more rules-based standard. Consistent with Donelson et al. (2012, 2016), untabulated validation tests for the *RBC* score show that all four characteristics are positively and significantly correlated at the 1% level. In addition, a factor analysis indicates that the four observable characteristics load on one factor, suggesting that all four characteristics measure the same underlying aspect of the standards.¹³ It is important to note that *Guide* and *Detail* are constructed using pooled U.S. GAAP and IFRS standards in each year during the sample period.

3.3 Principles-based continuum (*PBC*) score

The *RBC* score developed by Mergenthaler (2011) captures the rules-based characteristics of accounting standards; standards with low *RBC* scores can be interpreted as being more principles-based (Donelson et al. 2012, 2016). This study develops a new measure to directly capture the principles-based characteristics of accounting standards. The principles-based

¹³ As an additional validation test, we compare our *RBC* scores for selected U.S. GAAP and IFRS standards with the SEC (2003) classification and those reported in Donelson et al. (2012, 2016), and our untabulated results are generally consistent.

continuum (*PBC*) is based upon the number of accounting choices, references to professional judgment, references to the conceptual framework, volume of accounting disclosures, and number of examples following the existing accounting literature (e.g., Schipper 2003; Nobes 2005; Bennett et al. 2006; DiPiazza et al. 2006; Kothari et al. 2010) and regulatory and governmental reports (IASB 2001; FASB 2002; AAA 2003; SEC 2003). Specifically, we construct the *PBC* score by identifying standards in the top deciles of individual characteristics in pooled U.S. GAAP and IFRS standards to allow us to compare the changes in the *PBC* scores between the two accounting systems.¹⁴ Hence, the *PBC* score for standard j at time t is calculated as follows:

$$PBC_{jt} = Choice_{jt} + Judgment_{jt} + Conceptual_{jt} + Disclosure_{jt} + Example_{jt} \quad (2)$$

Each indicator (i.e., *Choice*, *Judgment*, *Conceptual*, *Disclosure*, and *Example*) is equal to 1 if it is in the top decile of accounting choice, professional judgment, conceptual framework, disclosure, and examples in pooled U.S. GAAP and IFRS standards over the entire sample period, and 0 otherwise. The *PBC* score for an accounting standard ranges between 0 and 5, with a higher score indicating a more principles-based standard. Appendix A provides details on how we extracted these five characteristics from each accounting standard.

To validate the *PBC* score, we first compare the *PBC* scores for 2008 and 2016 with a set of selected U.S. GAAP and IFRS standards that were identified as principles-based standards in the SEC's 2003 Report to Congress. We find that the *PBC* scores are mostly consistent with the SEC classifications. We also find that all five characteristics are positively correlated at the 1% level. Finally, our factor analysis indicates that the five characteristics load on one factor,

¹⁴ We also conduct a robustness test by ranking the *RBC* and *PBC* scores of U.S. GAAP and IFRS standards separately and find that the results are qualitatively consistent with those of the pooled U.S. GAAP and IFRS.

suggesting that all five characteristics capture the same underlying aspect of standards. Further details on the validation tests are provided in Appendix A.

4. Graphical and univariate analysis

4.1 Graphical analysis: change in RBC score for U.S. GAAP and IFRS over time

We follow Donelson et al. (2016) to measure the changes in *RBC* scores over time using graphical analysis. Figure 1 shows the mean *RBC* scores for U.S. GAAP and IFRS from 1976 to 2016. Although formal convergence efforts ended in 2012, we extend our study to 2016 to capture an ‘informal convergence’ period to capture the potential delayed impact of the convergence project. The mean *RBC* scores of U.S. GAAP exhibit an overall increasing trend with few fluctuations, whereas the mean *RBC* scores of IFRS exhibit more variations over time. We note a dip in the *RBC* score around 1990, which coincides with the beginning of a major overhaul of International Accounting Standards by the IASC (the predecessor of the IASB). This was undertaken as part of an effort to attain endorsement by the International Organization of Securities Commissions (IOSCO).¹⁵ These efforts spanned nearly a decade, during which many changes were made to IFRS through 1999. Subsequently, we see that the mean *RBC* scores increase significantly from 2005 to 2016, with a marked increase in 2005, mostly due to amendments to existing standards and the introduction of new standards that were part of topics in short- and long-term convergence projects between the FASB and IASB.¹⁶ We find evidence that IFRS contains more rules-based characteristics over time and, more importantly, that IFRS

¹⁵ Many changes were made in 1990. The Exposure Draft 32 (E32), issued in 1990, targeted financial statement comparability and led to the elimination of IAS 3 in 1990 and amendments to IAS 25, 26, and 27. IAS 3 contained two exceptions and one numeric bright-line whereas IAS 25, 26, 27 had exceptions eliminated. These changes partially contributed to the drop in mean *RBC* score exceptions and bright-line in Figure 1 for 1990.

¹⁶ The increase in the *RBC* score for IFRS standards between the years 2004 and 2005 is mostly due to: (1) an increase in the *RBC* scores of IAS 8, IAS 16, and IAS 17 from an increase in *Guide*; (2) an increase in the *RBC* scores of IAS 2, IAS 28, and IAS 31 from an increase in *Except*; (3) issuance of new IFRS 4 and IFRS 5 that each increase the mean *RBC* score due to an increase in *Except*; and (4) many SICs being superseded by new standards or being incorporated into existing standards. All the amended IASs and new IFRS cover convergence topics.

and U.S. GAAP gradually align in terms of rules-based characteristics during the formal convergence period.

To provide additional insight, we examine the relative percentage of standards with *RBC* score of 2 or more among all U.S. GAAP and IFRS standards before and after convergence. Untabulated results show that in 2002, the year the convergence project started, 96 % (4%) of standards with an *RBC* score of 2 or more were U.S. GAAP (IFRS) standards. However, by 2008, these percentages had shifted to 84% (16%), in 2012 to 79% (21%), and by 2016 to 74% (26%). These results indicate that among all U.S. GAAP and IFRS standards, US GAAP's share of standards with high *RBC* scores decreases, while IFRS' share increases about 17% during the convergence period.

[Insert Figure 1 here]

*4.2 Graphical analysis: change in *PBC* score of U.S. GAAP and IFRS over time*

Figure 2 shows the *PBC* scores for U.S. GAAP and IFRS follow an overall increasing trend in the period 1976-2016. IFRS increases its *PBC* score in 1996, followed by a sharp increase in 1999 and 2005 (the years with the highest *PBC* scores). The gap between the *PBC* scores of U.S. GAAP and IFRS widens in 2002 and reaches its peak in 2006 before it eventually declines in 2009 and remains stable thereafter.

We further examine the relative percentage of standards with the *PBC* score of 3 or more among all U.S. GAAP and IFRS standards over time. Untabulated results show that in 2002, approximately 27% (73%) of the standards with a *PBC* score of 3 or more were U.S. GAAP(IFRS) standards. However, by the end of the formal convergence in 2012, 47% (53%) of standards with a *PBC* score of 3 or greater were U.S. GAAP (IFRS) standards. Although IFRS contains more principles-based standards than U.S. GAAP in the pre-and post-convergence

periods, U.S. GAAP's share of standards with high *PBC* scores increases about 20% during the convergence period.

[Insert Figure 2 here]

4.3 Univariate analysis: RBC score for U.S. GAAP and IFRS

Table 2 Panel A shows that the mean *RBC* score for U.S. GAAP standards is 0.795 from 1953 to 2016. We find evidence consistent with Donelson et al. (2012, 2016) that while it is widely believed that U.S. GAAP contains more rules-based characteristics, it is not an exclusively rules-intensive system. The mean *RBC* score for U.S. GAAP is 1.075 in 2002, 1.105 in 2005, 1.115 in 2009, 1.163 in 2012, and 1.183 in 2016, indicating that the rules-based characteristics of U.S. GAAP increase over the convergence period. The differences in the mean *RBC* scores between 2002 and all four comparison years are, however, not statistically significant. Results for individual rules-based characteristics are generally insignificant. We find evidence that U.S. GAAP continues to increase its rules-based characteristics, but all the changes during convergence do not appear to be statistically significant.

Table 2 Panel B shows that the mean *RBC* score for IFRS from 1976 to 2016 is 0.454. The mean *RBC* score is 0.297 for 2002, 0.510 for 2005, 0.569 for 2009, 0.609 for 2012, and 0.692 for 2016, indicating that the rules-based characteristics of IFRS increases over the convergence period. More importantly, the differences in the mean *RBC* scores between 2002 and all four comparison years are statistically significant at the 1% or 5% level, indicating that the rules-based characteristics of IFRS significantly increase over the convergence period. Results for individual rules-based characteristics are generally significant at conventional levels, except for *BrightLine* and *Detail*.

Panel C of Table 2 shows that U.S. GAAP has a significantly higher mean *RBC* score than IFRS (0.341, $p < 0.01$), indicating that U.S. GAAP contains more rules-based characteristics than IFRS. Compared to IFRS, U.S. GAAP has significantly more *BrightLine* (0.106), *Except* (0.050), *Guide* (0.069), and *Detail* (0.116) at the 1% level. We also find significant differences in the mean *RBC* scores between U.S. GAAP and IFRS at the 1% or 5% level for all five years. U.S. GAAP has significantly higher mean values of *BrightLine* and *Detail* than IFRS at the 1% or 5% level for all five years. U.S. GAAP also has a significantly higher mean value of *Except* than IFRS (0.234, $p < 0.01$) in 2002 and significantly higher mean value of *Guide* than IFRS in 2002 (0.204, $p < 0.01$) and 2005 (0.180, $p < 0.01$).

[Insert Table 2]

Subsequently, we investigate the relative changes in the *RBC* scores in different sub-periods by testing the following model for U.S. GAAP and IFRS:

$$RBC_t = \alpha + \beta_1 T + \beta_2 Formal_0305 + \beta_3 Formal_0608 + \beta_4 Formal_0912 + \beta_5 Informal_1316 + \varepsilon \quad (3)$$

Given the dip in the mean *RBC* score of IFRS in 1990, due to seeking the endorsement of the IOSCO, we start in 1991 to account for the time trend. We create a time trend variable (T), measured as year $t-1991$, and three dummy variables to capture the convergence effect in three different time periods: *Formal_0305* for the period 2003-2005, *Formal_0608* for the period 2006-2008, and *Formal_0912* for the period 2009-2012. In addition, we include a dummy variable, *Informal_1316*, to capture the potential delay of the convergence effect and informal convergence efforts for the period 2013-2016.

Consistent with our previous findings, panel D shows positive and significant coefficients of the time trend (T) at the 1% level for U.S. GAAP (0.7842) and IFRS (0.1991). For U.S.

GAAP, the coefficients on *Formal_0608* (-0.0928) and *Formal_0912* (-0.1349) are negative and significant at the 1% level, indicating that U.S. GAAP tapers the increase in its rules-based characteristics during these two sub-periods. The coefficient for *Informal_1316* is also negative and significant (-0.2130, $p < 0.01$), indicating that the convergence effect continues even after formal convergence ends in 2012. For IFRS, the coefficients on *Formal_0608* (0.1293), *Formal_0912* (0.1390), and *Informal_1316* (0.1626) are all positive and significant at the 5% level, indicating that convergence increases the *RBC* score for IFRS, and this impact continues even after formal convergence ends. Thereby, our findings show that the convergence project is associated with an increase in the rules-based characteristics of IFRS but is not associated with changes for U.S. GAAP.

4.4 Univariate analysis: *PBC* score of U.S. GAAP and IFRS

Table 3 Panel A shows that the mean *PBC* score for U.S. GAAP is 0.389 from 1953 to 2016. The mean *PBC* score is 0.473 for 2002, 0.505 for 2005, 0.656 for 2009, 0.750 for 2012, and 0.849 for 2016. We find that the mean *PBC* scores in 2012 and 2016 are significantly higher than the mean *PBC* score in 2002 (0.227, $p < 0.10$ and 0.376, $p < 0.05$, respectively), indicating that U.S. GAAP contains more principles-based characteristics in the later years of convergence.

For individual principles-based characteristics, the mean *Choice* is 0.051, *Judgment* is 0.069, *Conceptual* is 0.102, *Disclosure* is 0.093, and *Example* is 0.074. The mean differences in *Choice*, *Judgment*, and *Conceptual* are insignificant between 2002 and all four comparison years. The mean *Disclosure* in 2012 and 2016 are significantly higher than that in 2002 (0.110, $p < 0.05$ and 0.108, $p < 0.05$, respectively). The mean *Example* in 2016 is significantly higher than that in 2002 (0.139, $p < 0.05$). These findings indicate that U.S. GAAP increases principles-based

characteristics through a combination of increasing disclosures and examples during the convergence period.

Table 3 Panel B reports results for IFRS. The mean *PBC* for IFRS is 0.763 from 1976 to 2016. The mean *PBC* increases steadily from 0.750 in 2002, to 1.184 in 2005, but decreases to 0.923 in 2009, only to increase again to 1.016 in 2012 and 1.169 in 2016. The difference in the mean *PBC* scores between 2002 and 2016 is significant (0.419, $p < 0.10$). For individual principles-based characteristics, the mean differences in *Choice* between 2002 and all four comparison years are negative but insignificant. The mean differences in *Judgment* are positive and significant ($p < 0.05$ or better) for all comparison years. The mean differences in *Conceptual* are insignificant for all four comparison years. The mean differences in *Disclosure* between 2002 and 2012 (0.110, $p < 0.10$) and between 2002 and 2016 (0.137, $p < 0.05$) are positive and significant. The mean difference in *Example* is significant only between 2002 and 2005 (0.124, $p < 0.10$). Overall, we find that IFRS contains more principles-based characteristics during the convergence period, especially the use of professional judgment and accounting disclosures.

Panel C shows that compared with IFRS, U.S. GAAP has a significantly lower mean *PBC* score (-0.373), *Choice* (-0.125), *Judgment* (-0.120), *Disclosure* (-0.051), and *Example* (-0.070) at the 1% level. This finding is consistent with the notion that IFRS contains more principles-based characteristics than U.S. GAAP. For individual principles-based characteristics, the mean differences in *Choice* between U.S. GAAP and IFRS are significantly negative and decrease over time; the difference eventually disappears in 2016. The mean differences in *Judgment* are negative and significant at conventional levels in all five years. The mean differences in *Disclosure* (-0.109, $p < 0.10$) and *Example* (-0.149, $p < 0.05$) are negative and

significant only in 2005. Overall, the differences in *PBC* scores between U.S. GAAP and IFRS largely disappear from 2009 onward, except for the differences in *Choice* and *Judgment*.

We then investigate the relative changes in the *PBC* scores in different subperiods by testing the following model for U.S. GAAP and IFRS:

$$PBC_t = \alpha + \beta_1 T + \beta_2 Formal_0305 + \beta_3 Formal_0608 + \beta_4 Formal_0912 + \beta_5 Informal_1316 + \varepsilon \quad (4)$$

Panel D shows that the coefficient of the time trend (*T*) is 0.0183 for U.S. GAAP and 0.0422 for IFRS, significant at the 1% level. This indicates that the principles-based characteristics of both sets of accounting standards increase over time. For U.S. GAAP, the coefficients on *Formal_0305* and *Formal_0608* are negative but insignificant. However, the coefficients on *Formal_0912* (0.1033, $p < 0.01$) and *Informal_1316* (0.1194, $p < 0.01$) are significantly positive. Consistent with our univariate mean difference results, we find that the principles-based characteristics of U.S. GAAP increase in the later years of the formal convergence period and in the informal period. For IFRS, the coefficient on *Formal_0305* (0.1856, $p < 0.01$) is significantly positive, while the coefficient on *Formal_0608* is positive but insignificant. The coefficients on *Formal_0912* and *Informal_1316* are both negative but insignificant. We find the principles-based characteristics of IFRS only increase during the early years of the formal convergence period. Overall, our findings indicate that an increase in the *PBC* score of U.S. GAAP is one of the consequences of the convergence project.

[Insert Table 3]

5. Benchmark analysis, multivariate analysis, and pre- and post- convergence tests

Thus far our evidence of changes in the *RBC* and *PBC* scores of both sets of accounting standards has largely been descriptive. Therefore, we conduct three additional tests to further

explore that changes in *RBC* and *PBC* scores are associated with the convergence project. First, we examine the magnitude and sources of changes for both U.S. GAAP and IFRS that occurred during the convergence project relative to a pre-convergence benchmark period. Second, we conduct a cross-sectional regression analysis for U.S. GAAP and IFRS separately to examine the effect of convergence across all standards while controlling for other factors that may affect both *RBC* and *PBC* scores. Third, we perform a pre- and post- convergence test to compare standards that are involved in convergence with standards not involved in convergence separately for U.S. GAAP and IFRS.

5.1. Magnitude of changes in the RBC and PBC scores: convergence period relative to benchmark period

We examine the relative changes in the *RBC* scores for U.S. GAAP and IFRS before (1991-2001 as a benchmark) and during the convergence project period (2002-2012). We find that the changes in *RBC* for U.S. GAAP during the convergence project account for only 27.6% of the entire changes in *RBC* over the period 1991-2012, whereas the changes before convergence account for 72.4%. In contrast to U.S. GAAP, the changes in *RBC* for IFRS during the convergence project account for 71.3% of the entire change in *RBC* over the sample period. This evidence indicates that convergence has a greater impact on the rules-based characteristics of IFRS than for U.S. GAAP. Further untabulated analysis indicates that this impact primarily arises from replacing existing standards and the issuances of new standards rather than relying on amendments.

We also examine the relative changes in *PBC* scores for both sets of standards before (1991-2001) versus during the convergence project period (2002-2012). We find that changes in the *PBC* scores for U.S. GAAP during the convergence period account for 59.3% of the total

changes in the *PBC* score over the period 1991-2012. Changes in the *PBC* scores for IFRS are also greater during convergence at 67%, whereas the changes before convergence accounts for only 33% of the total changes over the period 1991-2012. Both U.S. GAAP and IFRS change more in their principles-based characteristics during the convergence project period than in the benchmark period. However, the convergence project appears to have a greater impact on IFRS than on U.S. GAAP. Further untabulated analysis indicates that this impact primarily arises from amendments to existing standards and the issuance of new standards rather than relying on replacement of existing standards.

5.2 Multivariate analysis: cross-sectional tests of RBC and PBC scores

Next, we perform cross-sectional tests that examine the effect of convergence while controlling for other factors that may affect the *RBC* and *PBC* scores. For each standard, we count the number of references to the convergence project (*Converg*) as the reason for the amendment, revision, or issuance of new standards.¹⁷

We use models (5) and (6) to test these associations separately for U.S. GAAP and IFRS standards that existed in 2008 and 2016.¹⁸ We run a 2008 regression to benchmark our findings with those of Donelson et al. (2016). We select 2016 to capture cumulative effect of the convergence project and informal convergence between the Boards.

$$RBC_i \text{ or } PBC_i = \beta_0 + \beta_1 Converg_i + \beta_2 Age_i + \beta_3 Complex_i + \beta_4 FairValue_i + \beta_5 Ln(Freq)_i + \beta_6 SCDL_i + \beta_7 Ln(Lit)_i + \beta_8 FASB_led_i + \beta_9 IASB_led_i + \varepsilon \quad (5)$$

$$RBC_i \text{ or } PBC_i = \beta_0 + \beta_1 Converg_i + \beta_2 Age_i + \beta_3 Complex_i + \beta_4 FairValue_i + \beta_5 Ln(Freq)_i +$$

¹⁷ We use textual analysis to search for the keyword “Converg*” in U.S. GAAP and IFRS standards. We then read the surrounding paragraphs to verify that it is referring to the convergence project.

¹⁸ We follow Donelson et al. (2016) to use Ordinary Least Square to estimate these two models. As a robustness test, we have run the Tobit model to account for the non-negative nature of *RBC* and *PBC* scores. Among 8 regressions, 7 have similar inferences.

$$\begin{aligned} & \beta_6 SCDL_i + \beta_7 Enforce_i + \beta_8 HHI_i + \beta_9 BdMemCom_i + \beta_{10} USEdExp_i + \beta_{11} FASB_led + \beta_{12} IASB_led_i \\ & + \varepsilon \end{aligned} \quad (6)$$

We follow Donelson et al. (2016) to control for the factors that could have contributed to *RBC* and *PBC* and predict their signs in Table 4, Panel C. *Age* measures the age of the standard. Standards tend to become more rules-based as they mature. Over time the standard's topic is better understood and applied thus making it easier to develop specific rules (Donelson et al. 2016). We develop two proxies for complexity: *Complex* measures the number of times the FASB or IASB refers to the standard's underlying transactions as complex, and *FairValue* is equal to 1 if the U.S. GAAP standard was amended by FAS 157 (Topic 820) or if the IFRS standard was amended by IFRS 13. *Ln(Freq)* is the log of the frequency of the application of the standard's underlying transactions in practice. For U.S. GAAP, we develop two proxies for constraining opportunism: *SCDL* and *Ln(Lit)*. *SCDL* is equal to the number of times a standard is violated in major accounting scandals scaled by the total number of accounting standards. *Ln(Lit)* is the log of 1 plus *Litigation*. *Litigation* is the frequency of a standard's involvement in securities litigation from 1996 to 2006 for the 2008 sample and from 1996 to 2014 for the 2016 sample.¹⁹ We also control for the potential impact of standard-setters on individual standards. *FASB_led* (*IASB_led*) is equal to 1 if the standard covers a topic that is part of FASB (IASB) led convergence efforts and 0 otherwise. All the variables used in the cross-sectional analysis are defined in detail in Appendix B.

We include additional variables to control for unique features arising from the international nature of IFRS and IASB member characteristics. We develop a variable for the enforcement of IFRS (*Enforce*), which is the number of times an IFRS standard is involved in a

¹⁹ The model for IFRS does not control litigation because such data for IFRS countries is not available.

European Securities and Markets Authority (ESMA) enforcement action during the period 2005-2008 for the 2008 sample and 2005-2016 for the 2016 sample. The enforcement data were gathered from the ESMA's European Enforcers Coordination Sessions (EECS) Database of Enforcement (July 2021). The nature of IFRS may evolve as more countries adopt or permit its use. Therefore, we construct a Herfindahl-Hirschman Index (*HHI*) using World Bank data on countries permitting or requiring IFRS to capture the percentage of global market share of IFRS. We also examine two specific characteristics of IASB members. *BdMemCom* is the percentage of IASB members from common law countries. Principles-based characteristics are grounded in common law notions (Ball, 2016), so individuals from common law jurisdictions tend to have more experience with principles-based systems (Guerreiro et al. 2014). *USEdExp* is the percentage of IASB members with either a U.S. education or work experience. U.S. educated and experienced members may be more inclined toward rules-based standard setting, given their experience and education in a rules-based system. Appendix B provides detailed definitions of these variables.

Table 4 Panel A presents the descriptive statistics for U.S. GAAP. For the 2008 sample, the mean *RBC* score is 1.126, and the mean *PBC* score is 0.568. The mean *Converg* is 0.758, *Age* is 33.121 years, *Complex* is 0.758, and *FairValue* is 0.284. The mean *FASB_led* is 0.095, and *IASB_led* is 0.063, indicating that of the standards in 2008 nearly 10% covered topics in FASB-led convergence efforts and approximately 6% covered topics in IASB-led efforts. For 2016, the mean *RBC* score is 1.183, and the mean *PBC* score is 0.849. The mean *Converg* is 0.516, *Age* is 39.621 years, *Complex* is 0.677, and *FairValue* is 0.258.

Panel B presents the Pearson correlations. For the 2008 sample, we find that *RBC* score is significantly and positively correlated with *Converg*, *Complex*, *FairValue*, *Ln(Freq)*, *Ln(Lit)*, and

FASB_led at the 1% level. We find a significantly negative correlation between *RBC* score and *Age* ($p < 0.01$), which is inconsistent with the notion that older standards are likely to contain more rules-based characteristics but is consistent with the negative correlation reported by Donelson et al. (2016). The correlation coefficients for a few variables appear high; however, untabulated variance inflation test shows that all factors are less than 1.5, suggesting that multicollinearity is not a concern.²⁰ The correlation coefficients for the 2016 and 2008 samples were generally consistent. Additionally, we find that the *PBC* score is significantly and positively correlated with *Converg*, *Complex*, *Ln(Freq)*, and *Ln(Lit)*, while it is significantly and negatively correlated with *Age* at the 1% level.

Panel C presents the regression results for the *RBC* scores for U.S. GAAP for 2008 and 2016. The 2008 sample results show that the coefficient on *Converg* is positive but insignificant. Consistent with our predictions, the coefficients on *FairValue* (0.7956), *Ln(Freq)* (0.3109), and *Ln(Lit)* (0.1825) are all positive and significant at the 1% level, while the coefficient on *Complex* is significant (0.1126, $p < 0.05$). The 2016 sample provides consistent results with the 2008 sample, except that the coefficients on *FASB_led* (0.8469) and *IASB_led* (0.8492) are marginally significant at the 10% level, indicating that U.S. GAAP standards involved in convergence are not associated with higher *RBC* scores.

Panel D presents the regression results for the *PBC* scores of U.S. GAAP for both 2008 and 2016 samples. The 2008 sample results indicate that the coefficients on *Converg* (0.1580, $p < 0.01$) and *Complex* (0.0872, $p < 0.10$) are positive and significant, suggesting that the U.S. GAAP standards involved in the convergence project are associated with higher principles-based

²⁰ Some variables in the model appeared highly correlated thus we did a variance inflation test to determine if there is any multicollinearity. When assessing multicollinearity using variance inflation factor (VIF), a factor less than 10 is considered acceptable because it indicates that the variance of the estimated coefficient for a predictor variable is not significantly inflated due to multicollinearity.

characteristics in the initial stages of the project. The coefficient on *Age* (-0.0181, $p < 0.01$) is significantly negative. For the 2016 sample, the coefficients on *Age* (-0.0161), *Ln(Freq)* (0.3026), and *Ln(lit)* (0.1676) are all significant at the 10% level. The coefficient on *Converg* is positive but insignificant.

[Insert Table 4 here]

Table 5 Panel A reports the descriptive statistics for IFRS for both 2008 and 2016 samples. For the 2008 sample, the mean *RBC* score is 0.556, and the mean *PBC* score is 0.968. The mean *Converg* is 1.825, *Age* is 11.245, *Complex* is 0.254, and *FairValue* is 0.095. The mean *Frequency* is 1.095, and *Ln(Freq)* is 0.329. The mean *Enforce* is 1.587, and *HHI* is 0.205. *BdMemCom* has a mean of 0.616. *USEdExp* has a mean of 0.222, indicating that 22.2% of the IASB board members in 2008 had either a U.S. educational background or work experience. The mean *FASB_led* is 0.143, and *IASB_led* is 0.111. For the 2016 sample, the means are largely similar to those of 2008 with some exceptions. The mean *RBC* score is 0.692 and *PBC* score is 1.169. The mean *FairValue* is 0.431 and *Enforce* is 4.400.

Panel B reports Pearson correlations. We find that the *RBC* score is significantly and positively correlated with *Converg*, *Complex*, *FairValue*, *Ln(Freq)*, *Enforce*, *SCDL*, *HHI*, and *FASB_led* at the 1% level in the 2008 sample. We also find that the *PBC* score is significantly and positively correlated with *Converg*, *Complex*, *Ln(Freq)*, *Enforce*, *HHI*, and *FASB_led* and significantly and negatively correlated with *BdMemCom* and *USEdExp* at the 1% level. The correlation coefficients for the 2016 and 2008 samples are generally consistent. *Converg*, *Complex*, *FairValue*, *SCDL*, *Enforcement*, *BdMemCom*, and *FASB_led* are all positively and significantly correlated with the *RBC* score at the 1% level in 2016. *Converg*, *Ln(Freq)*, and *Enforce* are all positively and significantly correlated with *PBC* score at the 1% level in 2016.

Panel C shows the regression results for the *RBC* scores for IFRS for both 2008 and 2016 samples. For the 2008 sample, the coefficient on *Converg* is positive but insignificant. The coefficient on *Age* is significantly positive ((0.0198, $p < 0.01$), suggesting that older standards are associated with more rules-based characteristics. The coefficients of *FairValue* (1.1858), *Complex* (0.2637), and *FASB_led* (0.4449) are all significant at the 1% or 5% level. For the 2016 sample, the coefficients of *Converg* (0.1512), *Age* (0.0140), *Ln(Freq)* (0.2749), and *HHI* (1.1288) are all significant at the 1% or 5% level. We find evidence that IFRS standards with more references to the convergence project are positively associated with rules-based characteristics in the later years of convergence.

Panel D of Table 5 presents the regression results for the *PBC* scores for IFRS for 2008 and 2016. The 2008 sample results indicate that the coefficients of *Converg* (0.1197, $p < 0.10$), and *Age* (0.0421, $p < 0.05$) are positive and significant. The coefficients of *Complex* (-0.4900, $p < 0.10$) and *SCDL* (-0.2985, $p < 0.10$) are negative and significant. For the 2016 sample, the coefficient of *BdMemCom* (-7.6535, $p < 0.05$) is negative and significant and the coefficient of *Converg* is positive but insignificant. We find evidence that the IFRS standards with more references to the convergence project are associated with principles-based characteristics in the early years of convergence.

[Insert Table 5 here]

5.3 Pre- and post-convergence tests

To further address the concerns that some unobserved factors may have affected the *RBC* and *PBC* scores of both sets of standards over time and to identify the effect of convergence, we conduct pre- and post-convergence tests separately for U.S. GAAP and IFRS using the following regression:

$$RBC_{it} \text{ or } PBC_{it} = \alpha_0 + \alpha_1 TREAT + \alpha_2 POST + \alpha_3 TREAT \times POST + \varepsilon_{it} \quad (7)$$

We select ‘treatment’ standards ($TREAT = 1$) for standards that reference ‘convergence’ in the body of the standard for the first time during the convergence period (2002 to 2012). For the ‘control’ standards ($TREAT = 0$), we select standards that never reference convergence in the body of the standard. We define the post-convergence period as 2014, 2015, and 2016, three years starting one year after formal convergence ($POST = 1$), and the pre-convergence period as 1998, 1999, and 2000, three years ending one year before convergence ($POST = 0$). If a standard was replaced by another standard, for example, FAS 123 was replaced by FAS 123R, we treat it as the same standard. We require each standard to appear at least once during both periods.

Table 6 Panel A presents the results of tests comparing the RBC scores in the pre- and post- convergence period. For U.S. GAAP, the coefficient of $TREAT$ (0.6167, $p < 0.01$) is positive and significant, whereas the coefficient of $POST$ is positive but insignificant. The coefficient of the interaction between $TREAT$ and $POST$ is positive but insignificant, indicating that U.S. GAAP standards involved in the convergence project did not add more rules-based characteristics from the pre- to post-convergence periods relative to standards not involved. For IFRS, the coefficients of $TREAT$ and $POST$ are positive but insignificant, while the coefficient of the interaction of $TREAT$ and $POST$ (0.5768, $p < 0.01$) is significantly positive. We find that IFRS standards that are involved convergence add more rules-based characteristics from the pre- to the post-convergence periods relative to standards not involved convergence.

Table 6 Panel B reports the results for the PBC score. For U.S. GAAP, the coefficient of $TREAT$ (0.4285, $p < 0.01$) is significantly positive, while the coefficient of $POST$ is positive but insignificant. The coefficient of the interaction term of $TREAT$ and $POST$ (0.4040, $p < 0.01$) is significantly positive. This indicates that U.S. GAAP standards that are involved in the

convergence project add more principles-based characteristics from the pre- to the post-convergence periods relative to standards that are not involved. For IFRS, the coefficient of *TREAT* is significantly positive (0.8284, $p < 0.05$) , while the coefficient of *POST* is positive but insignificant. The coefficient of the interaction term of *TREAT* and *POST* is significantly positive (0.8382, $p < 0.10$) , indicating that IFRS standards involved in convergence add more principles-based characteristics from the pre- to the post-convergence periods relative to standards not involved in convergence.

[Insert Table 6 here]

6. Conclusion

This study examines the FASB-IASB convergence project and its impact on the rules-and principles-based characteristics of both U.S. GAAP and IFRS. The main findings for the rules-based characteristics are as follows: First, both sets of accounting standards increase their *RBC* scores over time, but only the increase in the *RBC* scores of IFRS is statistically significant during the convergence period. Second, the gap between U.S. GAAP and IFRS rules-based characteristics narrows during the convergence period. Third, after controlling for the upward time trend, we find that IFRS increases, but U.S. GAAP decreases its rules-based characteristics during the convergence period. This suggests that the convergence project converges the two sets of standards by making IFRS more rules-based and preventing U.S. GAAP from becoming more rules-based. Fourth, the cross-sectional regression analysis shows that IFRS standards involved in the convergence project are associated with higher *RBC* scores. Finally, our evidence shows that IFRS standards involved in the convergence project have greater increases in their rules-based characteristics than standards not involved. Taken together, the empirical evidence

suggests that the convergence project converges rules-based characteristics of both sets of accounting standards.

The main findings for the principles-based characteristics are as follows: First, both U.S. GAAP and IFRS increase their principles-based characteristics. Second, the gap between U.S. GAAP and IFRS principles-based characteristics begins to narrow during the convergence period and eventually disappears. Third, both sets of accounting standards increase their principles-based characteristics after controlling for the upward time trend. Fourth, cross-sectional regression analysis shows that standards involved in convergence are associated with higher *PBC* scores for both U.S. GAAP and IFRS in the early years of convergence. Finally, pre- and post-convergence tests show that both U.S. GAAP and IFRS standards involved in the convergence project have significantly greater increases in their principles-based characteristics than standards that not involved. Taken together, these findings suggest that U.S. GAAP and IFRS converge by increasing their principles-based characteristics, which is consistent with making both sets of accounting standards contain more principles-based characteristics.

This study has some limitations. First, the evidence is somewhat descriptive due to the nature of the study and the characteristics of the accounting standards that we examine. Second, we cannot rule out other factors such as board member composition, the legal and regulatory environment of board member's home countries, that may influence the rules- and principles-based characteristics of U.S. GAAP and IFRS during convergence. Third, our pre- and post-convergence test results must be interpreted with caution because the standards involved in the convergence project are not randomly chosen. Given these limitations, we cannot draw conclusions as to causality.

Nevertheless, this study is the first to investigate and provide evidence that the convergence project between the FASB and IASB converged the rules- and principles-based characteristics of U.S. GAAP and IFRS. We also provide initial evidence that the convergence project influences the development and evolution of IFRS as a single set of global accounting standards. Finally, we develop a new measure of principles-based characteristics in accounting standards. Future research could use this measure to develop a firm-level measure of principles-based characteristics and examine its association with a firm's financial reporting quality.

Appendix A: Principles-based continuum (*PBC*) score construction and validation

I. PBC score construction

For each standard, we use a combination of textual and contextual analyses to search for keywords and carefully read the surrounding paragraphs to determine the presence of individual principles-based characteristics. We then record the total number of individual characteristics for each standard in U.S. GAAP and IFRS for each year in the sample. We track all changes and update each standard when amended, and the *PBC* score reflects these changes from the effective date of the amendment. Below, we provide detailed explanations of each characteristic.

Accounting choice

Principles-based standards based on broad principles must provide users with flexibility in the accounting choices used to apply these principles (FASB 2002; Alexander and Jermakowicz 2006; DiPiazza et al. 2008; Ball 2016; Bradbury and Schroder 2012). Accounting choice influences the outcomes of an accounting system (Fields et al. 2001). The flexible nature of IFRS allows users to make accounting choices if they do not violate the underlying principle of the standard (Carmona and Trombetta 2008). For example, *IAS 19 Employee Benefits* provides users with choices in valuation methods and how to recognize transitional liabilities. To construct the choice variable (*Choice*), we carefully read each standard and identified the number of accounting choices related to the recognition, disclosure, and presentation of accounting information. We then record the total number of accounting choices in the standard and rank all the standards-year observations across time by the number of accounting choices and set *Choice* equal to one when the standard-year observation is in the top decile rank of pooled U.S. GAAP and IFRS standards, 0 otherwise.

Professional judgment

An important feature of principles-based standards is their reliance on professional judgment to determine appropriate accounting treatment (FASB 2002; Schipper 2003; DiPiazza et al. 2008; Bradbury and Schroder 2012; Ball 2016). The literature suggests that judgment is the basis for achieving a “true and fair” view of accounting information (Benston et al. 2006; DiPiazza et al. 2008). For example, segment reporting (IFRS 8, FAS 131 (Topic 280)), although a converged standard, differs between regimes. IFRS 8 requires managers to use their judgment to determine the operating segments under different circumstances. However, FAS 131 provides specific guidance for recognizing segments for equity-method investees and other circumstances (SEC 2012). The keywords used in the textual analysis for *Judgment* include Assess*, Anal*, Method*, Judg*, Demonst*, Alloc*, Recogni*, and Measur*. For each keyword, we read the surrounding sentences to verify that the keywords contextually refer to the judgment in determining the accounting treatment. We count the total number of references to judgment in the standard. We then rank all the standard-year observations across time by the number of references to judgment and set *Judgment* equal to one when the standard-year observation is in the top decile rank of pooled U.S. GAAP and IFRS standards, 0 otherwise.

Conceptual framework

A key feature of principles-based standards is that they are consistent with and derived from a clear conceptual framework (FASB 2002; SEC 2003; IASB 2008, 2010, 2015; Benston et al. 2006; DiPiazza et al. 2008; Bradbury and Schroder 2012). Standard-setting bodies use a conceptual framework to develop principles, and minor changes or differences in the conceptual framework can alter standards (Bennett et al. 2006). To measure the extent to which a standard is derived from a conceptual framework, we use textual analysis to search each standard for specific keywords. The keywords used in the textual analysis for the *Conceptual* variable include

consistent*, comparab*, conceptual framework, reliab*, time*, relevant*, material*, pertinent*, faithful represent*, and understandab*. For each keyword, we read the surrounding sentences to verify that the keywords contextually refer to a conceptual framework. We then count the total number of keywords in the standard and rank all the standard-year observations across time by the number of conceptual framework keywords and set *Conceptual* equal to one when the standard-year observation is in the top decile rank of pooled U.S. GAAP and IFRS standards, 0 otherwise.

Accounting disclosure

As principles-based standards rely on professional judgment and provide users with considerable choice in how to apply the principles, it follows that such standards necessitate more disclosures and greater transparency (FASB 2002; SEC, 2003; DiPiazza et al. 2008). For example, IFRS, as an accounting regime used by many countries, requires disclosures that are broad enough to encompass the regulatory and legal environments in all countries (Ball 2016). To measure the increased disclosure requirements that may be present in the standards, we perform textual analysis for *Disclosure* using the keyword disclos*. We then read the surrounding sentences to verify the keywords reference the standards' disclosure requirements. We count the number of times disclosure is referenced in each standard in each year. We rank all the standard-year observations across time by the number of references to disclosure and set *Disclosure* equal to one when the standard-year observation is in the top decile rank of pooled U.S. GAAP and IFRS standards, 0 otherwise.

Example

Principles-based standards, by nature, need to provide sufficient examples such that users operationalize and apply the underlying principles consistently. However, additional example

guidance should expand on the principles of the standard and not focus on narrow issues or lists of rules (FASB 2002; Schipper 2003; SEC 2003; Ball 2016). To capture the *Example* characteristic of principles-based standards, we first use textual analysis to search for the keyword: *exampl**. We then read the surrounding sentences to ensure that it is an example of how the standard should be applied. We count the number of embedded examples in the standard, then rank all the standard-year observations across time and set *Example* equal to one when the standard-year observation is in the top decile rank of pooled U.S. GAAP and IFRS standards, 0 otherwise.

II. PBC score construct validation

Comparison to the SEC (2003) classifications

We validate the *PBC* score measure in three ways. Table A1 provides the *PBC* scores for 2008 and 2016 for a set of selected U.S. GAAP standards identified in the SEC (2003) classifications as either rules- or principles-based and their comparable IFRS. For example, U.S. GAAP FAS 142 (Topic 350) is a standard that the SEC identifies as a principles-based standard, and it has a *PBC* score equal to 5, indicating that this standard has all five principles-based characteristics. The SEC (2003) classifies standards as being rules- or principles-based, largely on the presence or absence of rules-based characteristics; thus, we find an overall consistent relationship between some of our *PBC* scores and SEC designation as principles-based standards but do not find this consistent relationship for other standards. For example, the SEC identifies FAS 144 (Topic 360) and FAS 52 (Topic 830) as principles-based standards; however, FAS 144 has a *PBC* score of 2, and FAS 52 has a *PBC* score of 0. Both FAS 144 and FAS 52 are considered principles-based standards by the SEC, largely because of the *absence* of bright lines, high volumes of interpretive guidance, and exceptions. In contrast, our *PBC* score attempts to

identify principles-based standards via the presence of principles-based characteristics. Both the SEC (2003) and FASB (2002) discuss the characteristics of principles-based standards. These characteristics form the basis of the *PBC* score measure.

[Insert Table A1 here]

Correlation analysis

To further validate the *PBC* score and ensure we are capturing the underlying construct of principles-based standards, we follow Donelson et al. (2012, 2016) and conduct a correlation analysis for the five characteristics of the *PBC* score for all U.S. GAAP and IFRS combined. Table A2, Panel A presents the correlation matrix for the five characteristics of the *PBC* score. The correlation below the diagonal is based on the raw values of the five characteristics. The correlation above the diagonal is based on the indicator variables of the five characteristics. All five characteristics are positively associated with one another at the 1% level. Standards that contain more accounting choices tend to reference judgment and conceptual framework ($\mu = 0.23$ and $\mu = 0.28$, respectively). Moreover, standards that contain more accounting choices also tend to include more disclosure requirements ($\mu = 0.25$) and examples ($\mu = 0.24$). Standards that reference judgment are more likely to refer to the conceptual framework ($\mu = 0.39$), contain disclosure requirements ($\mu = 0.38$), and examples ($\mu = 0.46$). Standards that reference conceptual framework are more likely to contain disclosures ($\mu = 0.42$) and examples ($\mu = 0.55$), while standards that have disclosures are more likely to have examples ($\mu = 0.59$).

Factor analysis

To ensure that we capture the underlying construct of principles-based standards, we follow Donelson et al. (2012, 2016) to conduct a factor analysis of the five characteristics of the *PBC* score for all U.S. GAAP and IFRS. Table A2 Panel B lists the eigenvalues obtained from

the factor analysis. Column (1) is based on the raw values of the five characteristics. Column (2) is based on the indicator variables of the five characteristics. Based on the guideline that eigenvalues above 1 indicate a distinct factor (Kaiser 1991), there appears to be a single factor in the data for U.S. GAAP and IFRS. This evidence suggests the five characteristics of the *PBC* score all proxy for a common construct and supports the decision to combine these characteristics into a single measure.

[Insert Table A2 here]

Table A1: Comparison of the *PBC* scores for selected IFRS and U.S. GAAP standards identified in SEC 2003 classifications

| Description | IFRS | <i>PBC</i> by 2008 | | U.S. GAAP Standards | <i>PBC</i> by 2008 | | SEC Classification |
|--|---------|--------------------------|------------|----------------------|--------------------------|------------|--------------------|
| | | 2016 | by 2016 | | 2016 | by 2016 | |
| Recognition of financial assets/liabilities | IAS 39 | 4 | 4 | FAS 140 (Topic 860) | 2 | 3 | Rules-based |
| Post-retirement benefits | IAS 19 | 5 | 5 | FAS 106 (Topic 715) | 1 | 3 | Rules-based |
| Taxes | IAS 12 | 1 | 4 | FAS 109 (Topic 740) | 1 | 1 | Rules-based |
| Stock-based compensation | IFRS 2 | 1 | 1 | FAS 123R (Topic 718) | 4 | 3 | Rules-based |
| Lease accounting | IAS 17 | 0 | 0 | FAS 13 (Topic 840) | 2 | 2 | Rules-based |
| Pensions | IAS 19 | 5 | 5 | FAS 87 (Topic 715) | 3 | 3 | Rules-based |
| Derivatives and Hedging | IAS 39 | 4 | 4 | FAS 133 (Topic 815) | 4 | 4 | Rules-based |
| Accounting for the sale of real estate | IAS 18 | 1 | 0 | FAS 66 (Topic 360) | 1 | 1 | Rules-based |
| | IFRS 15 | n/a | 5 | Topic 606 | n/a | 5 | n/a |
| Consolidation & Disclosure of interest in other entities | IAS 27 | 0 | 0 | ARB 51 (Topic 810) | 0 | 4 | Rules-based |
| | IFRS 10 | n/a | 0 | | | | |
| | IFRS 12 | n/a | 1 | | | | |
| Business combinations | IFRS 3 | 3 | 2 | FAS 141R (Topic 805) | 3 | 3 | Rules-based |
| Intangibles | IAS 38 | 4 | 4 | FAS 142 (Topic 350) | 3 | 5 | Principles-based |
| Long-lived asset impairment | IAS 36 | 3 | 4 | FAS 144 (Topic 360) | 2 | 2 | Principles-based |
| Foreign currency | IAS 21 | 1 | 1 | FAS 52 (Topic 830) | 0 | 0 | Principles-based |
| Inventory | IAS 2 | 2 | 2 | ARB 43-4 (Topic 330) | 2 | 2 | Principles-based |
| Borrowing costs | IAS 23 | 0 | 0 | FAS 34 (Topic 835) | 0 | 0 | Principles-based |

This table provides 2008 and 2016 *PBC* scores for selected U.S. GAAP standards identified by the SEC (2003) classifications as either rules- or principles-based and the scores for corresponding IFRS. The *PBC* score is derived from a summation of five principles-based characteristics: *Choice* equals 1 for standards in the top pooled decile for the number of accounting choices, 0 otherwise. *Judgment* equals 1 for standards in the top pooled decile for judgment in applying the standard, 0 otherwise. *Conceptual* equals 1 for standards in the top pooled decile for references to the conceptual framework, otherwise 0. *Disclosure* equals 1 for standards in the top pooled decile for disclosures, 0 otherwise. *Example* equals 1 for standards in the top pooled decile for examples, 0 otherwise.

Table A2: Principles-based continuum construct validity

| Panel A: Pearson Correlation among Principles-Based Characteristics | | | | | |
|---|--------|----------|------------|------------|---------|
| Variables | Choice | Judgment | Conceptual | Disclosure | Example |
| Choice | 1 | 0.079 | 0.141 | 0.032 | 0.135 |
| Judgment | 0.226 | 1 | 0.370 | 0.335 | 0.475 |
| Conceptual | 0.276 | 0.392 | 1 | 0.258 | 0.490 |
| Disclosure | 0.249 | 0.381 | 0.417 | 1 | 0.201 |
| Example | 0.244 | 0.461 | 0.553 | 0.594 | 1 |

Panel B: Eigenvalues

| Factor | Eigenvalues | Eigenvalues |
|--------|-------------|-------------|
| | (1) | (2) |
| 1 | 2.566 | 2.120 |
| 2 | 0.847 | 0.992 |
| 3 | 0.643 | 0.819 |
| 4 | 0.580 | 0.614 |
| 5 | 0.364 | 0.455 |

Panel A presents the correlation coefficients for the five characteristics of the *PBC* score used in our tests. The correlation below the diagonal is based on the raw values of the five characteristics. The correlation above the diagonal is based on the indicator variables of the five characteristics. These characteristics are variables measured for each standard. Panel B presents the eigenvalues from a factor analysis of these five characteristics variables. Column (1) is based on the raw values of the five characteristics. Column (2) is based on the indicator variables of the five characteristics.

Appendix B

Variable definitions

| <u>Variable</u> | <u>Definition</u> |
|----------------------|---|
| <i>RBC Score</i> | Rules-Based Continuum Score: $RBC_{jt} = BrightLine_{jt} + Except_{jt} + Guide_{jt} + Detail_{jt}$, where <i>BrightLine</i> equals 1 if a standard includes numeric bright-line thresholds, and 0 otherwise. <i>Except</i> equals 1 if a standard includes any scope and legacy exceptions, and 0 otherwise. <i>Guide</i> equals 1 if the number of interpretive guidance for a standard is in the top decile of interpretive guidance in pooled U.S. GAAP and IFRS standards, and 0 otherwise. <i>Detail</i> equals 1 if the total number of words in a standard is in the top decile of words in pooled U.S. GAAP and IFRS standards, and 0 otherwise. |
| <i>PBC Score</i> | Principles-Based Continuum Score: $PBC_{jt} = Choice_{jt} + Judgment_{jt} + Conceptual_{jt} + Disclosure_{jt} + Example_{jt}$. Each indicator (i.e., <i>Choice</i> , <i>Judgment</i> , <i>Conceptual</i> , <i>Disclosure</i> , and <i>Example</i>) is equal to 1 if it is in the top decile of the distribution of pooled U.S. GAAP and IFRS standards for accounting choice, professional judgment, conceptual framework, disclosure, and examples over the entire sample period, and 0 otherwise. See Appendix A for details. |
| <i>T</i> | A time trend variable, measured as year t -1991. |
| <i>Formal_0305</i> | Equals 1 if the year t is between 2003 to 2005, 0 otherwise. |
| <i>Formal_0608</i> | Equals 1 if the year t is between 2006 to 2008, 0 otherwise. |
| <i>Formal_0912</i> | Equals 1 if the year t is between 2009 to 2012, 0 otherwise. |
| <i>Informal_1316</i> | Equals 1 if the year t is between 2013 to 2016, 0 otherwise. |
| <i>Converg</i> | The number of times the convergence project is referenced in the standard. |
| <i>Age</i> | The age of the standard in U.S. GAAP or IFRS. |
| <i>Complex</i> | The number of times FASB or IASB referred to the standard's underlying transactions as complex. To identify complex underlying transactions, we use the same approach as Donelson et al. (2012): we perform a keyword search for stem words such as "complic" or "complex" and search for instances where standard-setters refer to the underlying transaction as complex. |
| <i>FairValue</i> | Equals 1 if the U.S. GAAP standard was amended by FAS 157 (Topic 820) or if the IFRS standard was amended by IFRS 13. |
| <i>Frequency</i> | A proxy for constraining opportunism that measures the frequency with which transactions are mentioned in item 7 of 10-K filings for U.S. GAAP and item 5 of 20-F filings for firms that use IFRS. This measure captures how frequently the standard's underlying transaction is applied in practice. |
| <i>Ln(Freq)</i> | The log of 1 plus <i>Frequency</i> . |
| <i>SCDL</i> | Equals the number of times a standard was violated in major accounting scandals, scaled by the total number of accounting standards. A proxy for constraining opportunism derived from major accounting scandals. For the U.S. GAAP sample, we follow Donelson et al. (2016) and use Clikeman's 2009 publication, <i>Called to Account: Fourteen Financial Frauds that Shaped the American Accounting Profession</i> , to identify the major accounting scandals that elicited public reaction and regulatory response. For the IFRS sample, we use Jones' 2011 publication, <i>Creative Accounting: Fraud and International Accounting Standards</i> , to identify major accounting scandals for IFRS. |

| | |
|-------------------|---|
| <i>Litigation</i> | Litigation captures how frequently a standard was involved in securities litigation from 1996 to 2006 for the 2008 sample and from 1996 to 2014 for the 2016 sample. We use the Stanford Securities Litigation Analytics database to find settled securities litigation specifically related to accounting issues to measure litigation risk. |
| <i>Ln(Lit)</i> | The log of 1 plus <i>Litigation</i> . |
| <i>FASB_led</i> | Equals 1 if the standard covers a topic involved in FASB-led convergence projects, 0 otherwise. |
| <i>IASB_led</i> | Equals 1 if the standard covers a topic involved in IASB-led convergence projects, 0 otherwise. |
| <i>Enforce</i> | The number of times an IFRS standard was involved in ESMA enforcement actions for the years 2005-2008 for the 2008 sample and 2005-2016 for the 2016 sample. Enforcement data is collected from the published ESMA EECS Database of Enforcement in July 2021. |
| <i>HHI</i> | The average HHI ($\sum_{i=1}^n s_i^2$ where s_i is the market share of each firm and n is the number of firms in the market) of countries requiring or permitting IFRS as of the most recent year the standard was issued or amended. World Bank WITS Herfindahl–Hirschman Market Concentration by country is used to develop this variable. |
| <i>BdMemCom</i> | The percent of IASB members from common law countries. |
| <i>USEdExp</i> | The percent of IASB members with a U.S. educational and/or work experience. |
| <i>TREAT</i> | Equals 11 for the treatment standards, which are standard involved in the convergence project, 0 otherwise; |
| <i>POST</i> | Equals 11 for the years 2014, 2015, and 2016, and 0 for the years 1998, 1999, and 2000. |

Acknowledgements Our sincere appreciation goes to two anonymous reviewers and Patricia Dechow, the editor, for their valuable comments and guidance to improve the quality of the paper. We are grateful for helpful comments and suggestions from Eric Allen, Agnes Cheng, Begoña Giner, Luzi Hail (discussant), Elaine Henry, Robert Larson, Linda Myers, and conference participants at the 2017 American Accounting Association annual meeting, the 2018 and 2023 *Journal of International Accounting Research* Conference, and workshop participants at Florida International University, Marquette University, University of California at Riverside, University of Cincinnati, University of Denver, and University of Memphis.

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Table 1: Type and number of accounting standards under U.S. GAAP and IFRS in selected years

Panel A: U.S. GAAP

| Type of Standard | 1953 | 1960 | 1962 | 1970 | 1973 | 1976 | 1980 | 1985 | 1990 | 1995 | 1998 | 2000 | 2002 | 2004 | 2005 | 2010 | 2012 | 2014 | 2015 | 2016 |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| FASB Codification Topic | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Accounting Principles Board Opinions (APBs) | 0 | 0 | 2 | 14 | 27 | 27 | 23 | 23 | 18 | 17 | 16 | 16 | 14 | 14 | 14 | 13 | 13 | 13 | 13 | 13 |
| Accounting Research Bulletins (ARBs) | 26 | 32 | 32 | 25 | 22 | 20 | 20 | 20 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 14 | 14 | 14 | 14 |
| Statement of Financial Accounting Concepts (SFAC) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Financial Accounting Standards (FAS) | 0 | 0 | 0 | 0 | 1 | 6 | 16 | 38 | 43 | 51 | 54 | 55 | 56 | 56 | 58 | 61 | 61 | 61 | 61 | 61 |
| Statement of Position (SOP) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| SEC Staff Bulletins (SAB) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Emerging Issue Task Force (EITF) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Total | 26 | 32 | 34 | 39 | 50 | 53 | 59 | 82 | 81 | 88 | 91 | 94 | 93 | 93 | 95 | 97 | 92 | 92 | 93 | 93 |

This panel provides the type and number of accounting standards in U.S. GAAP for select years. In 2009, the FASB codified U.S. GAAP into topics, however, the codification provides a mapping tool to the pre-codification standards.

Panel B: IFRS

| Type of Standard | 1976 | 1980 | 1985 | 1990 | 1995 | 1998 | 2000 | 2002 | 2004 | 2005 | 2010 | 2012 | 2014 | 2015 | 2016 |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| International Accounting Standards (IAS) | 5 | 13 | 23 | 27 | 29 | 30 | 31 | 33 | 32 | 31 | 29 | 29 | 28 | 28 | 28 |
| International Financial Reporting Standards (IFRS) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 9 | 9 | 15 | 15 | 15 |
| Statement of Interpretations Committee (SIC) | 0 | 0 | 0 | 0 | 0 | 8 | 21 | 31 | 23 | 11 | 11 | 10 | 8 | 7 | 7 |
| IFRS Interpretations Committee (IFRIC) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 16 | 16 | 18 | 15 | 15 |
| Total | 5 | 13 | 23 | 27 | 29 | 38 | 52 | 64 | 59 | 49 | 65 | 64 | 69 | 65 | 65 |

This panel provides the type and number of accounting standards under IFRS for select years.

Table 2: Comparison of the *RBC* score and its characteristics for U.S. GAAP and IFRS

Panel A: U.S. GAAP

| | U.S. GAAP (n=4,277) | | 1953-2016 | | 2002 (n=93) | | 2005 (n=95) | | 2009 (n=96) | | 2012 (n=92) | | 2016 (n=93) | | Diff in the mean between 2002 and | | | |
|-------------------|------------------------|--------|-----------|--------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|-----------------------------------|-------|------|------|
| | Mean | Median | Mean | Median | Mean | Median | Mean | Median | Mean | Median | Mean | Median | Mean | Median | 2005 | 2009 | 2012 | 2016 |
| <i>RBC score</i> | 0.795 | 0.000 | 1.075 | 1.000 | 1.105 | 1.000 | 1.115 | 1.000 | 1.163 | 1.000 | 1.183 | 1.000 | 0.030 | 0.040 | 0.088 | 0.108 | | |
| <i>BrightLine</i> | 0.138 | 0.000 | 0.172 | 0.000 | 0.168 | 0.000 | 0.146 | 0.000 | 0.152 | 0.000 | 0.151 | 0.000 | -0.004 | -0.026 | -0.020 | 0.021 | | |
| <i>Except</i> | 0.405 | 0.000 | 0.484 | 0.000 | 0.495 | 0.000 | 0.510 | 1.000 | 0.533 | 1.000 | 0.548 | 1.000 | 0.011 | 0.026 | 0.049 | 0.064 | | |
| <i>Guide</i> | 0.120 | 0.000 | 0.204 | 0.000 | 0.221 | 0.000 | 0.208 | 0.000 | 0.217 | 0.000 | 0.215 | 0.000 | 0.017 | 0.004 | 0.013 | 0.011 | | |
| <i>Detail</i> | 0.132 | 0.000 | 0.215 | 0.000 | 0.221 | 0.000 | 0.250 | 0.000 | 0.261 | 0.000 | 0.269 | 0.000 | 0.006 | 0.035 | 0.046 | 0.054 | | |

Panel B: IFRS (IAS, IFRS, IFRIC, and SIC)

| | IFRS (n=1,601) | | 1976-2016 | | 2002 (n=64) | | 2005 (n=49) | | 2009 (n=65) | | 2012 (n=64) | | 2016 (n=65) | | Diff in the mean between 2002 and | | | |
|-------------------|----------------|--------|-----------|--------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|-------------|----------|-----------------------------------|----------|------|------|
| | Mean | Median | Mean | Median | Mean | Median | Mean | Median | Mean | Median | Mean | Median | Mean | Median | 2005 | 2009 | 2012 | 2016 |
| <i>RBC score</i> | 0.454 | 0.000 | 0.297 | 0.000 | 0.510 | 1.000 | 0.569 | 0.000 | 0.609 | 0.000 | 0.692 | 1.000 | 0.213** | 0.272** | 0.312*** | 0.395*** | | |
| <i>BrightLine</i> | 0.032 | 0.000 | 0.031 | 0.000 | 0.041 | 0.000 | 0.031 | 0.000 | 0.031 | 0.000 | 0.031 | 0.000 | 0.010 | 0.000 | 0.000 | 0.000 | | |
| <i>Except</i> | 0.355 | 0.000 | 0.250 | 0.000 | 0.429 | 0.000 | 0.400 | 0.000 | 0.422 | 0.000 | 0.462 | 0.000 | 0.179** | 0.150* | 0.172** | 0.212** | | |
| <i>Guide</i> | 0.051 | 0.000 | 0.000 | 0.000 | 0.041 | 0.000 | 0.123 | 0.000 | 0.125 | 0.000 | 0.138 | 0.000 | 0.041 | 0.123*** | 0.125*** | 0.138*** | | |
| <i>Detail</i> | 0.016 | 0.000 | 0.016 | 0.000 | 0.000 | 0.000 | 0.015 | 0.000 | 0.031 | 0.000 | 0.062 | 0.000 | -0.016 | -0.001 | 0.015 | 0.046 | | |

Panel C: Difference in mean U.S.GAAP and IFRS

| | U.S.GAAP vs IFRS | | | | | |
|-------------------|---------------------|--------------|--------------|--------------|--------------|--------------|
| | Diff in mean | 2002 | 2005 | 2009 | 2012 | 2016 |
| | Diff in mean | Diff in mean | Diff in mean | Diff in mean | Diff in mean | Diff in mean |
| <i>RBC score</i> | 0.341*** | 0.778*** | 0.595*** | 0.546*** | 0.554*** | 0.491** |
| <i>BrightLine</i> | 0.106*** | 0.141*** | 0.127** | 0.115** | 0.121** | 0.120** |
| <i>Except</i> | 0.050*** | 0.234*** | 0.066 | 0.110 | 0.111 | 0.086 |
| <i>Guide</i> | 0.069*** | 0.204*** | 0.180*** | 0.085 | 0.092 | 0.077 |
| <i>Detail</i> | 0.116*** | 0.199*** | 0.221*** | 0.235*** | 0.230*** | 0.207*** |

The *RBC* score is derived from a summation of four rules-based characteristics: *BrightLine*, *Except*, *Guide*, and *Detail*. *BrightLine* equals 1 if a standard includes numeric bright-line thresholds, and 0 otherwise. *Except* equals 1 if a standard includes any scope and legacy exceptions, and 0 otherwise. *Guide* equals 1 if the number of interpretive guidance for a standard is in the top decile of interpretive guidance in pooled U.S. GAAP and IFRS standards, and 0 otherwise. *Detail* equals 1 if the total number of words in a standard is in the top decile of words in pooled U.S. GAAP and IFRS standards, and 0 otherwise.

Table 2: Comparison of the *RBC* score and its characteristics for U.S. GAAP and IFRS

Panel D: The impact of convergence effect on the *RBC* scores for U.S. GAAP and IFRS after controlling for the time trend

| | <u>U.S. GAAP</u> | | <u>IFRS</u> | |
|------------------------|------------------|----------------|-----------------|----------------|
| | <u>Estimate</u> | <u>p-value</u> | <u>Estimate</u> | <u>p-value</u> |
| Intercept | 0.7842 | <.0001 | 0.1991 | <.0001 |
| <i>T</i> | 0.0257 | <.0001 | 0.0126 | 0.0007 |
| <i>Formal_0305</i> | -0.0154 | 0.4543 | 0.0148 | 0.6724 |
| <i>Formal_0608</i> | -0.0928 | 0.0011 | 0.1293 | 0.0055 |
| <i>Formal_0912</i> | -0.1349 | 0.0001 | 0.1390 | 0.0108 |
| <i>Informal_1316</i> | -0.2130 | <.0001 | 0.1626 | 0.0146 |
| Model | 154.764 | | 87.2552 | |
| Adj. R ² | 0.9685 | | 0.9452 | |
| Number of Observations | 26 | | 26 | |

This panel provides the time trend analysis for the *RBC* scores for U.S. GAAP and IFRS starting in 1991 across three time periods for formal convergence (2003-2005; 2006-2008; 2009-2012) and one period of informal convergence (2013-2016). *T* is measured as (year t – 1991). *Formal_0305* is equal to 1 if year t is between 2003 to 2005, 0 otherwise. *Formal_0608* is equal to 1 if year t is between 2006 to 2008, 0 otherwise. *Formal_0912* is equal to 1 if year t is between 2009 to 2012, 0 otherwise. *Informal_1316* is equal to 1 if year t is between 2013 to 2016, 0 otherwise.

Table 3: Comparison of the *PBC* score and its characteristics for U.S. GAAP and IFRS

Panel A: U.S. GAAP

| | U.S. GAAP (n=4,277) | | 2002 (n=93) | | 2005 (n=95) | | 2009 (n=96) | | 2012 (n=92) | | 2016 (n=93) | | Diff in the mean between 2002 and | | | |
|-------------------|------------------------|--------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|-----------------------------------|--------|---------|---------|
| | Mean | Median | Mean | Median | Mean | Median | Mean | Median | Mean | Median | Mean | Median | 2005 | 2009 | 2012 | 2016 |
| <i>PBC score</i> | 0.389 | 0.000 | 0.473 | 0.000 | 0.505 | 0.000 | 0.656 | 0.000 | 0.75 | 0.000 | 0.849 | 0.000 | 0.032 | 0.183 | 0.277* | 0.376** |
| <i>Choice</i> | 0.051 | 0.000 | 0.043 | 0.000 | 0.042 | 0.000 | 0.031 | 0.000 | 0.033 | 0.000 | 0.065 | 0.000 | -0.001 | -0.012 | -0.010 | 0.022 |
| <i>Judgment</i> | 0.069 | 0.000 | 0.118 | 0.000 | 0.126 | 0.000 | 0.177 | 0.000 | 0.185 | 0.000 | 0.194 | 0.000 | -0.008 | 0.059 | 0.067 | 0.076 |
| <i>Conceptual</i> | 0.102 | 0.000 | 0.129 | 0.000 | 0.126 | 0.000 | 0.156 | 0.000 | 0.163 | 0.000 | 0.161 | 0.000 | -0.003 | 0.027 | 0.034 | 0.032 |
| <i>Disclosure</i> | 0.093 | 0.000 | 0.075 | 0.000 | 0.095 | 0.000 | 0.146 | 0.000 | 0.185 | 0.000 | 0.183 | 0.000 | 0.020 | 0.071 | 0.110** | 0.108** |
| <i>Example</i> | 0.074 | 0.000 | 0.108 | 0.000 | 0.116 | 0.000 | 0.146 | 0.000 | 0.185 | 0.000 | 0.247 | 0.000 | 0.008 | 0.038 | 0.077 | 0.139** |

Panel B: IFRS (IAS, IFRS, IFRIC, and SIC)

| | IFRS (n=1,601) | | 2002 (n=64) | | 2005 (n=49) | | 2009 (n=65) | | 2012 (n=64) | | 2016 (n=65) | | Diff in the mean between 2002 and | | | |
|-------------------|----------------|--------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|-----------------------------------|---------|---------|----------|
| | Mean | Median | Mean | Median | Mean | Median | Mean | Median | Mean | Median | Mean | Median | 2005 | 2009 | 2012 | 2016 |
| <i>PBC score</i> | 0.763 | 0.000 | 0.750 | 0.000 | 1.184 | 0.000 | 0.923 | 0.000 | 1.016 | 0.000 | 1.169 | 0.000 | 0.434 | 0.173 | 0.266 | 0.419* |
| <i>Choice</i> | 0.176 | 0.000 | 0.188 | 0.000 | 0.143 | 0.000 | 0.108 | 0.000 | 0.109 | 0.000 | 0.123 | 0.000 | -0.045 | -0.080 | -0.079 | -0.065 |
| <i>Judgment</i> | 0.189 | 0.000 | 0.141 | 0.000 | 0.347 | 0.000 | 0.292 | 0.000 | 0.328 | 0.000 | 0.369 | 0.000 | 0.206** | 0.151** | 0.187** | 0.228*** |
| <i>Conceptual</i> | 0.109 | 0.000 | 0.172 | 0.000 | 0.224 | 0.000 | 0.169 | 0.000 | 0.156 | 0.000 | 0.215 | 0.000 | 0.052 | 0.003 | -0.016 | 0.043 |
| <i>Disclosure</i> | 0.144 | 0.000 | 0.109 | 0.000 | 0.204 | 0.000 | 0.185 | 0.000 | 0.219 | 0.000 | 0.246 | 0.000 | 0.095 | 0.076 | 0.110* | 0.137** |
| <i>Example</i> | 0.144 | 0.000 | 0.141 | 0.000 | 0.265 | 0.000 | 0.169 | 0.000 | 0.203 | 0.000 | 0.215 | 0.000 | 0.124* | 0.028 | 0.062 | 0.074 |

Panel C: Difference in mean U.S.GAAP and IFRS

| | U.S.GAAP vs IFRS | | 2002 | | 2005 | | 2009 | | 2012 | | 2016 | | | | | |
|-------------------|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------|------|------|------|
| | Diff in Mean | Diff in mean | Diff in mean | Diff in mean | Diff in mean | Diff in mean | Diff in mean | Diff in mean | Diff in mean | Diff in mean | Diff in mean | Diff in mean | 2005 | 2009 | 2012 | 2016 |
| <i>PBC score</i> | -0.373*** | -0.277* | -0.679*** | -0.267 | -0.266 | -0.320 | | | | | | | | | | |
| <i>Choice</i> | -0.125*** | -0.145*** | -0.101** | -0.077* | -0.076* | -0.058 | | | | | | | | | | |
| <i>Judgment</i> | -0.120*** | -0.023 | -0.221*** | -0.115* | -0.143** | -0.175** | | | | | | | | | | |
| <i>Conceptual</i> | -0.007 | -0.043 | -0.098 | -0.013 | 0.007 | -0.054 | | | | | | | | | | |
| <i>Disclosure</i> | -0.051*** | -0.034 | -0.109* | -0.039 | -0.034 | -0.063 | | | | | | | | | | |
| <i>Example</i> | -0.070*** | -0.033 | -0.149** | -0.023 | -0.018 | 0.032 | | | | | | | | | | |

The *PBC* score is derived from a summation of the five principles-based characteristics based on the top pooled decile for each characteristic. *Choice*, *Judgment*, *Conceptual*, *Disclosure*, and *Example* each equal 1 if the standard is in the top decile of the distribution of pooled U.S. GAAP and IFRS standards for that characteristic, 0 otherwise. Appendix A provides details of the construction of the *PBC* score.

Table 3: Comparison of the *PBC* score and its characteristics for U.S. GAAP and IFRS

Panel D: The impact of convergence effect on the *PBC* score for U.S. GAAP and IFRS after controlling for the time trend

| | U.S. GAAP | | IFRS | |
|------------------------|-----------|---------|----------|---------|
| | Estimate | p-value | Estimate | p-value |
| Intercept | 0.2547 | <.0001 | 0.2493 | <.0001 |
| <i>T</i> | 0.0183 | <.0001 | 0.0422 | <.0001 |
| Formal_0305 | -0.0165 | 0.4301 | 0.1856 | 0.0042 |
| Formal_0608 | -0.0112 | 0.6537 | 0.0941 | 0.1884 |
| Formal_0912 | 0.1033 | 0.0022 | -0.0945 | 0.2638 |
| Informal_1316 | 0.1194 | 0.0035 | -0.1039 | 0.3166 |
| Model | 316.712 | | 108.014 | |
| Adj. R ² | 0.9844 | | 0.9554 | |
| Number of Observations | 26 | | 26 | |

This panel provides the time trend analysis for the *PBC* score for U.S. GAAP and IFRS starting in 1991 across three time periods for formal convergence (2003-2005; 2006-2008; 2009-2012) and one period of informal convergence (2013-2016). *T* is measured as (year *t* – 1991). *Formal_0305* is equal to 1 if year *t* is between 2003 and 2005, 0 otherwise. *Formal_0608* is equal to 1 if year *t* is between 2006 and 2008, 0 otherwise. *Formal_0912* is equal to 1 if year *t* is between 2009 and 2012, 0 otherwise. *Informal_1316* is equal to 1 if year *t* is between 2013 and 2016, 0 otherwise.

Table 4: Descriptive statistics and multivariate analysis for U.S. GAAP

Panel A: Descriptive statistics for U.S. GAAP 2008 and 2016 sample

| | U.S. GAAP 2008 sample (n= 95) | | | U.S. GAAP 2016 sample (n=93) | | |
|------------------|-------------------------------|--------|---------|------------------------------|--------|---------|
| Variable | Mean | Median | Std Dev | Mean | Median | Std Dev |
| <i>RBC score</i> | 1.126 | 1.000 | 1.240 | 1.183 | 1.000 | 1.224 |
| <i>PBC score</i> | 0.568 | 0.000 | 0.975 | 0.849 | 0.000 | 1.310 |
| <i>Converg</i> | 0.758 | 0.000 | 1.911 | 0.516 | 0.000 | 1.348 |
| <i>Age</i> | 33.121 | 31.000 | 17.194 | 39.621 | 39.000 | 17.177 |
| <i>Complex</i> | 0.758 | 0.000 | 1.977 | 0.677 | 0.000 | 1.490 |
| <i>FairValue</i> | 0.284 | 0.000 | 0.453 | 0.258 | 0.000 | 0.440 |
| <i>Ln(Freq)</i> | 0.705 | 0.000 | 1.320 | 0.399 | 0.000 | 0.785 |
| <i>SCDL</i> | 0.421 | 0.000 | 1.097 | 0.430 | 0.000 | 1.107 |
| <i>Ln(Lit)</i> | 1.652 | 1.099 | 1.869 | 1.844 | 1.946 | 1.600 |
| <i>FASB_led</i> | 0.095 | 0.000 | 0.294 | 0.054 | 0.000 | 0.227 |
| <i>IASB_led</i> | 0.063 | 0.000 | 0.245 | 0.054 | 0.000 | 0.227 |

This panel presents the descriptive statistics for the U.S. GAAP sample used for the cross-sectional analysis. The left three columns present the descriptive statistics for the 2008 sample and the right three columns are for the 2016 sample. *RBC score* is the rules-based continuum score of the standard for each year. *PBC score* is the principles-based continuum score of the standard for each year. *Converg* is the number of times FASB refers to the convergence project in the body of the standard or explanatory section. *Age* is the age of the standard. *Complex* is the number of times FASB refers to the underlying transaction of a standard as complex. *FairValue* is equal to 1 if the standard was amended by FAS 157 (Topic 820), 0 otherwise. *Frequency* is the average number of times the standard's underlying transaction is mentioned in item 7 of 10-K filings for each year. *Ln(Freq)* is the log (1+ *Frequency*). *SCDL* is equal to the number of times the standard was violated in 9 major frauds, scaled by the total number of accounting standards. *Ln(Lit)* is the log (1+ *Litigation*), where *Litigation* is the number of times the standard was cited in settled securities litigation related to accounting issues from 1996-2006 for the 2008 sample and 1996-2014 for the 2016 sample. *FASB_led* is equal to 1 if the standard was part of a convergence topic led by FASB, 0 otherwise. *IASB_led* is equal to 1 if the standard was part of a convergence topic led by IASB, 0 otherwise.

Table 4: Descriptive statistics and multivariate analysis for U.S. GAAP (cont.)

Panel B: Pearson correlation coefficients for U.S. GAAP 2008 and 2016 sample

| | <i>RBC score</i> | <i>PBC score</i> | <i>Converg</i> | <i>Age</i> | <i>Complex</i> | <i>FairValue</i> | <i>Ln(Freq)</i> | <i>SCDL</i> | <i>Ln(Lit)</i> | <i>FASB_led</i> | <i>IASB_led</i> |
|------------------|------------------|------------------|----------------|---------------|----------------|------------------|-----------------|--------------|----------------|-----------------|-----------------|
| <i>RBC score</i> | 1 | 0.556 | 0.381 | -0.428 | 0.603 | 0.503 | 0.740 | 0.117 | 0.638 | 0.404 | -0.062 |
| <i>PBC score</i> | 0.580 | 1 | 0.560 | -0.528 | 0.453 | 0.305 | 0.492 | 0.152 | 0.383 | 0.255 | 0.116 |
| <i>Converg</i> | 0.311 | 0.315 | 1 | -0.422 | 0.342 | 0.154 | 0.314 | 0.034 | 0.260 | 0.268 | -0.035 |
| <i>Age</i> | -0.381 | -0.379 | -0.402 | 1 | -0.166 | -0.461 | -0.276 | 0.055 | -0.130 | -0.346 | 0.035 |
| <i>Complex</i> | 0.348 | 0.303 | 0.398 | -0.265 | 1 | 0.173 | 0.606 | 0.067 | 0.472 | 0.277 | -0.034 |
| <i>FairValue</i> | 0.275 | 0.200 | 0.048 | -0.247 | -0.004 | 1 | 0.244 | 0.078 | 0.143 | 0.274 | -0.068 |
| <i>Ln(Freq)</i> | 0.395 | 0.324 | 0.296 | -0.136 | 0.133 | 0.016 | 1 | 0.127 | 0.661 | 0.255 | -0.066 |
| <i>SCDL</i> | 0.070 | 0.158 | 0.024 | 0.128 | 0.085 | 0.015 | 0.016 | 1 | 0.378 | 0.139 | 0.336 |
| <i>Ln(Lit)</i> | 0.305 | 0.320 | 0.175 | -0.108 | 0.131 | 0.000 | 0.151 | 0.492 | 1 | 0.365 | 0.107 |
| <i>FASB_led</i> | 0.277 | 0.210 | 0.122 | -0.204 | 0.052 | 0.077 | 0.137 | 0.123 | 0.059 | 1 | -0.084 |
| <i>IASB_led</i> | 0.238 | 0.174 | -0.021 | -0.061 | 0.020 | -0.141 | 0.312 | 0.080 | 0.066 | 0.155 | 1 |

The coefficients above (below) the diagonal are the Pearson correlation coefficients for the U.S. GAAP 2008 (2016) sample. The coefficients in **bold** are significant at the 0.01 level. The coefficients in *italics* are significant at the 0.10 level. The other coefficients are not significant at the 0.10 level.

Table 4: Descriptive statistics and multivariate analysis for U.S. GAAP (cont.)

Panel C: Factors affecting cross-sectional variation in *RBC* scores across all U.S. GAAP

| Variable | Pred. Sign | U.S. GAAP 2008 Sample | | U.S. GAAP 2016 Sample | |
|---------------------|------------|-----------------------|---------------|-----------------------|---------------|
| | | Estimate | p-value | Estimate | p-value |
| Intercept | | 0.5107 | 0.0235 | 0.704 | 0.0595 |
| <i>Converg</i> | ? | 0.0307 | 0.4599 | 0.0241 | 0.7890 |
| <i>Age</i> | + | -0.0068 | 0.1813 | -0.0096 | 0.1697 |
| <i>Complex</i> | + | 0.1126 | 0.0137 | 0.1950 | 0.0101 |
| <i>FairValue</i> | + | 0.7956 | <.0001 | 0.6934 | 0.0048 |
| <i>Ln(Freq)</i> | + | 0.3109 | 0.0002 | 0.3538 | 0.0151 |
| <i>SCDL</i> | ? | -0.0714 | 0.3231 | -0.1048 | 0.3365 |
| <i>Ln(Lit)</i> | + | 0.1825 | 0.0014 | 0.1891 | 0.0128 |
| <i>FASB_led</i> | + | 0.2186 | 0.4182 | 0.8469 | 0.0699 |
| <i>IASB_led</i> | - | -0.065 | 0.8292 | 0.8492 | 0.0808 |
| Adj. R ² | | 0.7214 | | 0.3904 | |
| N | | 95 | | 93 | |

This panel presents the results of examining factors affecting cross-sectional variation in the *RBC* score of U.S. GAAP for 2008 and 2016. *RBC* score is the rules-based continuum score of a standard for each year. *Converg* is the number of times FASB refers to the convergence project in the body of the standard or explanatory section. *Age* is the age of the standard. *Complex* is the number of times FASB refers to the underlying transaction of a standard as complex. *FairValue* is equal to 1 if the standard was amended by FAS 157 (Topic 820), 0 otherwise. *Ln(Freq)* is the log (1+ *Frequency*), where *Frequency* is the average number of times the standard's underlying transaction is mentioned in item 7 of 10-K filings for each year. *SCDL* is equal to the number of times the standard was violated in 9 major frauds, scaled by the total number of accounting standards. *Ln(Lit)* is the log (1+ *Litigation*), where *Litigation* is the number of times the standard was cited in settled securities litigation related to accounting issues from 1996-2006 for the 2008 sample and 1996-2014 for the 2016 sample. *FASB_led* is equal to 1 if the standard falls under a convergence topic that is FASB led, 0 otherwise. *IASB_led* is equal to 1 if the standard falls under a convergence topic that is IASB led, 0 otherwise.

Table 4: Descriptive statistics and multivariate regression for U.S. GAAP (cont.)

Panel D: Factors affecting cross-sectional variation in *PBC* scores across all U.S. GAAP

| Variable | Pred. Sign | U.S. GAAP 2008 Sample | | U.S. GAAP 2016 Sample | |
|-----------------------|------------|-----------------------|---------------|-----------------------|---------------|
| | | Estimate | p-value | Estimate | p-value |
| Intercept | | 0.7918 | 0.0010 | 0.7379 | 0.0905 |
| <i>Converg</i> | ? | 0.1580 | 0.0005 | 0.0578 | 0.5832 |
| <i>Age</i> | + | -0.0181 | 0.0010 | -0.0161 | 0.0504 |
| <i>Complex</i> | - | 0.0872 | 0.0671 | 0.1435 | 0.1012 |
| <i>FairValue</i> | + | 0.1052 | 0.5647 | 0.4442 | 0.1163 |
| <i>Ln(Freq)</i> | + | 0.1341 | 0.1161 | 0.3026 | 0.0731 |
| <i>SCDL</i> | + | 0.0663 | 0.3831 | 0.0541 | 0.6709 |
| <i>Ln(Lit)</i> | ? | 0.0153 | 0.7925 | 0.1676 | 0.0571 |
| <i>FASB_led</i> | + | -0.1916 | 0.4997 | 0.4808 | 0.3752 |
| <i>IASB_led</i> | - | 0.5025 | 0.1156 | 0.5403 | 0.3389 |
| Adj. R ² | | 0.5014 | | 0.2722 | |
| N | | 95 | | 93 | |

This panel presents the results of examining factors affecting cross-sectional variation in the *PBC* score of U.S. GAAP for 2008 and 2016. *PBC* score is the principles-based continuum score of the standard for each year. *Converg* is the number of times FASB refers to the convergence project in the body of the standard or explanatory section. *Age* is the age of the standard. *Complex* is the number of times FASB refers to the underlying transaction of a standard as complex. *FairValue* is equal to 1 if the standard was amended by FAS 157 (Topic 820), 0 otherwise. *Ln(Freq)* is the log (1+ *Frequency*), where *Frequency* is the average number of times the standard's underlying transaction is mentioned in item 7 of 10-K filings for each year. *SCDL* is equal to the number of times the standard was violated in 9 major frauds, scaled by the total number of accounting standards. *Ln(Lit)* is the log (1+ *Litigation*), where *Litigation* is the number of times the standard was cited in settled securities litigation related to accounting issues from 1996-2006 for the 2008 sample and 1996-2014 for the 2016 sample. *FASB_led* is equal to 1 if the standard falls under a convergence topic that is FASB led, 0 otherwise. *IASB_led* is equal to 1 if the standard falls under a convergence topic that is IASB led, 0 otherwise.

Table 5: Descriptive statistics and multivariate analysis for IFRS

Panel A: Descriptive statistics for IFRS 2008 and 2016 sample

| Variable | IFRS 2008 sample (n= 63) | | | IFRS 2016 sample (n= 65) | | |
|------------------|-----------------------------|--------|---------|-----------------------------|--------|---------|
| | Mean | Median | Std Dev | Mean | Median | Std Dev |
| <i>RBC score</i> | 0.556 | 0.000 | 0.690 | 0.692 | 1.000 | 0.769 |
| <i>PBC score</i> | 0.968 | 0.000 | 1.391 | 1.169 | 0.000 | 1.527 |
| <i>Converg</i> | 1.825 | 0.000 | 4.412 | 0.708 | 0.000 | 1.720 |
| <i>Age</i> | 11.245 | 8.500 | 10.005 | 17.278 | 14.000 | 10.887 |
| <i>Complex</i> | 0.254 | 0.000 | 0.842 | 0.369 | 0.000 | 1.084 |
| <i>FairValue</i> | 0.095 | 0.000 | 0.296 | 0.431 | 0.000 | 0.499 |
| <i>Ln(Freq)</i> | 0.329 | 0.000 | 0.588 | 0.451 | 0.000 | 0.856 |
| <i>SCDL</i> | 0.413 | 0.000 | 0.978 | 0.492 | 0.000 | 1.187 |
| <i>Enforce</i> | 1.587 | 0.000 | 2.821 | 4.400 | 1.000 | 6.988 |
| <i>HHI</i> | 0.205 | 0.140 | 0.140 | 0.391 | 0.385 | 0.175 |
| <i>BdMemCom</i> | 0.616 | 0.643 | 0.119 | 0.556 | 0.500 | 0.102 |
| <i>USEdExp</i> | 0.222 | 0.214 | 0.012 | 0.193 | 0.214 | 0.054 |
| <i>FASB_led</i> | 0.143 | 0.000 | 0.353 | 0.262 | 0.000 | 0.443 |
| <i>IASB_led</i> | 0.111 | 0.000 | 0.317 | 0.092 | 0.000 | 0.292 |

This panel presents the descriptive statistics for the IFRS sample used for cross-sectional analysis. The left three columns present the descriptive statistics for the 2008 sample and the right three columns are for the 2016 sample. *RBC score* is the rules-based continuum score of the standard for each year. *PBC score* is the principles-based continuum score of the standard for each year. *Converg* is the number of times IASB refers to the convergence project in the body of the standard or explanatory section. *Age* is the age of the standard. *Complex* is the number of times the IASB refers to the underlying transaction of a standard as complex. *FairValue* is equal to 1 if the standard was amended by IFRS 13, 0 otherwise. *Frequency* is the average number of times the standard's underlying transaction is mentioned in item 5 of English language IFRS 20-F filings for each year. *Ln(Freq)* is the log (1+ *Frequency*). *SCDL* is the number of times the standard was violated in major international scandals scaled by the number of standards from *Creative Accounting: Fraud and International Accounting Scandals*, Jones 2011). *Enforce* is the number of times the standard was involved in ESMA enforcement actions for years 2005 to 2008 for the 2008 sample and 2005 to 2016 for the 2016 sample. This data is from the published ESMA EECS Database of Enforcement in July 2021. *HHI* is the Herfindahl–Hirschman Index of countries requiring or permitting IFRS as of the most recent year the standard was issued or amended. *BdMemCom* is the percentage of IASB board members from common-law countries as of the most recent year the standard was issued or amended. *USEdExp* is the percentage of IASB members with U.S. educational background and/or work experience as of the most recent year the standard was issued or amended. *FASB_led* is equal to 1 if the standard was part of a convergence topic led by FASB, 0 otherwise. *IASB_led* is equal to 1 if the standard was part of a convergence topic led by IASB, 0 otherwise.

Table 5: Descriptive statistics and multivariate analysis for IFRS (cont.)

Panel B: Pearson correlation coefficients for IFRS 2008 and 2016 Sample

| | PBC | | | | | | | | | | | | | | |
|-----------|--------------|---------------|--------------|--------|--------------|--------------|---------------|--------------|---------------|---------------|---------------|---------|--------------|----------|--|
| | RBC score | score | Converg | Age | Complex | FairValue | Ln(Freq) | SCDL | Enforce | HHI | BdMemCom | USEdExp | FASB led | IASB led | |
| RBC score | 1 | 0.506 | 0.488 | 0.263 | 0.362 | 0.526 | 0.542 | 0.372 | 0.517 | 0.053 | 0.027 | 0.173 | 0.464 | -0.139 | |
| PBC score | 0.604 | 1 | 0.525 | 0.194 | 0.186 | 0.321 | 0.580 | 0.128 | 0.572 | 0.272 | 0.156 | 0.210 | 0.272 | -0.065 | |
| Converg | 0.604 | 0.406 | 1 | 0.092 | 0.641 | 0.211 | 0.741 | 0.402 | 0.720 | 0.243 | 0.137 | 0.218 | 0.110 | 0.026 | |
| Age | 0.102 | 0.111 | -0.189 | 1 | -0.002 | -0.084 | 0.068 | 0.216 | 0.121 | -0.500 | -0.341 | 0.059 | 0.134 | 0.057 | |
| Complex | 0.439 | 0.358 | 0.629 | -0.051 | 1 | -0.040 | 0.504 | 0.147 | 0.403 | 0.097 | 0.142 | 0.278 | -0.082 | -0.055 | |
| FairValue | 0.351 | 0.169 | 0.295 | 0.003 | 0.308 | 1 | 0.270 | 0.364 | 0.473 | 0.206 | -0.067 | 0.165 | 0.331 | 0.057 | |
| Ln(Freq) | 0.690 | 0.533 | 0.588 | -0.028 | 0.493 | 0.270 | 1 | 0.257 | 0.788 | 0.290 | 0.097 | 0.195 | 0.283 | -0.152 | |
| SCDL | 0.391 | 0.255 | 0.370 | 0.065 | 0.160 | 0.006 | 0.458 | 1 | 0.373 | -0.108 | -0.199 | 0.201 | 0.154 | -0.046 | |
| Enforce | 0.422 | 0.500 | 0.268 | 0.187 | 0.246 | 0.241 | 0.420 | 0.279 | 1 | 0.203 | -0.011 | 0.261 | 0.287 | -0.038 | |
| HHI | 0.455 | 0.445 | 0.306 | -0.235 | 0.237 | 0.314 | 0.390 | 0.184 | 0.376 | 1 | 0.528 | 0.180 | 0.061 | 0.072 | |
| BdMemCom | -0.296 | -0.353 | -0.260 | 0.044 | -0.214 | -0.185 | -0.346 | -0.225 | -0.344 | -0.489 | 1 | 0.021 | 0.150 | 0.143 | |
| USEdExp | -0.273 | -0.432 | -0.148 | 0.036 | 0.057 | -0.220 | -0.249 | -0.156 | -0.267 | -0.463 | 0.451 | 1 | 0.044 | 0.119 | |
| FASB_led | 0.515 | 0.511 | 0.266 | 0.221 | 0.251 | 0.331 | 0.539 | 0.019 | 0.471 | 0.364 | -0.282 | -0.302 | 1 | -0.144 | |
| IASB_led | -0.150 | -0.176 | -0.039 | -0.043 | -0.110 | -0.063 | -0.149 | -0.043 | -0.034 | 0.183 | -0.096 | -0.062 | -0.190 | 1 | |

The coefficients above (below) the diagonal are the Pearson correlation coefficients for the IFRS 2008 (2016) sample. The coefficients in **bold** are significant at the 0.01 level. The coefficients in *italics* are significant at the 0.10 level. The other coefficients are not significant at the 0.10 level.

Table 5: Descriptive statistics and multivariate analysis for IFRS (cont.)

 Panel C: Factors affecting cross-sectional variation in *RBC* scores across all IFRS

| Variable | Pred. Sign | IFRS 2008 Sample | | IFRS 2016 Sample | |
|---------------------|------------|------------------|---------------|------------------|---------------|
| | | Estimate | p-value | Estimate | p-value |
| Intercept | | 0.0401 | 0.9752 | -0.5412 | 0.358 |
| <i>Converg</i> | ? | 0.0187 | 0.4794 | 0.1512 | 0.0092 |
| <i>Age</i> | + | 0.0198 | 0.0099 | 0.0140 | 0.0485 |
| <i>Complex</i> | + | 0.2637 | 0.0296 | -0.0239 | 0.7758 |
| <i>FairValue</i> | + | 1.1858 | <.0001 | 0.1000 | 0.4916 |
| <i>Ln(Freq)</i> | + | 0.3265 | 0.1453 | 0.2794 | 0.0252 |
| <i>SCDL</i> | ? | 0.0216 | 0.7715 | 0.0467 | 0.5026 |
| <i>Enforce</i> | ? | -0.0522 | 0.2066 | 0.0009 | 0.9341 |
| <i>HHI</i> | + | -0.1688 | 0.7828 | 1.1288 | 0.0327 |
| <i>BdMemCom</i> | + | -1.1835 | 0.834 | -0.1166 | 0.9373 |
| <i>USEdExp</i> | + | 0.4992 | 0.4401 | 0.4649 | 0.5509 |
| <i>FASB_led</i> | + | 0.4449 | 0.0286 | 0.1691 | 0.4340 |
| <i>IASB_led</i> | - | -0.2562 | 0.2082 | -0.2667 | 0.2651 |
| Adj. R ² | | 0.5681 | | 0.5636 | |
| N | | 63 | | 65 | |

This panel presents the results of examining factors affecting cross-sectional variation in the *RBC* score of IFRS for 2008 and 2016. *RBC* score is the rules-based continuum score of the standard for each year. *Converg* is the number of times IASB refers to the convergence project in the body of the standard or the explanatory section. *Age* is the age of the standard. *Complex* is the number of times IASB refers to the underlying transaction of a standard as complex. *FairValue* is equal to 1 if the standard was amended by IFRS 13, 0 otherwise. *Ln(Freq)* is the log (1+ Frequency), where *Frequency* is the average number of times the standard's underlying transaction is mentioned in item 5 of English language IFRS 20-F filings for each year. *SCDL* is the number of times the standard was violated in major international scandals scaled by the number of standards from *Creative Accounting: Fraud and International Accounting Scandals*, Jones 2011). *Enforce* is the number of times the standard was involved in ESMA enforcement actions for years 2005 to 2008 for the 2008 sample and 2005 to 2016 for the 2016 sample. This data is from the published ESMA EECS Database of Enforcement in July 2021. *HHI* is the Herfindahl–Hirschman Index of countries requiring or permitting IFRS as of the most recent year the standard was issued or amended. *BdMemCom* is the percentage of IASB board members from common law countries as of the most recent year the standard was amended or issued. *USEdExp* is the percentage of IASB board members with U.S. educational background and/or work experience as of the year the standard was issued, or the most recent year amended. *FASB_led* is equal to 1 if the standard was part of a convergence topic led by FASB, 0 otherwise. *IASB_led* is equal to 1 if the standard was part of a convergence topic led by IASB, 0 otherwise.

Table 5: Descriptive statistics and multivariate regression for IFRS (cont.)

 Panel D: Factors affecting cross-sectional variation in *PBC* scores across all IFRS

| Variable | Pred. Sign | IFRS 2008 Sample | | IFRS 2016 Sample | |
|---------------------|------------|------------------|---------------|------------------|---------------|
| | | Estimate | p-value | Estimate | p-value |
| Intercept | | -4.0005 | 0.1892 | 1.1590 | 0.3813 |
| <i>Converg</i> | ? | 0.1197 | 0.0572 | 0.1160 | 0.3602 |
| <i>Age</i> | + | 0.0421 | 0.0187 | 0.0191 | 0.2267 |
| <i>Complex</i> | + | -0.4900 | 0.0815 | 0.2108 | 0.2678 |
| <i>FairValue</i> | + | 0.9270 | 0.1365 | -0.5126 | 0.1205 |
| <i>Ln(Freq)</i> | + | 0.6200 | 0.2356 | 0.2347 | 0.3931 |
| <i>SCDL</i> | ? | -0.2985 | 0.0907 | -0.0286 | 0.8548 |
| <i>Enforce</i> | + | 0.0595 | 0.5360 | 0.0412 | 0.1128 |
| <i>HHI</i> | + | 1.1050 | 0.4418 | 1.8101 | 0.1237 |
| <i>BdMemCom</i> | - | 12.8905 | 0.3315 | -7.6535 | 0.0251 |
| <i>USEdExp</i> | - | 1.8205 | 0.2310 | 0.3723 | 0.8316 |
| <i>FASB_led</i> | ? | -0.0661 | 0.8868 | 0.4255 | 0.3817 |
| <i>IASB_led</i> | ? | -0.5854 | 0.2191 | -0.8528 | 0.1154 |
| Adj. R ² | | 0.4171 | | 0.4397 | |
| N | | 63 | | 65 | |

This panel presents the results of examining factors affecting cross-sectional variation in the *PBC* score of IFRS for 2008 and 2016. *PBC* score is the principles-based continuum score of the standard for each year. *Converg* is the number of times IASB refers to the convergence project in the body of the standard or the explanatory section. *Age* is the age of the standard. *Complex* is the number of times IASB refers to the underlying transaction of a standard as complex. *FairValue* is equal to 1 if the standard was amended by IFRS 13, 0 otherwise. *Ln(Freq)* is the log (1+ Frequency), where *Frequency* is the average number of times the standard's underlying transaction is mentioned in item 5 of English language IFRS 20-F filings for each year. *SCDL* is the number of times the standard was violated in major international scandals scaled by the number of standards from *Creative Accounting: Fraud and International Accounting Scandals*, Jones 2011). *Enforce* is the number of times the standard was involved in ESMA enforcement actions for years 2005 to 2008 for the 2008 sample and 2005 to 2016 for the 2016 sample. This data is from the published ESMA EECS Database of Enforcement in July 2021. *HHI* is the Herfindahl–Hirschman Index of countries requiring or permitting IFRS as of the most recent year the standard was issued or amended. *BdMemCom* is the percentage of IASB board members from common law countries as of the most recent year the standard was amended or issued. *USEdExp* is the percentage of IASB board members with a U.S. educational background and/or work experience as of the year the standard was issued, or the most recent year amended. *FASB_led* is equal to 1 if the standard was part of a convergence topic led by FASB, 0 otherwise. *IASB_led* is equal to 1 if the standard was part of a convergence topic led by IASB, 0 otherwise.

Table 6: Difference-in-differences tests

Panel A: The incremental impact of convergence on *RBC* scores of U.S. GAAP and IFRS

| | U.S. GAAP | | IFRS | |
|------------------------|-----------|---------|----------|---------|
| | Estimate | p-value | Estimate | p-value |
| Intercept | 0.8088 | <.0001 | 0.2500 | 0.0501 |
| <i>TREAT</i> | 0.6167 | 0.0012 | 0.2010 | 0.1924 |
| <i>POST</i> | 0.0607 | 0.6532 | 0.0833 | 0.6326 |
| <i>TREAT*POST</i> | 0.1608 | 0.5418 | 0.5768 | 0.0073 |
| Adj. R ² | 0.0669 | | 0.2400 | |
| Number of Observations | 372* | | 156** | |

This table reports the difference-in-differences results derived from the following equation, which is used to assess the incremental effect of convergence on the rules-based characteristics of U.S. GAAP and IFRS.

$$RBC_{it} = \alpha_0 + \alpha_1 TREAT + \alpha_2 POST + \alpha_3 TREAT \times POST + \varepsilon_{it}$$

Where: *RBC* score is the rules-based continuum score of the standard for each year. *TREAT* = 1 for the treatment standards, which are standard involved in the convergence project, 0 otherwise; *POST* = 1 for the years 2014, 2015, and 2016, and 0 for the years 1998, 1999, and 2000.

*For the U.S. GAAP sample, 98 standard-years (including 47 in the pre-convergence period and 51 in the post-convergence period) are treatment observations vs. 274 standard-years (including 136 in the pre-convergence period and 138 in the post-convergence period) are control observations.

** For the IFRS sample, 105 standard-years (including 51 in the pre-convergence period and 54 in the post-convergence period) are treatment observations vs. 51 standard-years (including 24 in the pre-convergence period and 27 in the post-convergence period) are control observations.

Table 6: Difference-in-difference tests (cont.)

Panel B: The incremental impact of convergence on the *PBC* scores of U.S. GAAP and IFRS

| | U.S. GAAP | | IFRS | |
|------------------------|-----------|---------|----------|---------|
| | Estimate | p-value | Estimate | p-value |
| Intercept | 0.3162 | <.0001 | 0.2500 | 0.3633 |
| <i>TREAT</i> | 0.4285 | 0.0043 | 0.8284 | 0.0138 |
| <i>POST</i> | 0.1259 | 0.2386 | 0.0833 | 0.8253 |
| <i>TREAT*POST</i> | 0.4040 | 0.0527 | 0.8382 | 0.0698 |
| Adj. R ² | | 0.1088 | | 0.2032 |
| Number of Observations | | 372* | | 156** |

This table reports the difference-in-differences results derived from the following equation, which is used to assess the incremental effect of convergence on the principles-based characteristics of U.S. GAAP and IFRS.

$$PBC_{it} = \alpha_0 + \alpha_1 TREAT + \alpha_2 POST + \alpha_3 TREAT \times POST + \varepsilon_{it}$$

Where: *PBC* score is the principles-based continuum score of the standard for each year. *TREAT* = 1 for the treatment standards, which are standard involved in the convergence project, 0 otherwise; *POST* = 1 for the years 2014, 2015, and 2016, and 0 for the years 1998, 1999, and 2000.

*For the U.S. GAAP sample, 98 standard-years (including 47 in the pre-convergence period and 51 in the post-convergence period) are treatment observations vs. 274 standard-years (including 136 in the pre-convergence period and 138 in the post-convergence period) are control observations.

** For the IFRS sample, 105 standard-years (including 51 in the pre-convergence period and 54 in the post-convergence period) are treatment observations vs. 51 standard-years (including 24 in the pre-convergence period and 27 in the post-convergence period) are control observations.

Figure 1 Mean U.S. GAAP vs. IFRS *RBC* scores for the period of 1976-2016

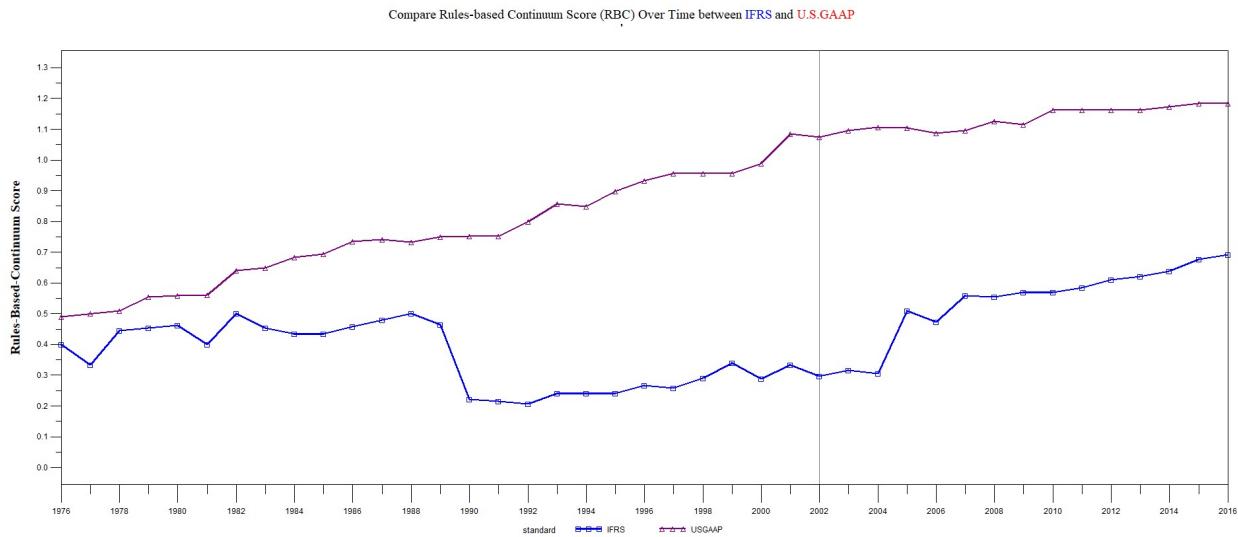


Figure 1. This figure plots the mean *RBC* scores across all U.S. GAAP and IFRS each year from 1976 to 2016.

Figure 2 Mean U.S. GAAP vs. IFRS *PBC* scores for the period of 1976-2016

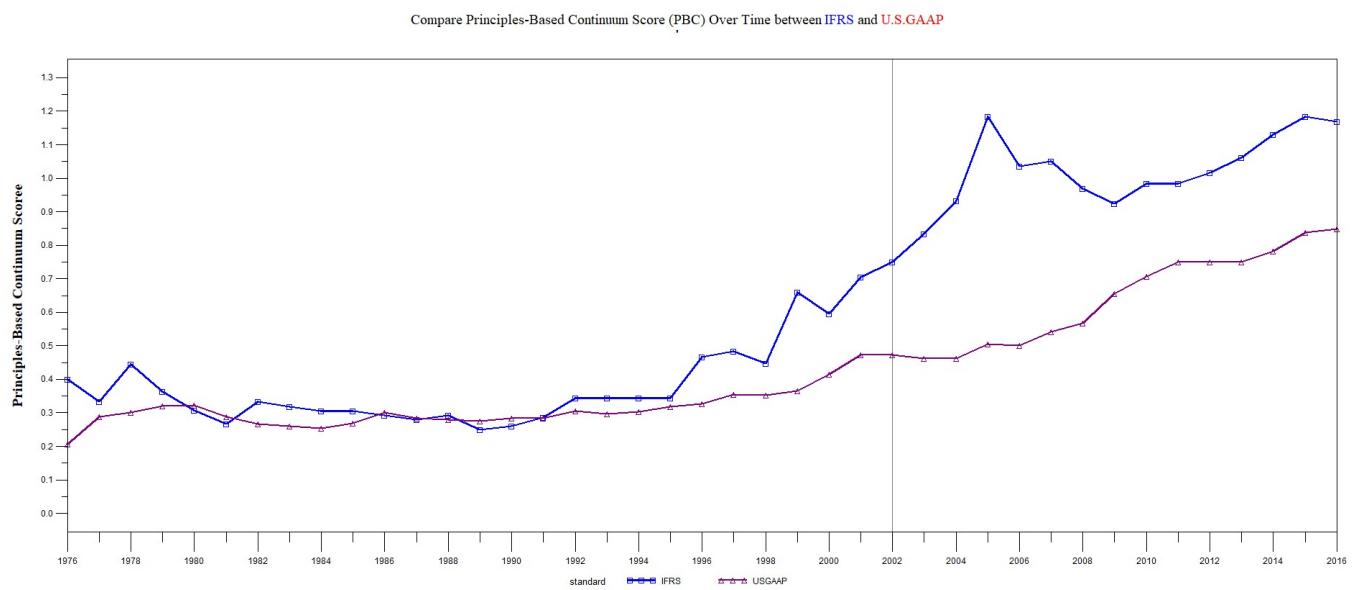


Figure 2. This figure plots the mean *PBC* scores across all U.S. GAAP and IFRS each year from 1976 to 2016.